How does visualizing knowledge look like?

Why should we depart from representationalism to performativity?

This dissertation is a journey to visual knowing and visualizing knowledge that is told in seven parts. Moving between theoretical, empirical, and experimental perspectives, my aim here is to challenge our assumptions on knowledge creation by focusing on the visual.

The theoretical framework constructed for this dissertation draws on research in sociomateriality, knowing, and visual performativity in order to look at knowledge creation as a process enacted through action between the animate and the inanimate.

Data for this study was collected from three knowledge-intensive organizations in Finland and Japan over the course of two years. The theoretical insights and empirical findings in this dissertation broaden our current understanding of knowledge.
Visual knowing and visualizing knowledge in knowledge-intensive organizations

Miikka J. Lehtonen
Supervising professor
Rebecca Piekkari

Thesis advisor
Elizabeth Rose

Opponent
Associate Professor Vesa Peltokorpi, Japan Advanced Institute of Science and Technology, Japan
Abstract

This dissertation investigates the visual dimension of knowing and knowledge creation in knowledge-intensive organizations in Finland and Japan. Previously knowledge creation theories have predominantly focused on written and oral communication, and cognitive matters, therefore overlooking the visual and sociomaterial dimensions. To counter this, I have adopted a performative/sociomaterial approach to visual knowing and visualizing knowledge to acknowledge the importance of non-human entities.

The theoretical framework constructed for this dissertation draws on research in sociomateriality, knowing, and visual performativity in order to look at knowledge creation as a process enacted through action. This dissertation consists of five essays out of which three are empirical ones. Data for the essays was collected in three different settings: an academic unit in a leading university in Finland, a financial unit of a North European automotive industry company’s Japanese subsidiary, and a Finnish design export event in Tokyo, Japan.

Findings in this dissertation illustrate that knowledge creation and knowing are inherently visual, and that our understanding of them as cognitive and phenomenological processes should be complemented with sociomateriality. Moreover, findings also suggest that knowledge creation processes yield objects and artifacts that do not contain knowledge per se, but instead they – together with individuals – enable performative knowledge and knowing to emerge.

The theoretical insights and empirical findings in this dissertation broaden our current understanding of knowledge creation processes by arguing for a more multifaceted stance towards knowledge and knowing. Instead of looking at knowledge as a separate entity, in this dissertation claims have been set forth that argue for visual knowing and visualizing knowledge.

Keywords international business, knowing, knowledge-intensive organizations, knowledge, knowledge creation, performativity, sociomateriality, visual communication

ISSN-L 1799-4934 ISSN (printed) 1799-4934 ISSN (pdf) 1799-4942
Location of publisher Helsinki Location of printing Helsinki Year 2014
Tekijä
Miikka J. Lehtonen

Väitöskirjan nimi
Visuaalinen tieto ja tiedon visualisointi tietointensiivisissä organisaatioissa

Julkaisija
Kauppakorkeakoulu

Yksikkö
Johtamisen laitos

Sarja
Aalto University publication series DOCTORAL DISSERTATIONS 43/2014

Tutkimusala
Kansainvälinen liiketoiminta, organisaatiotutkimus, tietojohtaminen

Väitöspäivä
16.05.2014

Monografia
Yhdistelmäväitöskirja
Esseeväitöskirja

Tiivistelmä

Tämä väitöskirja puretuu tietämisen ja tiedon luomisen visuaaliseen ulottuvuuteen tietointensiivisissä organisaatioissa Suomessa ja Japanissa. Aiempia tiedon luomisen tutkimuksia on pääasiassa keskittynyt kirjalliseen ja suulliseen viestintään sekä tiedon kognitiiviseen, jolloin visuaalisuus ja performatiivisuus ovat jääneet melkeinä kokonaan huomiotta. Voidaksemme paremmi ymmärtää elottomien asioiden merkityksen tiedon luomisessa olen tässä väitöskirjasssa lähestynyt visuaalista tietoa ja tiedon visualisointia performatiivisuuden ja sosiomateriaalisuuden näkökulmasta.

Väitöskirjan teoreettinen viitekehys pohjautuu sosiomateriaalisuuteen, tietämiseen, ja visuaaliseen performatiiviseen, jolloin tiedon luominen ymmärretään aktiivisena prosessina. Väitöskirja koostuu yhteensä viidestä paperista, joista kolmessa on kerätty empirististä tutkimusmateriaalia. Aineisto kerättiin kolmessa eri kontekstissa: johtavan suomalaisen yliopiston yksikkö, pohjoisruoppalaisen autoteollisuuden yrityksen japanilaisen tytäryhtiöön rahoitusyksikkö, ja suomalaisen muotoilun vientitilaisuus Tokiossa, Japanissa.

Löydökset korostavat tiedon luomisen ja tietämisen visuaalisuutta ja osoittavat sosiomateriaalisuuden merkityksen yhtalöissä. Lisäksi väitöskirjassa kerätty aineisto osoittaa elottomien asioiden merkityksen tiedon näkökulmasta: tiedon luomisen prosessit tuottavat asioita ja objekteja, jotka itsessään eivät sisällä tieota, mutta jotka mahdollistavat performatiivisen tiedon ja tietämisen synyn.

Teoreettiset oivallukset ja empiriset havainnot tässä väitöskirjassa laventavat ymmärrystämme tiedon luomisen prosesseista haastamalla vallalla olevat käsitykset tiedosta päätös verbaalisena ilmiönä. Sen sijaan että tieto ymmärrettäisiin itsenäisenä entiteettinä, tämä väitöskirja korostaa tiedon ja tietämisen visuaalisuutta.

Avainsanat
Kansainvälinen liiketoiminta, tietämisen, tietointensiiviset organisaatiot, tieto, tiedon luominen, performatiivisuus, sosiomateriaalisuus, visuaalinen viestintä

ISBN (painettu) 978-952-60-5631-9
ISBN (pdf) 978-952-60-5632-6
ISSN-L 1799-4934
ISSN (painettu) 1799-4934
ISSN (pdf) 1799-4942
Julkaisupäiväkaikki Helsinki
Painopaikka Helsinki
Vuosi 2014
Sivumäärä 314
Only damaged people want good things to happen to them through visualization.

I have always wanted to become a researcher\(^1\). Well, I also wanted to become a diplomat, and even went to the exam, but they said something along these lines: “look, kid, you’re a nice guy, but your general knowledge matches that of a chicken”. So I didn’t know the amount of reindeers we have in Lapland, big deal? Nonetheless, these first few years in academia have shown me that this is definitely the place where I want to be. Moreover, my PhD journey is best characterized by two words: serendipity and perseverance.

Serendipity in the sense that it was out of time pressure and accident that I started to investigate visual knowing and visualizing knowledge, and perseverance as my research topic has attracted a fair amount of criticism and doubt along the way. Although this journey has definitely not been an easy one, I am still extremely happy I did it. I have met and worked with wonderfully brilliant and talented people, been to places I otherwise would not have been able to visit, and learned a lot about myself. In short: I feel I have grown tremendously while pursuing a PhD, and there are numerous people I would like to thank for making this transformative journey a pleasurable one.

First of all, I would like to thank my supervisor and custos, Professor Rebecca Piekkari, for believing in my work and helping me in becoming a better scholar. Without you I would not be here, and for this I am extremely grateful! If I ever get to supervise PhD students I hope I will be even as half as good as you are. In addition, without the amazingly helpful and constructive comments from my two pre-examiners, Associate Professor Vesa Peltokorpi from Japan Advanced Institute of Science and Technology and Adjunct Assistant Professor Ayano Hirose from Hitotsubashi University (Graduate School of International Corporate Strategy), I would not be publicly defending this work: you, too, have my deepest gratitude.

---

\(^1\) LCD Soundsystem *Yeah – Crass Version*
Moreover, I am honored and privileged to have Associate Professor Vesa Peltokorpi acting as my opponent.

Without the help of inspiring and talented people in organizations from where I collected my empirical data I would not have made it this far – thank you so much! As I promised full anonymity for you and even signed a couple of NDAs along the way, I cannot explicitly mention you, but you know who I am talking about. You provided me with your time, resources, and connections to make this dissertation come true, and I hope I am able at least partially to pay you back with this finished book.

Moving on to academia, there are people who have my eternal gratitude for their support and guidance during this project. Professors Asta Salmi and Elizabeth Rose provided me with guidance during the early phase of my journey, and Associate Professor Kristiina Mäkelä and Research Director Toni-Matti Karjalainen helped me in greatly improving this work by serving as my opponents in my final seminar before the dissertation process. Furthermore, it has been an honor working in FLUID with Toni-Matti as my boss: you have taught me many great things about scholarship, and our travels around the world have been both insightful and delightful. In addition, the following people have greatly helped me in one way or another to improving this work – and keeping my sanity – and through their commitment I have a learned a lot: Mika Aaltonen, Markus Ahola, Antti Ainamo, Bea Alanko, Zuhair al-Obaidi, Mirjaliisa Charles, James Collins (for proofreading the manuscript), floorball gang, FLUIDers, Daniel Graff, Robin Gustafsson, JaBuPro team, Anne Kankaanranta, Tero Karppi, Kari-Hans Kommonen, Janne M. Korhonen, Mikko Koria, Krista Kosonen, Alexei Koveshnikov, Laura Laaksonen, Maarit Laihonen, Leena Louhiala-Salminen, Peter McGrory, Mika Pantzar, Markus Paukku, Chris Rowell, Markku Salimäki, Anna Salo, Fernando Santos, Janne Tienari, and Svetlana Usenyuk. I would also like to thank my other colleagues at the Department of Management Studies and at the Aalto University in general.

Extending my gratitude outside the Finnish borders, I would like to thank the following colleagues for their support and insights during my journey: Francesca Bargiela, Bryan Boyer, Jesper Edman, Geir Helgesen, Katrine Herold, Jamer Hunt, i.school team, Fumiko Ichikawa, Shuko Ikemura (for the illustrations), Constance Kampf, Helena Kjellgren, Tore Kristensen, Tero Kuittinen, Minna Logemann, Laura Mata García, Ikujiro Nonaka, Sissel Olander, Silve Parviainen, Emmanuella Plakoyiannaki, Randy Shoai, Hiroshi Tamura, Anna Wilroth, EGOSians, and Nord-IBers. It has been
both a pleasure and an honor working and exchanging ideas with you, and I look forward to continuing along the same lines in the future!

This dissertation would not have been possible without the generous funding of the following institutions: Liikesivistysrahasto (The Foundation for Economic Education), Helsingin kauppakorkeakoulun tukisäätiö (HSE Foundation) Tutkijat maailmalle initiative, Scandinavia-Japan Sasakawa Foundation, Jenny and Antti Wihuri Foundation, Aalto University School of Business, and Tekes (The Finnish Funding Agency for Technology and Innovation). I cannot thank you enough for supporting me in my journey, but I hope this dissertation shows you that the support you provided me with was not in vain.

A special thank you goes to Rebecca W. B. Lund: thank you for all the discussions we had about our dissertations and academic work in general. Without your support I would not be where I am today. It was a tough road, and at times sad, but I am looking forward to whatever adventures future holds for us.

I would also like to thank my dear friends: for years and years you kept on asking me what is it that I am actually working on, and finally I am happy to be able to show you that this book is the result of a wonderful journey. There are so many of you that instead of listing all the names here, I would like to thank you in person. Thank you for being there and supporting me although I was at times too deeply focused on writing and researching.

Finally, I wish to dedicate this dissertation to my parents, Irma and Harri, as without their love and support I would not have been able to complete this journey. You helped me during times when I thought I would not make it on my own, and you have never ceased to support me in realizing my dreams. I hope you are as proud of this dissertation as I am!

Tokyo, Japan, February 2014

Miikka J. Lehtonen
TABLE OF CONTENTS

Preface .................................................................................................................. 11

PART I: Overview ............................................................................................... 13

1 Introduction ........................................................................................................ 15

1.1 Background – why do we need to study visual knowing and visualizing knowledge? ................................................................. 15
1.2 Research setting – knowledge-intensive organizations ..................... 17
1.3 Research questions ..................................................................................... 19
1.4 Key concepts ........................................................................................... 20
1.5 Structure of the dissertation .................................................................... 24

2 What is this thing called visual communication? ............................... 25

2.1 History of visual communication ........................................................... 26
2.2 Visual communication – interpreting and crafting ......................... 28
  2.2.1 Interpreting – the perception side of visual communication .... 29
  2.2.2 Crafting – the creation side of visual communication .......... 32
2.3 How has the visual been dealt with in various disciplines? .......... 34
2.4 Integrating the visual to organizational knowledge creation theories .................................................................................. 37
2.5 Conclusion ............................................................................................... 38

3 Knowledge-related studies in organizations: A literature review .................................................................................. 41

3.1 Introduction ............................................................................................... 41
3.2 Interfirm knowledge ............................................................................... 43
  3.2.1 Knowledge acquisition ................................................................. 44
  3.2.2 Knowledge spillovers ................................................................ 46
  3.2.3 Summarizing the stream .............................................................. 47
3.3 Intrafirm knowledge .............................................................................. 48
  3.3.1 Knowledge-based view of the firm ............................................. 49
7.3 Conclusions – where do we go from here? ..............................................131

8 Summary of papers .................................................................135

8.1 Communicating competence through PechaKucha presentations. 135
8.2 Visualizing knowledge about sustainability: case PechaKucha presentations. ...........................................................................135
8.3 How do people construct their organization using Chigo blocks?
   An exploratory investigation into visual knowing.............................136
8.4 A visual approach to studying cultural knowing at workplaces:
   Evidence from Japan ......................................................................136
8.5 Ultra Innovation Force 4: Aalto & i.school saving the future of shopping + accompanying text .................................................137

References ................................................................................139

Part II: Papers ..............................................................................161
List of Figures

Figure 1. Research setting of this dissertation
Figure 2. Key concepts and their connections visualized
Figure 3. The movie Inception’s plot visualized (Rick Slusher 2010, http://www.fastcodesign.com/1662130/infographic-of-the-day-inception-contest-winner, retrieved 13 September 2013)
Figure 4. A Rhizomatic map of visual communication (adapted from Moriarty and Barbatsis 2005: xx)
Figure 5. Market share of fictitious companies
Figure 6. The three levels of knowledge-related studies
Figure 7. How does this dissertation aim at expanding our understanding of organizational knowledge creation?
Figure 8. The visual and sociomateriality are inextricably bound together through performativity
Figure 9. Knowing extends beyond the verbal domain
Figure 10. The three streams of research before connections are established between them
Figure 11. The three streams of research after connections are established between them
Figure 12. The theoretical framework for multisensory knowing
Figure 13. Visual knowing and visualizing knowledge are not bound by organizational boundaries
Figure 14. Contributions of this dissertation crystallized

List of Pictures

Picture 1. An example of visual communication from my empirical data
Picture 2. The stick figure
Picture 3. An example of sociomateriality in visual knowledge creation and knowing (Paper #2)
Picture 4. Another example of sociomateriality in visual knowledge creation and knowing (Paper #2)
Picture 5. A drawing illustrating ‘our project’s budget has been exceeded’ (Paper #4)
Picture 6. A picture of an artifact portraying an organization (Paper #3)
Picture 7. Can we ignore the visual dimension in the picture above? (Paper #2)
Picture 8. “Organized mess” (a visual metaphor of an academic institution as portrayed by one of the respondents, paper #3)
Picture 9. “Controlled chaos” (a visual metaphor of an academic institution as portrayed by one of the respondents, paper #3)
Picture 10. A picture from a PechaKucha presentation on ‘sustainability’ (paper #2)
Picture 11. An example of Chigo blocks constructs
Picture 12. An example of a drawing for ‘a Japanese person walking home’

List of Tables

Table 1. Abstract and concrete shifts towards postmodern organizations
Table 2. A categorization of visual research
Table 3. A summary of methodological choices in the papers
LIST OF PAPERS


Paper 2: Lehtonen, Miikka; Lund, Rebecca; and Kesävuori, Taru (Unpublished). Visualizing knowledge about sustainability: case PechaKucha presentations. An earlier version of this paper was presented at the Tsinghua-DMI International Design Management Symposium, 3-5 December 2011, Tsinghua University, Hong Kong.

Paper 3: Lehtonen, Miikka J. (Unpublished). How do people construct their organization using Chigo blocks? An exploratory investigation into visual knowing. An earlier version of this paper was presented at the 28th EGOS Colloquium, 5-7 July 2012, Aalto University and Hanken School of Economics, Finland.


Preface

What you are about to read is a journey to the intersection between the visual and knowledge: visual knowing and visualizing knowledge, to be precise. In early 2009, when I was crafting my PhD research proposal, little did I know I would be opening a black box many scholars of organizational knowledge creation had neglected. At first, when I was presenting my initial PhD research proposal I met resistance as my topic was seen as unorthodox and too far from International Business’ (IB) core research topics. One comment to my proposal went something like this: “I would not touch that topic, even with a ten-foot pole”. For me, this was a good sign, as I realized I was on to something that evokes emotions in people.

The academic profession and scholarly thinking have been traditionally characterized as verbal practices: we write academic papers and present them in international conferences to our peers. My first conference presentations received mixed reactions as some scholars instantly bought the idea as novel and fascinating while others were not so convinced as they thought my project was foolhardy and trivial. Lucky for me, two things happened: I managed to find organizational scholars who were equally interested in the visual, and I also stopped caring about the negative feedback I received for my papers. Today, I am grateful for those two things, as they both have helped in making my claims and arguments sharper in this dissertation.

Whether or not you buy into the fact that academic research can also be visual, I hope that after reading this dissertation you are more open to the visual or, even better, considering incorporating the visual in whatever you do. When I started this dissertation project I had no prior education on the visual, but as of writing this preface I can no longer see the world as not being essentially visual.
Finally, my writing style in this dissertation has been influenced by such scholars as Helen Sword (2012), Beverley Skeggs (1997), and Kaj Sand-Jensen (2007) among others, who, in their own way, argue for a more subjective and inclusive form of writing. As my topic flirts with art and performativity, I have decided to explicitly include my voice in the text. Instead of achieving reliability through objectivity I have opted for transparency by opening up my thinking process.
Half an hour after swallowing the drug I became aware of a slow dance of golden lights.


#SuperDrive
1 Introduction

Take a look around you, what do you see? Do you see other people, your desk, a glass of fine Chardonnay, or a prototype your client is expecting to see in a few days time? No matter what you see, you see things around you and you interact with them in numerous ways. Maybe seeing your colleague at work inspires you to solve a task you have been trying to figure out for days now.

Now, imagine that everything I described above would be trivial from the perspective of what makes organizations competitive or just functional. This was the feeling I had when I started to read about organizational knowledge creation theories: it almost felt as if scholars had closed their eyes from the visual, which is why this dissertation aims at opening our eyes by looking at visual knowing and visualizing knowledge in knowledge-intensive organizations.

1.1 Background – why do we need to study visual knowing and visualizing knowledge?

Although knowledge as a field of intellectual inquiry has attracted the attention academics and philosophers ever since the time of Ancient Greece, within management practice and research knowledge it is still the new kid on the block (Nonaka, von Krogh and Voelpel 2006; Nonaka and Peltokorpi 2006). Marking a departure from understanding organizations as purely information-processing entities, the knowledge-based view of the firm has aimed at appreciating – and taking into account – the diverse nature of knowledge (Amin and Cohendet 2004; Machlup 1980; Tsoukas 1996).
We, as scholars, like to talk about knowledge as one of the main building blocks for contemporary organizations and knowledge creation as a source for competitive advantages, but what really counts as knowledge? How do we create knowledge and what does it look like? Furthermore, what really surprised me was the absence of the visual in empirical data, theorizing, and most journal articles and books on organizational knowledge creation. Given that most of our sensory perceptions are visual, why do we not include the visual in organizational knowledge creation (OKC) research?

As a result, my intellectual journey started with the question ‘why is the visual left out of the picture?’, because the leading authorities in knowledge creation research did not seem to explicitly touch upon the multisensory realm of knowledge (e.g. Cook and Brown 1999; Nonaka and Takeuchi 1995; Nonaka, Toyama and Hirata 2008; Spender 1996; Tsoukas 2009). For many knowledge creation scholars, knowledge seems to be mainly cognitive and phenomenological, and through social interaction individuals accumulate new knowledge. Digging deeper in the literature, I found three assumptions that have been shaping the field and the way we study knowledge creation in organizations (Alvesson and Sandberg 2011; Sandberg and Alvesson 2011).

First, it seems that OKC research is mainly focused on the cognitive and phenomenological dimensions of knowledge creation. The challenge in current literature is that although scholars seem to argue that explicit knowledge (Nonaka and Takeuchi 1995; Spender 1996) exists in the form of manuals, products, and databases, for example, these products are not seen as integral in the knowledge creation process in the sense that they could be seen as holding agency. To counter this, I turn to proponents of sociomateriality (Bogost 2012; Latour 1987; Latour and Woolgar 1986; Orlikowski 2002; Star and Griesemer 1989) by arguing that knowledge is created within connections that comprise not only individuals but also the material world.

Second, in terms of knowledge creation, verbal communication is seen as the main catalyst. Although it has never been explicitly claimed, there nonetheless seems to be silent consensus that not all means of communication are of equal importance when it comes to knowledge creation. In the earlier versions of knowledge creation theories Nonaka (1994: 19; Nonaka and Takeuchi 1995), for example, argues that tacit knowledge can be acquired through metaphors, and observation and imitation, consequently broadening the scope to cover matters outside the
linguistic dimension. Similarly, later on Nonaka and von Krogh (2009: 636-637) claim that tacit knowledge is connected to senses and tactile experiences, and they continue that one of the reasons for drawing on the concept of tacit knowledge was to break away from the information–knowledge equation. It hence seems that the introduction of tacit knowledge to organizational knowledge creation research has served two purposes: first, the aim has been to make an intellectual distinction between dominant organizational theories (Nonaka and von Krogh 2009) and second, to argue that we know more than what we can tell.

Third, apart from certain contemporary openings within OKC (Amin and Cohendet 2004; Nonaka et al. 2008; Tsoukas and Mylonopoulos 2004; Tsoukas 2009), most studies seem to argue that knowledge can be externalized and separated from the individual. While I agree that in cognitive terms knowledge creation processes have the potential to yield new tacit knowledge, to date most arguments for externalizing knowledge to diverse objects (such as manuals and prototypes) have not been adequately explored. Instead of investigating the intersection between the individual and language, I am looking at the relationship between the social and the material as inherently including knowing in action. Or in other words: knowing is both tacit and explicit at the same time (Nonaka et al. 2008; Polanyi 2009; Tsoukas and Mylonopoulos 2004) as it is embedded in the relationship.

How then should we proceed now that the assumptions have been unearthed? To offer a way forward, in this dissertation I am focusing on visual knowing and visualizing knowledge to draw attention to the previously neglected domain of the visual. In terms of collecting rich empirical data, I decided to focus on three knowledge-intensive organizations in Finland and Japan in order to generate vantage points to different professions. In the section below I will elaborate more on the research setting that further helped me to frame this dissertation.

1.2 Research setting – knowledge-intensive organizations

In this dissertation I am looking at knowledge-intensive organizations (see e.g. Kärreman and Alvesson 2004; Robertson and Swan 2003 for a discussion on knowledge-intensive firms) in Finland and Japan through
three different empirical investigations: design-intensive firms and how they visualize knowledge about sustainability, university staff (both research and administrative) and visual artifacts of organizations, and a financial team in the automotive industry on visualizing cultural knowing. More specifically, as I am interested in the visual and the sociomaterial, I will be focusing on connections between individuals and the sociomaterial as follows:

![Figure 1. Research setting of this dissertation](image)

Moreover, the visual seems to be regarded and appreciated differently in the three aforementioned industries, which is why I wanted to focus on three distinctively different contexts. What they do have in common, however, is that they are all knowledge-intensive organizations: that is to say, knowledge forms the foundations for work and value adding activities within the organizations I studied. Moreover, I also chose these three organizational settings because I wanted to find out how relevant it is to study the visual in connection to them: in public discourses, design-intensive firms are seen as highly visual with their prototypes, storyboards and so forth, whereas financial people are seen as number crunchers and academics as producers of written knowledge in their ivory towers. With these stereotypes in mind I wanted to explore the visual in these settings.
What falls under the scope of this research is the intertwined assemblage of connections between individuals, the visual, and artifacts (Latour 1987; Latour and Woolgar 1986). These elements will be covered during the papers from different viewpoints, but at the core we can find the assumption that they are essential for organizational knowledge creation. Spaces and individuals have already been discussed in knowledge creation research in great detail (Nonaka and Konno 1998), and hence the greatest contribution here will stem from the artifacts and the visual.

1.3 Research questions

Building on the two previous sections my aim in this dissertation is to study visual knowing and visualizing knowledge by asking the following research question:

The main research question:

*What kind of sociomaterial and performative practices of visual knowing and visualizing knowledge are there in knowledge-intensive organizations?*

To approach this question from various, supporting, perspectives, I have devised the following sub-questions:

Sub-question #1 (Paper #2): *What kind of visual strategies the respondents employed to communicate their knowledge of sustainability in the PechaKucha presentation?*

Sub-question #2 (Paper #3): *What kind of visual knowledge do individuals create about their academic organization through Chigo blocks?*

Sub-question #3 (Paper #4): *What do visual research methods tell us about cultural knowing and formations?*

Hence, the research questions asked above focus on three different perspectives to visual knowing and visualizing knowledge in three different knowledge-intensive organizations. With this combination I believe I can
shed light on various visual practices related to knowledge in organizational settings.

1.4 Key concepts

In this section I will briefly introduce and discuss the key concepts in order to further frame this dissertation. These concepts will be dealt with in greater length during the remaining chapters, but here the idea is to show what are the essential building blocks for this dissertation. The visualization below summarizes the concepts and shows the chapter(s) that elaborates more on that concept.

![Figure 2. Key concepts and their connections visualized](image)

**Knowledge and knowledge creation**: it seems that Plato’s “justified, true belief” and Polanyi’s – often creatively interpreted – tacit–explicit duality of knowledge have been the dominant conceptualizations for knowledge within organizational knowledge creation research (see e.g. Grant 1996; Gupta and Govindarajan 2000; Hansen 1999; Kogut and Zander 1992; Nonaka 1994; Nonaka and Takeuchi 1995). This combination has led many scholars to argue that knowledge can be externalized and that as such it also holds knowledge for everyone else (this claim was raised in Tsoukas and Mylonopoulos 2004), and in addition, following Plato’s take on knowledge unnecessarily narrows it down to the linguistic domain, as a
However, in this dissertation I am following a different path that builds on performativity and sociomateriality (Barad 2003; Bolt 2004; Orlikowski 2002, 2006; Orlikowski and Scott 2008): I do not regard knowledge as an externally and independently existing entity, but instead I am looking at visual knowing and visualizing knowledge. A departure from knowledge to knowing has been gaining momentum (Amin and Cohendet 2004; Orlikowski and Scott 2008; Tsoukas and Mylonopoulos 2004) as it understands knowledge as emerging through action, and from this standpoint looking at the visual within the domain of knowledge and knowing appreciates the diversity of knowledge. Building on this, in this dissertation I understand knowledge as a knowing process that emerges from the interaction between individuals and materials within sociomaterial spaces.

Organizational knowledge creation, on the other hand, was devised as a counterforce to organization theories that assumed the organization to be an information-processing machine (Nonaka 1994: 14), organizational knowledge creation theories take as their starting point the dynamic nature of organizations. When speaking about organizational knowledge creation, scholars (Grant 1996; Hansen 1999; Nonaka and Takeuchi 1995; Nonaka and Toyama 2002, 2005; Spender 1996) refer to the knowledge creation processes taking place between individuals within organizational settings. Hence, the underlying logic is that organizational knowledge creation theories explain the raison d’être of contemporary organizations.

**Organization and organizational spaces:** questions on the ontology and epistemology of organizations and organizational spaces abound, and more often than not new theories have emerged in connection with larger societal shifts. In the early days of organization studies, we turned to Weber in our attempts to explain organizations, and currently textual and linguistic, resource-based and knowledge-related takes on organizations seem to be the most attractive ones in our disciplines. I will further elaborate on my intellectual perspective on organizations in Chapter 3, but here I wish to summarize my stance by drawing on such scholars as Tsoukas (1996, 2009), Lash and Urry (1994), and Latour (1987). In this dissertation, organizations are seen as fluid and sponge-like, suggesting that there are no clear borders between organizations and societies in which they are embedded. This, however, should not be taken as a nihilistic stance.
on organizations, but instead as an attempt to look at organizations beyond borders defined by ownership: “the boundary setting becomes far more complicated when an organization is viewed as an organic configuration of multi-layered ba” (Nonaka and Toyama 2005: 429).

Building on the notion of organizations introduced above, it is also crucial to address the notion of space as organizations can be regarded as spaces that are constituted by and constitute knowledge creation. Scholars before me (Amin and Cohendet 2004; Nonaka and Konno 1998) have emphasized and theorized on the importance of space for knowledge creation, and this study will draw to a large extent on the work already conducted within this field. Especially Nonaka and his associates (Nonaka and Konno 1998; Nonaka, Toyama and Konno 2000) have theorized on the interplay between space and knowledge, and their concept of space – *ba* – has attracted academic attention globally (Alavi and Leidner 2001; Brown and Duguid 1998; Osterloh and Frey 2000). Moreover, space has been an important focus of academic and practical discussion especially within architecture (Alexander 1977; Alexander, Ishikawa and Silverstein 1977; Lefebvre 1991) and sociology (Bourdieu 1993), but it has also gained importance in organizational learning and knowledge creation literatures through Communities of Practice (CoP) (Wenger 1998) and Nonaka’s *ba* (Nonaka and Konno 1998; Nonaka et al. 2000). Whereas in the CoP and OKC literature space has been of importance mainly in terms of contextualizing learning and knowledge creation, for Bourdieu (1993) and Latour (1987), for example, space has more ontological relevance as space frames and gives rise to action. That is to say, knowledge creation shapes and is shaped by space.

**Sociomateriality:** drawing on the work in sociomateriality (Orlikowski 2006; Orlikowski and Scott 2008), boundary objects (Carlile 2002, 2004; Star and Griesemer 1989) and Actor-Network Theory (ANT) (Latour 1987; Latour and Woolgar 1986), I am rethinking the ‘social’ within the framework of knowledge creation research. The role of sociomateriality in knowing and knowledge practices (Ewenstein and Whyte 2009; Orlikowski 2006) has recently been explored, but mainly from the individual perspective; how do these artifacts look like and how they are produced, for example. That is to say, in Ewenstein and Whyte (2009), for example, artifacts exist only and are given meaning in relation to individuals creating them. Here, however, I am building on and extending this assumption by

---

* Ba, Japanese word for space, was introduced by Nonaka and Konno (1998) to knowledge creation research, and originally it was devised by the Japanese philosopher Nishida Kitaro (1990).
arguing that visual knowing and visualizing knowledge are inherently sociomaterial practices: there is no social without the material and vice versa.

**Visual communication:** in short, visual communication is a means of communication that relies on non-textual cues and elements (such as dot, line, and scale) to convey and create meaning, and as such it is something acquired through birth. Whereas language is a skill and a form of self-expression we learn through social interaction, visual communication and seeing can be regarded to precede that: “it is seeing that which established our place in the surrounding world; we explain that world with words, but words can never undo the fact that we are surrounded by it” (Berger 1972: 7). Like verbal communication, visual communication is also laden with social norms and conventions, but it is the precedence of the latter that connects it more closely with our bodily experiences.

![Picture 1. An example of visual communication from my empirical data](image.jpg)

The kind of visual communication presented above is somewhat easy to define as it mainly consists of visual elements (lines, shapes, and symbols), but what about books and advertisements, for example? Would it not be relevant to say they also employ visual communication while at the same time containing textual elements? Research on multimodality (Bezemer and Kress 2008; Kress 2000, 2005) and multisensoriality (Pink 2009, 2011) argues that the different means of communication cannot be separated, and one of the aims of this dissertation is to bring the visual to the core of OKC research, but for clarity’s sake I am looking at the visual separately.
1.5 Structure of the dissertation

The journey begins in Chapter 2, in which I will discuss and define visual communication from the perspective of knowledge. Building on this, in Chapter 3 I review extant literature on knowledge-related studies in international business (IB) and organization studies, and here the main focus is on analyzing how knowledge and the visual have been treated to date. After these two chapters, I will focus on the concepts of visual knowing and visualizing knowledge in Chapter 4. Chapter 5 introduces the theoretical framework devised in this dissertation, while Chapter 6 presents the research methodology. Chapter 7 concludes the dissertation project by reviewing its contributions, and implications for research and practice. Finally, Chapter 8 presents summaries of the papers.
2 What is this thing called visual communication?

Before moving on to the literature review chapter, in this chapter I will first discuss knowledge creation and knowing from the visual perspective, as by doing this I am making my stance towards the visual explicit to the reader. Furthermore, although the amount of internationally published research dealing with the visual in IB and organization studies is increasing steadily, there still seems to be some vagueness related to the way we deal with the visual. In this chapter I will offer my take on the visual, as well as a review of the ways the visual has been approached in IB and organization studies, and in OKC more specifically.

My aim in this chapter is both to map the field of visual communication from the OKC perspective and to craft a definition of visual communication that can be integrated to OKC in order to push the field forward. Before integrating visual communication to other means of communication it is worthwhile discussing it separately, as Bergström (2009) has argued that the visual has almost become our enemy because we have become so estranged from it. At least in organization and management studies, visual communication has been marginalized almost nonchalantly and as such it has become a matter of taste, not a foundation for rigorous and analytical discussions (Doz 2011; Sunaoshi, Kotabe and Murray 2005; Whyte, Ewenstein, Hales and Tidd 2008). Therefore, with this chapter I wish to illustrate the relevance of the visual dimension in IB and organization studies.

This chapter starts by offering a brief account on the history of visual communication so as to situate this dissertation to broader discourses, after which I move on to discuss the definition of visual communication. Building on this, I then discuss how the visual has been dealt with within IB and organization studies, and finally, before concluding the chapter, I will offer
my perspective for studying the visual dimension of knowledge and knowing.

2.1 History of visual communication

The earliest form of visual communication can be traced all the way back to prehistoric times. Cave paintings, dating over 30,000 years in Europe, are widely recognized as the earliest form of visual communication, yet scholars have been somewhat perplexed by the original purpose. For some, cave paintings have been spells that were used to bring good luck in hunting, while others argue that shamans made them during periods of trance. No matter what the reasons for creating cave paintings were, it is nonetheless undeniable that they are some of the earliest forms of visual communication. During the prehistoric era, it can be argued, visual communication was of great importance and it enjoyed a less marginalized position than it does currently. It was only around 3000BC that visual communication started to lose influence since during that time the alphabet was developed.

After written communication started to gain influence among merchants and royals, visual communication started its journey towards the margins in terms of both consumption and influence. Although oral communication still retained its position as the main *modus operandi*, written communication ‘replaced’ visual communication as the means to convey and create meaning among society’s upper echelons. However, visual communication continued to be used by artists and even today designers and artists have been recognized as the *conoscenti* of visual communication (Bergström 2009). Thus, visual – and to some extent non-verbal communication – have been recognized as unexplored territories, while written and oral communication have been adopted by organizing and bureaucracy (Barry and Meisiek 2010).

One of the challenges with communicating visually has been that we really are not taught *how* to communicate visually, yet we spend countless hours at school learning how to write essays, reports, and reviews in a grammatically correct fashion (Bergström 2009; Kress and van Leeuwen 2006). Moreover, before the Internet and the information revolution, we have not had the means to create and disseminate visual works easily to people all over the world, which has meant that visual communication has
been reserved for those who are willing to take on the painful challenge of producing something that is visual.

Things, however, have changed now, mainly due to scientific and technological advances. Hardware (e.g. computers, smartphones, and cameras) and software (programs utilized in the aforementioned objects) have exploded the quantity of visual information and communication (Villi 2010), and as of writing this dissertation, infographics (information displayed visually [Tufte 2001]) have become enormously popular. Combining information with visual communication, infographics and their creators have participated in the second renaissance of visual communication.

Figure 3. The movie Inception’s plot visualized (Rick Slusher 2010, http://www.fastcodesign.com/1662130/infographic-of-the-day-inception-contest-winner, retrieved 13 September 2013)

The infographics movement has helped in bringing visual communication back towards an ’accepted’ mode of communication by relying on hard and seemingly objective data, but there is yet another approach to visual communication that has paved the way for more intuition and inspiration based communication. With the rise of design thinking in managerial and innovation discourse (Brown 2009; Martin 2009), it has become more accepted to present and brainstorm ideas through visual means. Due to societal and organizational challenges (ill-defined solutions, bad organizing, ineffective organizations, poverty, and so forth) managers and decision-makers started to look outside their sphere of thought, which had been dominated by Weberian and Mintzbergian thought for so long (Mintzberg 1979; Weber [1930] 2001). As a result, visual communication means seemed to have transformed from child’s play to ‘serious play’ (Roos, Victor and Statler 2004).
Although it is alluring to argue the two strands – hard data driven and the design approach – to be the sole reasons why visual communication has become so fascinating for managers and wider audiences alike, I believe the second coming of visual communication to be an outcome of many reasons. In my reading and understanding of events currently taking place around us. These two reasons – along with the technological advances in terms of hardware and software – are perhaps the most important.

To conclude, visual communication has shifted between the center and the margins throughout the history of human perception. What used to be a means to cast spells for better luck in hunting has become a tool to inspire, to make complex matters simple (Tufte 2001), and to create new competitive advantages (Buur and Mitchell 2011), to name but a few examples.

2.2 Visual communication – interpreting and crafting

Acceptance of visual communication as a legitimate form of communication within organizations and societies at large has been steadily rising during the last few decades, and this, scholars argue (Kress 2005; McDonagh, Goggin and Squier 2005), has led to the questioning of written communication’s dominant position especially in the West. While books and other forms of printed media used to be regarded as the most prestigious means of communication especially in the West, this assumption can no longer be convincingly defended as technological and societal advances have imploded the amount of information in visual form. Not only has the amount of visual information bombarded at us increased, but also the means with which we can communicate visually both analogically and digitally. This leads us to reconsider how we should approach the different means of communication: written, oral, visual, and non-verbal.

In the following two sections I will focus on visual communication from two perspectives: interpreting and crafting. As this dissertation looks at visual knowing and visualizing knowledge, it is necessary to understand how the visual is perceived and created. I acknowledge that by looking at the visual in temporary isolation makes my argument vulnerable for claims that I am reinforcing the dichotomies that proponents of multimodality and
multisensoriality (Bezemer and Kress 2008; Kress 2000, 2005; Pink 2009, 2011) have been trying to resolve. However, as both multimodality and multisensoriality are relatively unknown in management and IB studies, this means that written texts still reign supreme within these disciplines, and therefore giving a culturally informed account of visual communication is necessary to move forward.

2.2.1 Interpreting – the perception side of visual communication

Whereas oral and written communication can be somewhat easily defined and narrowed down, visual communication escapes ‘easy’ definitions. One of the reasons behind this is that when we are born, the first perceptions we acquire from our world come through our eyes (Berger 1972) – feeling, tasting, smelling, and hearing the world are also of importance, but it is only through vision that we acquire most of our knowledge about the world around us during the first moments of our lives. Furthermore, despite vision and visual communication having been extremely important for our ancestors many millennia ago, we still seem to lack a grammar of visual communication (Bergström 2009; Kress and van Leeuwen 2008). Or in other words, we are taught to look at pictures and visual material in terms of aesthetics, while at the same time we are not taught to look at the visual in terms of grammar (Kress and van Leeuwen 2006).

The preceding sentence opens up discussion in at least two ways. First, do we need a grammar for visual communication? Furthermore, is there one to begin with (Kress and van Leeuwen 2006: 4)? Second, can we say that visual communication is universal? After all, are not we seeing the same stick figure below, regardless of our cultural identity (Collier and Thomas 1988; Jameson 2007)?
I will answer these questions more thoroughly later on, but at this point the following answer for both questions will suffice: visual communication – like any other mode of communication – is not universal, but culturally bound, and as such we cannot – and should not – create a grammar that would cater for the diverse cultural needs spanning our world. However, what we can talk about in terms of visual communication is composition and perception.

According to Dondis (1986: 39), visual communication consists of the following elements: “the dot, line, shape, direction, tone, color, texture, dimension, scale, movement”. Furthermore, of the ten basic elements listed above, the dot can be regarded as the most basic, as a line consists of dots put together, for example. Although in terms of visual perception the abovementioned elements are more often than not present, when it comes to visual communication “the structure of the visual work is the force that determines which visual elements are present and with what emphasis” (Dondis 1986: 39). This account, however, is culturally bound, as Hara (2010) has discussed with regard to the concept of white in Japanese culture. By analyzing aesthetics in Japanese culture Hara (2010: i) has sought “to find the source of a Japanese aesthetic that produces simplicity and subtlety through the concept of white”. Hence, what is not communicated through the elements listed in Dondis (1986), does not fully acknowledge the notion of what is not communicated through explicit symbols. This leads us to extend the list by including white, indicating the importance of relationships and emptiness in visual communication.
Where does the list of eleven basic elements take us? Understanding the basic composition of visual messages is a prerequisite of some sort: without the ability to distinguish basic elements from each other it is nearly impossible to derive or construct any meaning in a visually communicated message. Hence, what we need is another classification of visual communication that focuses on the message. One categorization comes from Dondis (1986: 67), who divides visual communication into representational, abstract, and symbolical. Representational visual communication refers to messages that are directly linked to our memories and experiences – a photograph of a research setting would be one example. Abstract form, on the other hand, seeks to convey messages in ways that are stripped of detailed descriptions (e.g. cave paintings). Finally, symbolic visual communication aims at creating forms and shapes that create meaning through other cultural references (such as a dove with an olive branch).

While the elements of visual communication are somewhat universal, the three levels presented above open avenues for ontological and epistemological questions: what is representation, how abstract can we make something until it becomes unrecognizable, and what kind of meanings people attach to symbols, are questions that scholars of visual communication have been dealing with across disciplines (e.g. Bolt 2004; Meyer, Höllerer, Jancsary and van Leeuwen 2013).

Approaching the visual from an empirical perspective, Emmison (2011: 238-244) divides visual communication into three dimensions: two-dimensional visual data, three-dimensional visual data, and lived and living visual data. For Emmison, it is not so much about the accuracy of representation, but instead he is more interested in methodologically treating the visual, which is why his classification is based primarily on how different forms of the visual could be approached. For example, Emmison (2011: 242) defines three-dimensional visual data as “objects of material culture which operate as signifiers in social life”, and he continues (Emmison 2011: 242) that “[t]here is not a great deal we can learn about ‘behaviour’ from observing people reading or watching television, but observing what people do with objects is much more promising”. This seems to echo with the sociomaterial approach (Barad 2003; Latour 1987; Orlikowski and Scott 2008) that draws on performativity: however, Emmison (2011: 246) does not touch upon performativity, but instead he insists on the representational power of visual data as “[t]hinking of visual research more as the study of the seen and the observable, rather than as...
something which can only be conducted through recording technology, can facilitate important conceptual connections”. Similarly for Kress and van Leeuwen (2006: 19)

visual communication is treated as something representing something else: “[w]e take the view that language and visual communication can both be used to realize the ‘same’ fundamental systems of meaning that constitute our cultures, but that each does so by means of its own specific forms, does so differently, and independently”.

Above, Kress and van Leeuwen (2006) adopted a semiotic / linguistic approach to the visual, thus adhering to what Barad (2003) saw as an action to turn everything into language. While it might be an exacerbated claim, it does, however, highlight the overall tendency to treat the visual as a separate entity.

To conclude, there are various perspectives for analyzing seeing and perception: on the one hand we can investigate the amount of information entering our brain through our eyes, while at the same time we can theorize on the aesthetics of an office space, for example. Despite the different, and often competing, standpoints to perceiving the visual they all agree that the visual is something that cannot be excluded in research designs.

### 2.2.2 Crafting – the creation side of visual communication

As Bolt (2004: 12) proclaimed, “representation has come to be understood as the structure that enables representationalism to dominate our contemporary way of thinking. Representationalism is a system of thought that fixes the world as an object and resource for human subjects”. Building on this, how could we, then, weave together the actor and the message?

One possible solution comes from performativity. Drawing on such thinkers as Deleuze, Heidegger, and Latour, Bolt (2004: 51) asserts that

> We do not set forth the things that we encounter and place them in relation to ourselves, but rather we work in the ‘heat of the moment’ and in relation to tools and materials to produce movement. In this way art is not necessarily a representational practice.
Although Bolt (2004) speaks about art’s performative power, her arguments can be easily transferred to the domain of the visual, hence weaving together sociomaterial research (by drawing on Latour) and visual communication (by dealing with art). Thus, in this dissertation my take on the visual is a performative one: visual communication does not ‘merely’ represent, but it also shapes, enables, restricts, and acts. That is to say, visual communication acts and enacts in a similar way as we individuals. Transferring this takes visual communication to the domain of knowledge I am arguing that visual communication can enable knowledge creation and knowing in ways that we have not yet extensively dealt with in knowledge-related studies in IB and organization studies. Visual communication does not merely make complex messages easy to convey to others, but it also gives rise to unintended interpretations and affordances (McGaughey 2006).

Categorizing means of communication paves the way for certain affordances that, in turn, enable hierarchies (Gibson 1979). Whether these hierarchies are explicit or implicit, they are nonetheless culturally bound and even the five senses are culturally constructed (Pink 2011). What this means is that the meanings and symbols mobilized to communicate should not be analyzed in isolation from each other, but instead be considered a complex rhizome-like network (Kress 2005; Moriarty and Barabatsis 2005; Pink 2011). To date, multimodality (Kress 2005) and multisensoriality (Pink 2009, 2011) have emerged as two main ontologies for explaining communication, and I will approach the visual from this tension.

How should we formulate our basic definition of visual communication? The purpose here is to open up discussion for further ontological and epistemological inquiries by defining visual communication as follows: visual communication is a communicative act that draws on perceived eleven basic elements, and as such it is intrinsically connected to the sensory experiences and skills we acquire through birth. In order to detach visual communication temporarily from other means of communication, visual communication should be understood as something that is not learned, but acquired through birth. To be more precise, the definition above should be understood as a mechanistic one onto which more phenomenologically refined analyses can be built. How visual is connected to knowledge creation and knowing will be dealt with later on in this dissertation, and the purpose of this definition is to help us frame what visual communication is and what it is not.
2.3 How has the visual been dealt with in various disciplines?

As discussed previously, I argue that visual communication has become popular in managerial and societal discourse for two reasons: hard data, and art and design. For the purpose of this dissertation, both of these approaches have important ramifications for knowledge as they approach knowledge from different perspectives. Below, I will start at the broader level by introducing fields where the visual has been investigated and continue by narrowing down to IB and organization studies specifically looking at knowledge-related issues.

Since there are numerous ways to study the visual, how does one start to map the field? On the one hand there are abundant academic books and articles in the fields of design and art (Arnheim 1997a, 1997b; Berger 1972; Bergström 2009), sociology and anthropology (Becker 1995; Latour 2005), semiotics (Kress and van Leeuwen 2001, 2006), organization studies (Ewenstein and Whyte 2007, 2009; Meyer et al. 2013; Strati 1996) and communication studies (Dondis 1986; Moriarty and Barbatsis 2005) that deal with visual perception, aesthetics, and art theories, while on the other hand there are equally many written accounts in psychology, information systems, and technology on visual stimuli and perception, and on the components and functions of visual communication (Attneave 1954; Berg 2012; O'Regan 1992). The following figure offers one perspective of the disciplines where the visual has been explored.
Quite curiously, ‘business’ as a discipline has been placed in the vicinity of media and advertising research, although many would argue IB, and organization studies specifically, to be closely connected to sociology and anthropology, therefore implicitly suggesting IB and organization studies to be absent from the picture as independent disciplines. Nonetheless, the figure above illustrates a diversity of disciplines looking at the visual, and in this dissertation I am mainly drawing on art, philosophy, and sociology in order to bring IB and organization studies to the figure. Moreover, although there are numerous ways to look at visual communication, there seems to be two main research trajectories: the first is mainly interested in information processing and physiological processes of perception (e.g. Berg 2012; O’Regan 1992; Tufte 2001; Ware 2004), while the other trajectory is more focused on the cultural and sociological dimension of visual communication (e.g. Berger 1972; Bolt 2004; Merleau-Ponty 2002). How, then, has the visual been investigated in IB and organization studies?

In a relatively exhaustive review of the visual in organization research, Meyer et al. (2013) argue that organization studies have mainly drawn on anthropology, sociology, art studies, social semiotics, communication and media studies, and philosophy for theorizing and analyzing the use of the visual in organizing and organizations. The need to borrow – or export – from neighboring disciplines in our field has also been noted by Steyaert et al. (2012: 49) who call for a performative approach to the visual within organization studies in order to acknowledge “enacting multiplicities with
respect to the creation, analysis, and publication of (audio-)visual research material”. What is more, Meyer et al. (2013: 522) go so far as to claim that “the inclusion of visual data in empirical analyses must be the norm rather than the exception” (original emphasis): given that the visual is all-pervasive in organizations this claim needs to be taken seriously.

Although in many studies in our field the visual aspect of communication has been approached as trivial or supporting other forms of data at best (Meyer et al. 2013; Steyaert, Marti and Michels 2012), there is, however, a considerable amount of research looking at the visual especially in terms of organizations. From the OKC perspective, on the other hand, the most important streams of research deal with aesthetic knowledge (Ewenstein and Whyte 2007; Strati 1992, 1996, 1999; Witz, Warhurst and Nickson 2003) and objects and artifacts (Carlile 2002; Engeström and Blackler 2005; Ewenstein and Whyte 2009; Gagliardi 1990; Orlikowski 2006; Star and Griesemer 1989). What is interesting, however, is the absence of the visual in core OKC research: Meyer et al. (2013) identified Ewenstein and Whyte (2007, 2009) and Henderson (1995) as falling under knowledge creation research, and I would also add Sunaoshi et al.’s (2005) study on technology transfer through the use of visual data and Nonaka’s work (Nonaka and Toyama 2005; Nonaka et al. 2008; Peltokorpi, Nonaka and Kodama 2007), but apart from these studies visual seems to be mostly treated anecdotally in OKC.

In addition, visual methods and the visual as a source of data have also been successfully harnessed in various organizational inquiries (Davison, McLean and Warren 2012; Steyaert et al. 2012), but apart from research on aesthetic organizations and knowledge, and boundary objects we are still lacking a solid corpus of literature that would establish foundations for visually inclusive research in IB and organization studies. Knowing and sociomateriality – as advocated by Gherardi (2000) and Orlikowski (2002) for instance – have started to flirt with each other and thus form an emerging body of knowledge, as illustrated by Ewenstein and Whyte (2007: 705): “aesthetic reflexivity opens up a conceptual space in which to explain the mechanisms through which knowledge begins to emerge in interaction with materials and other actors”. In their study on aesthetic knowledge and knowing in an architecture company, Ewenstein and Whyte (2007) beautifully illustrate how knowledge and knowing go beyond linguistic means, as a result bringing together sociomateriality and the visual, as has also been advocated here.
Although a relatively remarkable body of work dealing with the visual in a non-anecdotal manner in IB and organization studies has already emerged, much still needs to be done, especially within OKC where scholars have focused for a long time mainly on cognitive processes. In Nonaka et al. (2000: 7) emphasis on the cognitive becomes apparent: “[k]nowledge is dynamic, since it is created in social interaction amongst individuals and organizations”. Here, Latour (2005) and others (Barad 2003; Orlikowski and Scott 2008) would ask “what is ‘social’?”, and I am joining them by calling for a more nuanced understanding of the visual in OKC that takes into account both performativity and the sociomateriality.

2.4 Integrating the visual to organizational knowledge creation theories

Now that I have addressed the way the visual has been dealt with previously, it is time to offer my account on how we could approach it in OKC by building on what we already know. To recall what I have said above, I understand visual communication to consist of eleven basic components and when we communicate visually it is always inherently a performative act: that is to say, visual communication does not merely represent, but instead it transcends representationalism by simultaneously evoking and limiting action. Think of a simple pie chart, for example:

![Market share chart](image)

**Figure 5.** Market share of fictitious companies

Now, imagine you are the sales director of a company and you are in an internal meeting where you discuss your company’s global market share
based on the pie chart above. According to the representationalist take on the visual, the pie chart shows reality as is, while a performative stance would analyze it, for example, as an element of power or as a frame that has the possibility to evoke action. Building on the performative stance, the pie chart above enables knowledge creation and knowing to emerge in a fashion that brings together both time and space (the pie chart might trigger a change in the company’s strategy, for example). Or in other words: it is not a question of what the visual represents, but what it enables us to do and how it participates in shaping what we can know.

A performative stance to visual knowing and visualizing knowledge assumes that the visual gives rise to action in connection to other actors looking at or creating it. Regardless of the quality or aesthetics of the visual, it always evokes something in the watcher. This, in turn, gives rise to sociomaterialism that assumes non-human actors to play a role in the social sphere, which, until now, has been left almost unacknowledged in OKC. Moreover, everything we see and communicate visually is intrinsically connected to knowing: to know is to see, and to see is to know.

2.5 Conclusion

In this chapter I have sought to map the current state of research dealing with the visual aspect of communication, mainly in organization and management studies, with the purpose of illustrating how it could benefit OKC studies. Research dealing with the visual is vibrant especially in such fields as psychology, design, and communication, but for some reason organization and management scholars have far too often shied away from using visual data and/or methods more than just as anecdotal evidence. To build on this I have drawn on performativity and sociomateriality to offer an approach to the visual that is compatible with especially those knowledge creation theories that stem from phenomenological thought. By expanding from the representationalist view to the visual we are able to move forward by seeing the visual as more than just anecdotal evidence otherwise apparent in linguistic terms. How this links to knowledge and knowing will be dealt with in more detail in Chapter 4.

Although some of the most pivotal OKC scholars (see e.g. Nonaka et al. 2008; Tsoukas 2009) have acknowledged the importance of the visual in
terms of knowledge creation, this, however, has not been fully integrated into OKC theories. In fact, Tsoukas (2009: 953) has explicitly pointed out we need more studies looking into artifacts and the visual in connection to OKC: “future research could focus in more detail on how artifacts and tools, as well as tangible definitions and demonstrations, mediate conversational interaction in organizations”. Building on this, in the next chapter I will review current literature on knowledge-related studies to illustrate what has been done so far, and how this dissertation can contribute to the ongoing discussions on knowledge and knowing in organizations.
3 Knowledge-related studies in organizations: A literature review

3.1 Introduction

The purpose of this chapter is to shed light on and review the state of knowledge-related research in organizations, and multinational corporations (MNCs) more specifically, in order to give an account of what has been done so far. Although my main interest in this dissertation is on knowledge creation, other perspectives to knowledge (such as knowledge management, transfer, and sharing) will be briefly covered as well in order to situate knowledge creation in relation to its neighboring research trajectories.

Due to the framing of this dissertation, I have not covered literature on technology transfer, learning, information, or networks, for example, although they do seem as attractive research streams from this dissertation’s perspective. Hence, I do acknowledge the existence of the aforementioned research streams and their contributions to understanding organizational phenomena, but here I have decided to focus mainly on studies specifically looking at knowledge-related issues in organizations in order to explicate the research domain to which I wish to contribute.

Studies looking at knowledge in the MNC context mainly focus on theorizing about the existence of MNCs (Kogut and Zander 1992, 1993, 1996; Nahapiet and Ghoshal 1998), while studies looking at knowledge in organizations seem to focus on more micro-level issues, which is why this review simultaneously looks at organizations more broadly and zooms in on MNCs more specifically. The amount of knowledge-related literature has grown exponentially during the last couple of decades (Hansen, Mors and

---

3 Multinational corporation (MNC) is understood as "a group of geographically dispersed and goal-disparate organizations" that comprise headquarters and subsidiaries globally (Bartlett and Ghoshal 1990: 603, see also Hedlund 1986; Minbaeva, Pedersen, Björkman, Fey and Park 2003).
Løvås 2005; Kogut and Zander 1992, 1993; Nonaka and Takeuchi 1995; Spender 1996), and today, it is almost all-pervasive that knowledge is seen as the basis for theorizing about organizations (Grant 1996; Spender 1996; Tsoukas 1996), implying an intellectual and conceptual change in how multinational corporations are investigated in the domain of IB. Previously, the raison d’être of organizations was explained by relying on economic theories (Wernerfelt 1984), but since the beginning of 1990s the existence of organizations as repositories of resources and bureaucratic machines has been questioned and extended as certain scholars have argued that organizations cannot be explained solely through tangible resources. Hence, knowledge became one of the pivotal elements in explaining why organizations – and MNCs more specifically – exist (Kogut and Zander 1992, 1993; Spender 1996).

Although knowledge has become an attractive research agenda in IB and organization studies (Alavi and Leidner 2001; Argote, McEvily and Reagans 2003; Foss, Husted and Michailova 2010) the field has been blurred partly because of the plurality of ontological and epistemological standpoints. To build on this, one of the purposes of this chapter is to review the current state of knowledge-based studies within IB in order to position my work in this burgeoning field of inquiry. Hence, the initial goal is to map knowledge-related studies in IB and organization studies in order to carve a path for contributions that aim at exploring the nature of knowledge by drawing on what we already know.

Because of the great variety of disciplines contributing to the study of knowledge, scholars have found it challenging to identify a unifying research trajectory (Foss et al. 2010; Nonaka and Peltokorpi 2006), but within the grand discourse on knowledge in organizations we can identify three levels where knowledge has been studied in organizations. These levels are illustrated in the figure below.
Figure 6. The three levels of knowledge-related studies

The illustration above should only be treated as a rough framing of the multitude of phenomena and constructs falling under it: intrafirm level, for example, comprises not only organizations themselves but also teams and departments. Literature dealing with each of the three levels will be dealt with in more detail in the sections below, after which I move on to synthesize current discourses revolving around knowledge by illustrating how we can broaden our scope of what is regarded as knowledge in organizations.

Accordingly, the rest of the chapter is structured so that I review each of the three levels separately according to the figure above, after which I synthesize the current state of research in the final part of this chapter.

3.2 Interfirm knowledge

Studies looking at knowledge at the interfirm level often focus on joint ventures, technology transfer, or internationalization, and here the purpose
is to review works falling under this category mainly from the perspective of how they define and conceptualize knowledge.

### 3.2.1 Knowledge acquisition

Research on knowledge acquisition or accumulation is mainly interested in how firms gather knowledge for various purposes and from various sources, such as internationalization (Fletcher and Harris 2012; Scott-Kennel and von Batenburg 2012) or international joint ventures (Evangelista and Hau 2009; Lin 2005; Lyles, von Krogh and Aadne 2003; Lyles and Salk 1996). Numerous studies belonging to this stream draw on Johanson and Vahlne’s (1977) internationalization theory in which they argue for the importance of knowledge acquisition as one of the determining factors of internationalization success.

In knowledge acquisition studies the ontology of knowledge has received attention and one of the conceptualizations is along the experiential–objective continuum (Fletcher and Harris 2012) that resembles the tacit–explicit categorization (Nonaka and Takeuchi 1995; Polanyi 2009). The implicit assumption – especially in studies dealing with internationalization – seems to be that experiential knowledge (direct experiences) matters more than objective knowledge (manuals, textbooks). Building on this, although knowledge acquisition studies do not cite pragmatists there still seems to be a certain mind–body connection inherent in theorizing about knowledge acquisition. In Fletcher and Harris (2012: 634), for example, experiential knowledge is argued to be more important than objective knowledge from a firm’s internationalization perspective. This argument was backed up by their (Fletcher and Harris 2012) qualitative study on ten internationalizing Scottish SMEs, in which they find new sources of knowledge about internationalization. Despite their effort to broaden the scope of knowledge in internationalization studies, Fletcher and Harris (2012: 634) seem to focus only on various ways for categorizing knowledge acquisition. In a similar vein, Scott-Kennel and von Batenburg (2012) studied the role of knowledge in the internationalization process of a professional services firm based in New Zealand. Their study revealed the importance of leveraging individual knowledge for firm’s strategic choices, but it remains vague on what is meant by ‘knowledge’: “tacit knowledge is difficult to codify and transfer between individuals” (Nonaka 1994; Polanyi 1958 in Scott-Kennel and von Batenburg 2012: 1670).
Similarly, in studies looking at international joint ventures the role of knowledge has been identified as crucial (Evangelista and Hau 2009; Lyles and Salk 1996), but studies do not seem to go beyond the tacit–explicit distinction. This knowledge dualism that was originally legitimized and disseminated by Nonaka and Takeuchi’s work (1995) does possess seemingly sound qualities: some aspects of knowledge can be articulated through language, while other aspects remain either embodied or expressed through other means of communication. This is illustrated in Lyles and Salk (1996: 880) who claim “knowledge can take the form of tacit or explicit knowledge, or a combination of the two”. Moreover, their findings suggest, and question underlying assumptions in the field, (Lyles and Salk 1996: 896) that acquiring managerial knowledge from international joint ventures is more important than technical know-how – however, the nature of ‘managerial knowledge’ is left without further analysis. Leaving the discussion to the tacit–explicit level is also evident in Yli-Renko, Autio and Sapienza’s (2001) study on knowledge acquisition in high-tech startups based in the United Kingdom. Here, knowledge is also defined along the tacit–explicit continuum (Yli-Renko et al. 2001: 589), but beyond that it is left to readers to make their own interpretation of what that knowledge can and could be.

Knowledge acquisition research seems to highlight the importance of experience and learning (Lyles and Salk 1996) for accumulating new knowledge, but little is said about the theoretical underpinnings of how these experiences and learning processes look like, although connections to phenomenological thought can be read between the lines. In their study of Hungarian international joint ventures (IJV), Lyles and Salk (1996) draw on Nonaka and Takeuchi’s work (1995) on knowledge creation by basing their work on the tacit–explicit knowledge continuum. By linking knowledge creation with learning theories, they (Lyles and Salk 1996) claim to provide the research community with a more solid foundation for studying knowledge acquisition in IJVs, but in fact their contribution seems to result in yet another theoretical layer to knowledge-related studies. However, their arguments on knowledge creation being closely linked to learning theories and knowledge being an important facet of internationalization and IJVs are valid, but nothing is said about the nature of knowledge being created or acquired. The same is equally true when Lyles and Salk (1996) offer avenues for further research in their article: although the avenues they suggest are potentially fruitful – ranging from culture to competencies – it is curious to notice that they do not place
emphasis on figuring out what kind of knowledge is actually being acquired in IJV contexts.

The notion that internationalization and international joint ventures contribute to firms’ and individuals’ knowledge stock is valid from the managerial perspective, but when it is exposed to academic scrutiny we are left with definitions that do not deepen, but instead diversify the already vast amount of knowledge conceptualizations (Gourlay 2006b). To conclude, knowledge acquisition studies have contributed to making knowledge one of the core constructs when it comes to understanding firms and their activities, but the field is still in the process of crafting an ontologically solid definition of knowledge that would enable further theory development.

3.2.2 Knowledge spillovers

Studies looking at knowledge spillovers are relatively few in quantitative terms, but they nonetheless have contributed towards operationalizing knowledge at the interfirm level. Knowledge spillovers are understood as processes that intentionally or unintentionally transfer knowledge between firms (Hallin and Lind 2012: 167), and as such they can also benefit firms that are close, but not necessarily directly or formally connected, to the units that are engaged in knowledge transfer.

Most studies in this stream draw on economics and they mostly employ export statistics (Salomon and Jin 2008), and patents and R&D as research data (Hallin and Lind 2012; Sanna-Randaccio and Veugelers 2007; Singh 2007). More specifically, studies on knowledge spillovers focus on R&D activities within MNCs (Liu, Lu, Filatotchev, Buck and Wright 2010; Sanna-Randaccio and Veugelers 2007), and based on this they contribute mainly to studies looking at knowledge flows in MNCs.

As knowledge spillover research originally emerged within economics (Hallin and Lind 2012; Sanna-Randaccio and Veugelers 2007), conceptualizations of knowledge seem to be built on foundations that favor measurement and quantification. In their study of Swedish MNCs, Hallin and Lind (2012: 168) categorize knowledge spillovers as horizontal and vertical: "horizontal knowledge spillovers can therefore be manifested in local competitors' reactions in terms of imitative and/or innovative behaviour", while “vertical knowledge spillovers...can be viewed as the
diffusion of knowledge that the MNC subsidiary deliberately realizes to local suppliers and customers” (see also Mudambi 2002). In Hallin and Lind (2012), horizontal and vertical knowledge spillovers were studied through technological innovations, thus echoing the economics legacy as knowledge has been conceptualized as something quantifiable and transferrable.

A focus on exports and FDI in knowledge spillover research has placed these in a pivotal role, although there are exceptions to the rule. Looking at a staggering amount of 1318 Chinese high-tech firms Liu et al. (2010: 1183-1184) beautifully assert that

\[
\text{Highly skilled labor is generally now able to move across national borders, despite host countries' immigration policies. This new phenomenon challenges the traditional dominance of trade- and FDI-based studies of international knowledge spillovers, and raises an important research question as to whether human mobility represents a new channel for international innovation spillovers.}
\]

Hence, Liu et al. (2010) challenge the prevailing level of analysis in knowledge spillover studies by looking at the phenomenon at the individual level. However, despite their more humanistic approach to knowledge spillovers, Liu et al. (2010) fall short when it comes to knowledge as they equate it with patents. What about ideas that are never granted patents? Furthermore, how does an idea emerge and why does it receive a patent? Questions like these seem to have been left unnoticed by scholars of knowledge spillovers, albeit their importance for understanding knowledge spillovers is crucial.

3.2.3 Summarizing the stream

The interfirm perspective to knowledge has, to a large extent, focused on IJVs, internationalization, and technology transfer. While numerous studies have been published that fall under this category, theoretical developments have nonetheless been few and far between. However, studies looking at interfirm knowledge processes have yielded numerous, often pivotal, empirical insights on how and why subsidiaries, HQs and firms in general acquire knowledge from external sources.
However, perhaps the main reason why we still have not seen many widespread contributions emerging from this stream lies in the relatively uncontested foundations when it comes to the nature of knowledge. Often knowledge has been defined as possessing both tacit and explicit dimensions or supplemented with learning theories, but as we have seen before (Gourlay 2006b, Jorna 1998), knowledge has far too often not been exposed to rigorous philosophical debate.

Moreover, as knowledge has been defined prior to entering the research setting, many interesting and theoretically relevant phenomena might have been left unnoticed. Or in other words, citing Burke (1984), “a way of seeing is also a way of not seeing”.

### 3.3 Intrafirm knowledge

This section looks at four research approaches to knowledge: knowledge-based view, knowledge flow, knowledge management, and knowledge transfer. The main purpose here is to review the abovementioned research streams by looking at how they have conceptualized knowledge, and what kind of investigations scholars have conducted to date to increase our understanding of intrafirm knowledge processes.

Organizations, especially MNCs due to their inherently complex structure (Grant 1996, Kogut and Zander 1993), have been shown to be a fruitful setting for knowledge-related studies. Emerging as a counterforce to the resource-based view (RBV) of the firm, the knowledge-based view (KBV) of the firm (Forsgren 2008; Grant 1996; Kogut and Zander 1992, 1993; Nickerson and Zenger 2004) contested RBV’s assumption that MNCs are created because of market failures: in contrast, according to KBV MNCs emerge because of their superior capabilities to transfer knowledge across national borders.

Seeing MNCs as tremendous repositories of knowledge also spurred academic interest beyond KBV, resulting in the emergence of such streams of research as knowledge management (Alavi and Leidner 2001) and

---

*Then again, both KBV and RBV oppose the notion of organizations as information processing machines. What sets them apart is that KBV highlights knowledge as one of the key elements that companies use to distinguish themselves from their competitors.*
knowledge transfer (Argote and Ingram 2000; Gupta and Govindarajan 2000; Tsai 2001). What brings all these three streams together is that they approach knowledge from the organizational perspective. However, while the organization—or MNC more specifically—has been the unit of analysis, the individual has not been completely left out of the picture, although theorizing has taken place on the organizational level.

3.3.1 Knowledge-based view of the firm

Studies approaching organizations from the knowledge-based view emerged during the early 1990s, and Kogut and Zander’s works (1992, 1993, 1996) during that time are seen as some of the most seminal. While the earliest piece (Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology, 1992) was conceptual, the first empirical paper—Knowledge of the Firm and the Evolutionary Theory of the Multinational Corporation (1993)—influenced not only IB but also neighboring fields such as management and strategy by paying more attention to a “more humanistic understanding of human motivation in the context of social communities” (Kogut and Zander 2003: 505).

In short, the knowledge-based view on the organization argues that knowledge, not market failures, defines organizational boundaries (Kogut and Zander 1993: 631). Further elaborating on this Kogut and Zander (1993: 631) continue:

_In this very critical sense, what determines what a firm does is not the failure of a market, but the firm’s efficiency in this process of transformation relative to other firms. It is the difference in knowledge and the embedded capabilities between the creator and the users...which determine the firm boundary, not market failure itself._

According to the authors, firms do not organize purely based on economic factors, but certain intangible assets are also present in the process; which is why Kogut and Zander (1992, 1993) and many others after them (Grant 1996; Spender 1996) turned to knowledge as one of the building blocks for firms’ activities. To test their claims, Kogut and Zander (1993) looked at thirty-five innovations created in and consequently transferred from Swedish companies. In addition to showing that market failures and imperfections do not alone explain why firms evolve, Kogut and Zander
developed a more nuanced approach to theorizing about human behavior and knowledge in MNCs by drawing on Williamson’s (1981) empirical philosophy.

Zooming back from Kogut and Zander’s work to KBV studies more broadly, the unit of analysis in KBV is usually the firm, because scholars are interested in studying how firms evolve and emerge based on knowledge and how it is developed and harnessed internally (Gassmann and Keupp 2007; Kogut and Zander 2003; Lenway and Murtha 2004). Knowledge is usually understood as a commodity that can be transferred, shared, and hence utilized in various temporal-spatial spaces (mainly within the firm’s boundaries). Furthermore, knowledge in knowledge-based view studies is often broadly defined as the factors that set the firm apart from the markets (e.g. Gassmann and Keupp 2007; Kogut and Zander 1992, 1993; Spender 1996), and as a result they can also be understood as competitive advantages (Nonaka 1991).

In a way, this perspective is defendable because organizations are built on something shared, but how this knowledge comes to be is not one of the main focus areas in the knowledge-based view. Instead, knowledge is studied through proxies or variables such as technology (Kogut and Zander 1993), and innovation (Gassmann and Keupp 2007), thereby resulting in knowledge still evading precise definitions. This line of thought, echoing Plato’s Allegory of the Cave, has been questioned by Foss and Pedersen (2004) who point out that the basic conceptual foundations in KBV are still fragmented and somewhat shallow.

Indeed, despite KBVs theoretical advancements and growing empirical evidence, we are still witnessing a certain intellectual drive-by analysis when it comes to understanding knowledge. While claims on the role of knowledge in building organizations set out by KBV scholars are sound and enjoy widespread popularity (Foss and Pedersen 2004), we do not seem to know much about how knowledge is defined, deconstructed, and developed. Instead, at the core of KBV seem to lay definitions of knowledge with a pragmatic undertone.

Finally, as KBV emerged to challenge RBV in RBV’s terms, this implies that the approach of knowledge is based on rationality. Or in other words, if it cannot be quantified then it cannot be tacit knowledge. While Kogut and Zander (2003) did highlight their quest to bring humanism to KBV as a means to counter RBV’s overtly rational approach, in reality this project has
not yet been realized; KBV’s methodological decisions do not seem to reflect
the nuances of social life (see e.g. Kogut and Zander 1993, Gassmann and
Keupp 2007).

3.3.2 Knowledge flow

Studies on knowledge flow focus on investigating how and why MNC
knowledge flows occur (Adler and Hashai 2007; Gupta and Govindarajan
1994, 2000; Harzing and Noorderhaven 2006). The main underlying
assumption in this stream of research originally was that internal
knowledge flows had not received adequate attention (Gupta and
Govindarajan 1994), which is why scholars started to look into MNCs and
how knowledge flows between different units. What started as an
exploratory investigation into the dynamics within an MNC has now
matured into a remarkable set of theories seeking to explain the dynamics
behind multinational organizations (Adler and Hashai 2007; Mudambi and
Mudambi 2005; Mudambi and Navarra 2004). As such, knowledge flow
studies possess many similarities with the KBV stream in that they both
agree that knowledge and numerous activities related to it is an essential
part of studies in international business (Ghoshal and Bartlett 1988; Kogut
and Zander 1993) and organization theory (Gupta and Govindarajan 2000;
Levitt and March 1988).

In terms of what constitutes knowledge in knowledge flow research,
scholars seem to have equated knowledge with various organizational
activities such as R&D, marketing efforts, and production (e.g. Adler and
Hashai 2007). Similarly in Driffield, Love and Menghinello (2010) the
authors often equate knowledge with R&D activities – following Cohen and
Levinthal’s (1989) work on absorptive capacity – but that apart little is said
of what knowledge could be. From the research design perspective, this
maneuver seems plausible as it enables studies with large data sets, but at
the same time it presents us with two challenges. First, by equating
knowledge with R&D it could be argued that everything falling out of the
scope of R&D is not considered to be knowledge, and second, the same
equation does not increase our conceptual understanding of knowledge, but
instead provides us with yet another synonym or proxy for knowledge.

In this regard, although knowledge flow studies have been shown to be
important in terms of contributing to the explanations for the existence and
emergence of MNCs (Gupta and Govindarajan 1994; Harzing and
knowledge itself in this stream of research is still open for further intellectual inquiries. Despite this shortcoming, knowledge flow research has greatly contributed to IB and neighboring fields by theorizing on the emergence of MNCs.

3.3.3 Knowledge management

As the concept in itself hints, knowledge management (KM) is about managing knowledge in organizational environments to support strategic objectives (Alavi and Leidner 2001; Berdrow and Lane 2003; Mahnke, Pedersen and Venzin 2005). Scholars of knowledge management, then, are interested in investigating how and what kinds of processes organizations and individuals alike employ to manage and store knowledge (McAdam and McCreedy 2000). Knowledge management as a concept – or even a theory of management – emerged during the 1990s as scholars, building on and extending the resource-based theory of the firm, argued that knowledge was the element that sets companies apart from each other (Alavi and Leidner 2001). By the turn of the millennium, knowledge management had become an integral part of managerial language, but as a field of academic inquiry it has been blurred by a multitude of competing concepts and research traditions (McAdam and McCreedy 2000; Nonaka and Peltokorpi 2006). However, despite the multiplicity of perspectives to KM (Nonaka and Peltokorpi 2006) scholars seem to agree on a broad definition of KM as a set of activities towards enhancing knowledge creation and transfer in organizations (von Krogh 1998 in Alavi and Leidner 2001: 113).

Knowledge management as a field of academic inquiry is diverse with scholars coming from fields such as psychology, computer science, and sociology (Baskerville and Dulipovici 2006; Boisot and MacMillan 2004; Nonaka and Peltokorpi 2006) and still relatively nascent with its roots dating back some thirty years (Edwards, Ababneh, Hall and Shaw 2009). Moreover, from the practitioner perspective, the first time the concept ‘knowledge management’ was allegedly used in a corporate setting was in the early 1980s (Edwards et al. 2009). Because scholars from various disciplines have contributed to the study of knowledge management, different philosophical perspectives have been employed in an effort to make sense of it (Berdrow and Lane 2003; Nonaka and Peltokorpi 2006). In my reading of knowledge management studies in IB (Berdrow and Lane 2003; Gerybadze 2004; Kiessling, Richey, Meng and Dabic 2009; Mahnke et al. 2005), the main focus has been on investigating how companies and
individuals within them organize their activities to leverage value through knowledge-related initiatives.

Moreover, especially within IB, knowledge management seems to be an attracting field of study, not only because our field is diverse by nature but also because coordinating intra-firm actions is part of knowledge management. For example, in their study of eight IJVs within the NAFTA (North American Free Trade Agreement) framework, Berdrow and Lane (2003) studied how knowledge was managed within the participating companies, and one of their findings was that firms that engaged not only in transfer of knowledge but also in transforming knowledge performed better than firms that focused solely on transferring knowledge between the parent and the IJV. Building on this, Mahnke et al. (2005) argued that the impact of knowledge management on knowledge flows and business performance should also be studied, and as a result this extends the research agenda from processes to impact. Moreover, knowledge management studies in IB have often looked at the MNC context (Gerybadze 2004; Johnston and Paladino 2007; Mahnke and Venzin 2003), and this expertise can be seen as an input to broader research discourses on knowledge management.

As both academics and practitioners turned attention towards knowledge in organizational settings, the question ‘how knowledge could be managed?’ also became crucial. Looking back, and taking stock of the discussion around knowledge and knowledge management during the 1990s (Kogut and Zander 1992, 1993; Nonaka 1994; Spender 1996; Tsoukas 1996), it can be argued that the time was ripe for knowledge management to emerge. Theories of management and organization tend to be reflections of their zeitgeist, which is why, in retrospective, knowledge management seemed to be a perfect articulation of the approach to management and managing organizations of that time.

Knowledge management, apart from few exceptions (Amin and Cohendet 2004), seems to follow the modernist paradigm in a sense that it is assumed that knowledge can be managed, stored, and shared. Furthermore, as knowledge management has also had a tendency to take the position that all knowledge is good for the organization and that all knowledge created is always for the better, rationalism has ruled the scene with only few scholars not following suit (Parviainen and Eriksson 2006).
Due to the aforementioned notion that knowledge management studies have attracted contributions from diverse fields, knowledge has been understood in myriad ways. In Gold, Malhotra and Segars (2001), for example, knowledge is often mentioned, but there is little discussion on the ontology of knowledge. Tackling this problem in a conceptual paper, Hedlund (1994) draws on Polanyi’s distinction between tacit and explicit knowledge in an effort to pin down what knowledge is and how it could be dealt with in research. Hedlund (1994: 74) argues that one of the reasons why knowledge has been inadequately defined and addressed in knowledge management studies is transaction cost theory’s dominant legacy in the field. This claim, however, seems unwarranted because other scholars have pointed out the diverse perspectives to knowledge management (Alavi and Leidner 2001; McAdam and McCreedy 2001).

The tacit–explicit knowledge continuum seems also to have received widespread adoption in knowledge management studies, yet in only a handful of studies (Inkpen and Dinur 1998; Spender 1996) has the concept been further developed. In a study looking at joint ventures between North American and Japanese companies, Inkpen and Dinur (1998) agree with Spender’s (1996) call for a more nuanced taxonomy of tacit and explicit knowledge, which is why they distinguish between individual and communal knowledge. However, this epistemological fine-tuning can be questioned, as it actually does not shed light on what knowledge is, but instead introduces another layer or space where knowledge can be studied. Regardless, Inkpen and Dinur’s (1998: 456) notion on the tacit–explicit knowledge continuum deserves credit: “similarly, we argue that although the distinction between tacit and explicit is important, it does not allow us to consider any gray areas between completely tacit and completely explicit knowledge”5. Here, attention is given to the diverse nature of knowledge between the two extremes, but no examples are given for knowledge residing somewhere in the middle.

To conclude, most research trajectories within knowledge management research seem to be mostly interested in processes and systems. Although knowledge is often defined based on the tacit–explicit distinction, studies do not seem to reveal much about what is seen as knowledge and how people acquire knowledge. Due to this stream’s popularity in terms of attracting academic contributions there is potential here for both theoretical and empirical advances, and it has to be pointed out that

---

5 This was also raised in Nonaka et al. (2008) nearly a decade later as the tacit–explicit distinction was seen as separating the two extremes too much.
knowledge management studies have made great contributions to the MNC context in the sense that we now know what kinds of processes organizations have devised to create, store, and disseminate knowledge.

### 3.3.4 Knowledge transfer

In essence, knowledge transfer studies emerged after knowledge was regarded as one of the main sources for competitive advantages during the 1990s. Especially in IB, knowledge transfer studies have become highly popular and influential – a good indication for this is the *Journal of International Business Studies* Decade Award granted to two studies looking at knowledge transfers in MNCs (Bresman, Birkinshaw and Nobel 1999; Minbaeva et al. 2003) – mostly perhaps because IB as a research context presents the stream with potentially interesting data stemming from cultural and geographic distance (Bresman et al. 1999; Birkinshaw, Bresman and Nobel 2010). Furthermore, knowledge transfer studies are closely connected to knowledge management, flows, and sharing, thus positioning it curiously between numerous other knowledge streams.

The gist of knowledge transfer research in IB is in understanding how knowledge is transferred between MNC’s different units. Although knowledge transfer literature mainly deals with intrafirm transfer, Bresman et al. (1999) point out that *inter*firm knowledge transfer is an equally important aspect, yet it has received far too little attention in literature. Indeed, interfirm knowledge transfer is interesting not only because it is somewhat different from intra-firm knowledge transfer, but also because it usually happens without the consent of the sending organization. That is to say, knowledge transfer occurs between companies through individuals switching jobs and reverse engineering, for example, and this is something firms have difficulties to control.

As Bresman et al. (1999) point out, knowledge transfer in IB is an interesting field of study because it inherently involves various distances and proximities (such as parent–subsidiary, host–target country). Building on this claim, it is no wonder that knowledge transfer has been researched from a cultural perspective (e.g. Buckley, Clegg and Tan 2006; Choi and Johanson 2012; Eden 2009; Jensen and Szulanski 2004). Although scholars have looked at various country contexts, it seems that China has received much attention (Buckley et al. 2003, 2006; Duanmu and Fai 2007; Liao and Yu 2012; Wang and Nicholas 2005; Wang, Tong and Koh 2004),
as have Asian countries in general (e.g. Giroud 2000; Makino and Delios 1996; Yong and Young-Ryeol 2004).

Knowledge transfer research is a diverse and popular stream, but it seems that the main emphasis has been on theory testing or validating studies looking into new contexts or phenomena related to knowledge transfer. This should not be understood as a stark critique towards knowledge transfer research in IB, but rather as a notion arising from the stream itself. Moreover, it seems that although knowledge transfer literature has not been keen on theory development, work in it has influenced theorizing in other knowledge-related streams.

Knowledge transfer research is mainly interested in the organizational level⁶ (Björkman, Barner-Rasmussen and Li 2004; Minbaeva et al. 2003; Mowery et al. 1996), and quite often the focus seems to be on technology (Frost and Zhou 2005; Park 2011), M&As or IJVs (Dhanaraj, Lyles, Steensma and Tihanyi 2004), or culture (Buckley et al. 2006; Eden 2009) within the interfirm context. From this perspective, knowledge transfer scholars are closely connected to research conducted within the field of strategy and strategic alliances, as strategic alliances and partnerships have been recognized as important sources of knowledge transfer and organizational learning (Simonin 2004; Wang and Nicholas 2005).

Building on this, the existence and unified nature of knowledge is taken as the starting point (Björkman et al. 2004; Bresman et al. 1999), and more often than not technologies, patents, and innovations are seen as manifestations of organizational knowledge. Knowledge transfer research draws to a large extent on the positivist tradition, and hence empirical studies looking at knowledge transfer often employ surveys and structured interviews (e.g. Bresman et al. 1999; Ciabuschi, Dellestrand and Kappen 2011) in order to refine theories. In their study of international knowledge transfer projects, Ciabuschi et al. (2011), for example, look at innovations as a measurement of knowledge transfer in MNCs. Drawing on previous studies that claim innovations to embody knowledge (e.g. Teece 1986), Ciabuschi et al. (2011: 138) collected empirical data from sending subsidiaries through a questionnaire. Going back to the original source that Ciabuschi et al. (2011) cite, we can see how knowledge is intrinsically connected to innovations: innovation is born out of knowledge of how to craft something better than how it already exists (Teece 1986: 288). It

⁶ Although few examples that do not look at the MNC level do exist (Mowery, Oxley and Silverman 1996; Sunaoshi et al. 2005).
seems that knowledge has been equated with novelty, but little is said about the origins of this knowledge. How does an individual realize something they are creating is new (and from whose perspective?), for example? Moreover, what does the process of creating something new look like?

In another study looking at knowledge transfer in 134 Western subsidiaries based in Finland and China, Björkman et al. (2004) approached knowledge from the competence perspective by focusing on five different business activities (general management, manufacturing, marketing and sales, service, and R&D). This take on knowledge was inspired by Gupta and Govindarajan’s (2000) work on knowledge flows in MNCs, and resonates with Ciabuschi et al.’s (2011) take on knowledge as antecedent to innovations.

Albeit that knowledge transfer is seen as an individual endeavor, knowledge transfer scholars do not seem to pay much attention to what is being transferred. For example, Björkman et al. (2004: 451) suggest that firms initiate international training schemes and visits across MNC’s units to increase the probability of knowledge sharing taking place. However, it seems curious that such initiatives can be suggested without touching upon the ontology of what is being shared. Grounding knowledge in competences is seemingly a sound argument, but Björkman et al. (2004) do not elaborate further on this argument, but base their argument on prior similar studies.

To conclude, although to some extent we are always defining words with other words, in knowledge transfer research knowledge is quite often equated with competences, innovations, and patents. The question here is: how do these equations expand our understanding of what kind of knowledge is shared in MNCs? Knowledge transfer research seems to be well suited to large-scale studies often dealing with impressive amounts of data from different organizations and subsidiaries, which is why it seems that breadth has attracted more attention than depth. Although homogeneity in terms of research design is not an issue per se, the way knowledge has been defined and pinned down in knowledge transfer research certainly proposes challenges and avenues for further inquiries to the field.
3.3.5 Summarizing intra-firm studies on knowledge

While studies looking at the knowledge-based view of the firm (Kogut and Zander 1992, 1993, 1996) have expanded our understanding of how MNCs emerge and work, most studies fail to give an adequate account of what knowledge actually is. Although Kogut and Zander (2003) advocated a more humanistic approach to knowledge in MNCs, they did not move far beyond the tacit–explicit continuum.

Knowledge flow studies have provided us with great advances in terms of how MNCs operate and are structured, but apart from that they have not been able to define knowledge beyond equating it with R&D. Although the contributions made in this stream have been remarkable in terms of processes and structures, it is nonetheless mind-boggling that the ontology of knowledge has received so little attention in this stream. After all, is it not reasonable to ask what is the nature of something that is seen as a crucial element when it comes to theorizing on how MNCs function?

Perhaps the most managerially oriented stream of knowledge-related research in organizations, knowledge management studies have looked at such phenomena as knowledge storing and retrieval, managerial processes, and information technology. Brilliantly summarizing the undertone of knowledge management research, Alavi and Leidner (2001: 131) claim that “a variety of knowledge management approaches and systems needs to be employed in organizations to effectively deal with the diversity of knowledge types and attributes”. Thus, with a normative approach to managing knowledge this stream seems more interested in what kind of processes organizations should adopt instead of theorizing on why certain processes exist. However, as in most knowledge management studies the level of analysis is the individual or the organization, this stream does contain a lot of potential for philosophical contributions as many studies here draw on phenomenological thought.

To summarize this stream, although the emergence of KBV research brought a more humanistic undercurrent to the study of MNCs and knowledge in organizations in general, studies looking at knowledge at the intrafirm level do not seem to have gone far beyond Polanyi’s tacit–explicit distinction (although Polanyi’s [2009] take on knowledge does not separate tacit from explicit, as has been pointed out in Tsoukas and Vladimirou [2001]). Neglecting this pitfall, we can still safely claim that studies stemming from this stream of research have greatly contributed to our
understanding of how and why MNCs emerge, and what goes on inside them at the organizational level.

3.4 Individual knowledge

In this section my aim is to scrutinize knowledge-related studies looking at the individual level by looking at their stance on the ontology of knowledge and whether senses are brought into the discussion. More specifically I will be looking at studies focusing on knowledge sharing and creation, as they both seem to focus on the individual more than other studies presented in the two sections above.

3.4.1 Knowledge creation

Knowledge creation literature became popular with both academics and practitioners sometime during the early 1990s, when the famous book titled The Knowledge-Creating Company (Nonaka and Takeuchi 1995) was published. Nonaka, however, had already published academic articles on knowledge creation before this book (Nonaka 1991, 1994), but since the book was easily available to all kinds of audiences this can be seen as the moment when knowledge creation reached the awareness of wider audiences. Many attempts to push the field forward have been proposed since (Grant 1996, Nonaka et al. 2008; Spender 1996, Tsoukas 2009), and building on these works much more is still left unexplored (Nonaka and Peltokorpi 2006; Nonaka et al. 2006).

Knowledge creation deals with question such as ‘what is (organizational) knowledge?’ (Amin and Cohendet 2004; Choo 1998; Kogut and Zander 1993; Tsoukas 1996, 2009) and ‘how individuals and communities create knowledge within a certain organizational space?’ (Cook and Brown 1999, Nonaka and Konno 1998; Nonaka and Takeuchi, 1995; Wenger 1998). In terms of management, knowledge creation scholars have taken a somewhat different position than those interested in knowledge management: knowledge per se cannot be managed, but instead spaces, technologies, and people can be nurtured in order for knowledge creation to take place (Nonaka and Konno 1998; von Krogh 1998).
In essence, knowledge creation studies look at how knowledge is created by individuals in organizations (Nonaka, Byosiere, Borucki and Konno 1994). While a vast majority of knowledge-related research draws on a positivist account of knowledge (Spender 1996), knowledge creation research on the other hand has been bolder in diversifying our understanding of knowledge and its epistemology. Spender (1996: 48) beautifully elaborates on the homogenous nature of knowledge by claiming “we cannot speak knowledgeably about knowledge so long as our discourse grasps only knowledge and its absence”. In my reading of Spender this seems to echo a broader discourse within knowledge creation studies: that knowledge should be exposed to more academic inquiry if we are to offer any explanations on how knowledge contributes to how and why firms work. Moreover, as a counterforce to traditional theories of organizations that emerged against an economics background, Nonaka et al. (2000: 6) crystallize the need for a new theoretical approach:

Yet, in spite of all the talk about ‘knowledge-based management’ and in spite of the recognition of the need for a new knowledge-based theory that differs “in some fundamental way” from the existing economics and organisational theory, there is very little understanding of how organisations actually create and manage knowledge.

The need to build a more solid foundation for knowledge-related research in organizations is also voiced by Tsoukas and Mylonopoulos (2004). By carefully criticizing our reluctance to study the very foundations of knowledge they (Tsoukas and Mylonopoulos 2004: S2) claim that:

[i]t is one thing to take knowledge for granted and then show how it is related to learning and dynamic capabilities, and quite another to explore questions regarding the social practices in organizations through which what is regarded as ‘knowledge’ attains this status, with what effects.

Consequently, knowledge creation research has aimed at providing novel approaches and theories for studying organizational phenomena that break away from the traditional rationalist and economic approach to organizations. In Nonaka et al. (2008: 13 citing John 2001), for example, the rational perspective to knowledge is questioned by drawing on
aesthetics: “[a]esthetic knowledge offers fresh insight and awareness that may not be possible to put into words, but nevertheless enables us to see in new ways”. Here, a sensorial and phenomenological (Zahavi 2003) standpoint is apparent.

The earliest works on knowledge creation were conducted in relatively homogenous settings in terms of national and geographical diversity (Nonaka and Takeuchi [1995], for example, looked at Japanese firms, and Nonaka et al. [1994] surveyed 105 Japanese managers located in Tokyo), but especially in IB literature scholars have been able to expand this to more diverse settings. More specifically, in IB knowledge creation has been investigated in various contexts: MNC (Andersson, Björkman and Forsgren 2005; Lagerström and Andersson 2003), different national settings (Mirza and Bassa 2000), and R&D (D’agostino and Santangelo 2012), to name but a few examples. While theoretical developments in knowledge creation have come mainly from organization and management studies (Grant 1996; von Krogh, Nonaka and Rechsteiner 2012; Nonaka et al. 2000; Spender 1996; Tsoukas 2009), studies within IB have provided the research community with empirical findings from diverse contexts, such as those described above.

Looking at how knowledge has been conceptualized in knowledge creation studies, three approaches emerge. First, knowledge is seen as intrinsically linked to patents (Zander 1994 in Andersson et al. 2005), echoing a positivist and homogenous stance on knowledge. Second, others have argued for a more pluralist take on knowledge that encompasses many kinds of organizational activities such as R&D, marketing, sales, and product design (Mirza and Bassa 2000). Quite interestingly Mirza and Bassa (2000: 523), for example, claim in their editorial that “the process of knowledge creation and transfer is ongoing and never more so than in the 21st Century”, and for knowledge they (Mirza and Bassa 2000) offer the following definition: “the term ‘knowledge’ is interpreted widely here and includes, among others, management systems and organizational structures, R and D and innovation, science and technology, production design and processes, and skills and expertise”. In a similar vein, Regnér and Zander (2011) highlight the importance of knowledge creation in MNCs, but they only seem to refer to knowledge creation as a complex process, hence not taking a stance on what it actually is that is being created.

Although the two conceptualizations described above offer somewhat comfortable avenues for operationalization, at the same time they replace
one definition with another, which, in turn, does not advance our understanding of how knowledge is actually created in organizations. Or in other words, from the research perspective these conceptualizations of knowledge are useful as they can be easily operationalized, but at the same time it also frames the scope so that only certain activities are seen as contributing towards knowledge creation.

The third approach embraces the diversity of knowledge more than the first two approaches, and as such it mainly draws on interpretivist and phenomenological thought (Lagerström and Andersson 2003; Nonaka 1994; Nonaka and Takeuchi 1995; Nonaka et al. 2000, 2008; Spender 1996; Tsoukas 2009). Nonaka et al. (1994: 339) claim “that the cognitive element of tacit knowledge refers to an individual’s images of reality and visions for the future, that is to say, what is and what ought to be”, consequently describing a distinct departure from narrow, often static, definitions of knowledge present in the other two approaches. In a similar vein, Lagerström and Andersson (2003: 85-86) also appreciate the richness of knowledge by highlighting differences in knowledge: “[a]cknowledging the value of individual differences in knowledge is important, especially among the individuals from different business units, which emanates from interaction with external counterparts”. Furthermore, they (Lagerström and Andersson 2003) discuss performativity in connection to knowledge; they claim that knowledge is closely linked to activities where both tacit and explicit knowledge are utilized. This reading of knowledge is closely connected to the knowing–knowledge debate (Cook and Brown 1999), and marks a somewhat unorthodox theoretical standpoint in contemporary IB literature on knowledge. Thus, what characterizes studies adopting an interpretivist paradigm is their desire to embrace the many forms and shapes knowledge may take.

The three approaches introduced above have markedly increased our understanding on how knowledge is created in organizations, but, as has been pointed out previously in Nonaka and Peltokorpi (2006), the number of disciplines contributing to knowledge creation research has blurred the field. While to some extent having diverse disciplines contributing to one research agenda is vital, in knowledge creation research we can see many small, often overlapping, research trajectories rather than one major (and potentially other smaller) trajectory shaping the field. However, of the three approaches introduced above, the last one that is closely connected to interpretivism and phenomenology seems to hold considerable amount of potential for additional future contributions.
In a sense, knowledge creation studies drawing on interpretivism and phenomenology are to a large extent sensitive to nuances in knowledge and knowing:

*although most people intuitively identify knowledge with individual knowledge, it is not quite evident how knowledge becomes an individual possession and how it is related to individual action, nor is it clear in what sense knowledge merits the adjective organizational. Despite the insights gained by the research of leading experts on organizational knowledge, there are still crucial questions unresolved.* (Tsoukas and Vladimirou 2001: 974)

The quote above illustrates the kind of ontological reflexivity present in similar studies (Cook and Brown 1999; Nonaka et al. 2008; Orlikowski 2002, 2006; Tsoukas 2009): knowledge as an ontological and epistemological concept is unpacked, scrutinized, and developed based on empirical data. In terms of philosophical foundations, studies within this stream have mainly drawn on pragmatism, phenomenology, or sociomateriality, thus emphasizing perception, language, and materiality as essential components of knowledge and knowing. Especially works by Nonaka and his associates (Nonaka and Konno 1998; Nonaka et al. 2000, 2008; Nonaka and Toyama 2005), Orlikowski (2002, 2006; Orlikowski and Scott 2008), and Tsoukas (1996, 2009; Tsoukas and Mylonopoulos 2004; Tsoukas and Vladimirou 2001) have often been spearheading knowledge creation research by tightly connecting theory with practice. We know now, for example, that knowledge can be aesthetic or processual (Nonaka et al. 2008), intertwined with social and the material (Orlikowski and Scott 2008), or built in dialogical exchanges (Tsoukas 2009). Although all of the works presented above are distinct from each other – and often even contradictory – what they all share in common is their understanding of knowledge and knowing as being essentially connected to relationships: knowledge does not exist independently, but instead it is emergent in relationships between individuals and other actors.

To conclude, behind the knowledge creation literature there is an implicit assumption and rationale that knowledge creation leads to firm-level competitive advantages, and hence by better understanding knowledge creation processes and triggers companies are able to transform themselves to being more innovative and beating the markets (Kogut and Zander 1992,
1993; Nonaka 1991; Takeuchi and Nonaka 1986). This taken-for-granted notion has, apart from Nonaka’s (Nonaka et al. 2000, 2008; Nonaka and Toyama 2005) and Tsoukas’s (Tsoukas 2009; Tsoukas and Mylonopoulos 2004; Tsoukas and Vladimirov 2001) works, received little attention among knowledge creation scholars. As I will argue later in this dissertation, this implicit assumption – that knowledge creation leads to more competitive organizations – has had tremendous ramifications for knowledge creation theories’ ontological and epistemological foundations by even today obediently sticking with the rationalist modernist paradigm. But as we as scholars and the world around us have entered the postmodern era of fragmentation, messiness, and emotions (Deleuze and Guattari 1987; Doz 2011; Guattari 1995; Lash and Urry 1994; Pink 2009), it seems increasingly difficult to defend an argument that all knowledge that is created is always for the best of the company.

3.4.2 Knowledge sharing

Research dealing with knowledge sharing is mainly interested in the organization and what happens inside its boundaries (Gupta and Govindarajan 2000; Mäkelä, Andersson and Seppälä 2012). Within this research tradition, knowledge has been linked to best practices (Szulanski 1996), innovations (Tsai and Ghoshal 1998), or new product development (Hansen 1999), and of special interest have been barriers impeding knowledge sharing within organizations (Mäkelä and Brewster 2009; Mäkelä, Kalla and Piekkari 2007; Mäkelä et al. 2012).

Knowledge sharing studies have looked at various themes, such as individual similarity (Mäkelä et al. 2007), Centers of Excellence (Adenfelt and Lagerström 2008), virtual teams (Klitmøller and Lauring 2012), networks (Lee and MacMillan 2008), and organizational values (Michailova and Minbaeva 2012). It seems that knowledge sharing research has paid great attention to how and where knowledge sharing takes place within an MNC and to the characteristics of individuals engaging in knowledge sharing. Moreover, knowledge sharing studies can be seen as the other side of the coin to knowledge flow studies that are mainly interested in the organizational level.

By nature, knowledge sharing is an individual and interpersonal endeavor, which is why most knowledge sharing studies focus on the individual level that is embedded in an organizational context (Adenfelt and Lagerström
2008; Dyer and Nobeoka 2000; Klitmøller and Lauring 2012; Mäkelä et al. 2012; Mäkelä et al. 2007). Furthermore, knowledge sharing has been conceptualized in slightly different ways, but in essence it is seen as a set of communicative actions that ultimately lead to knowledge being put to use elsewhere to where it was first created (Adenfelt and Lagerström 2008). Often knowledge sharing studies intersect and draw upon communication studies, as is seen in Klitmøller and Lauring (2012: 399): their aim was “to empirically explore how variation in culture and language affects knowledge-sharing effectiveness in global virtual teams using lean and rich media”. Building on this, in their study of a Danish MNC, Klitmøller and Lauring (2012: 405) argue for the importance of language in knowledge sharing research; their findings suggest “that differences in shared language commonality have a more prolific impact on knowledge sharing than one might at first assume”.

When it comes to the definition of knowledge, scholars in this stream seldom explicitly elaborate on their philosophical underpinnings as the focus has been more on interaction than knowledge itself, although more often than not they draw on the tacit explicit distinction (e.g. Dyer and Nobeoka 2000). This standpoint does, nonetheless, raise crucial questions from the methodological perspective as it can be argued that it is somewhat challenging to study something if it is not properly conceptualized.

Proponents of knowledge sharing research seem to take the nature of knowledge somewhat for granted, since in most knowledge sharing studies knowledge is defined as something static, or measurable (Mäkelä et al. 2012; Noorderhaven and Harzing 2009). Moreover, the name of this domain – knowledge sharing – implicitly suggests that knowledge can be shared, and this is also reflected in the ontological position scholars within this domain have adopted. Knowledge is deemed as a tricky and sticky concept, but for research purposes, a working definition is often utilized (Lee and MacMillan 2008; Noorderhaven and Harzing 2009).

Nevertheless, although knowledge sharing literature in IB is a quintessential and data rich research stream, it has not been able to influence broader IB theorizing as much as it could. The reasons for this might be diverse, but given the pivotal role of knowledge in organizations and organizing, studies on knowledge sharing have the potential to advance IB theorizing because they approach the phenomena at the grassroots level.
3.4.3 Summarizing this stream

Knowledge-related research focusing on the individual level in organizations has made remarkable contributions to the way we treat organizations and firms’ competitive advantages. We now know, for instance, that similarity between individuals can lead to greater knowledge sharing (Mäkelä et al. 2007), socialization between team members works as a catalyst for knowledge creation (Lagerström and Andersson 2003), and knowledge creation is intrinsically linked to competitive advantages (Nonaka and Takeuchi 1995). Moreover, scholars from various disciplines (Nonaka and Peltokorpi 2006) have contributed to the discussion on knowledge at the individual level, which has contributed to the number of definitions we have for knowledge and other crucial concepts.

More specifically, knowledge creation research has burgeoned during the last few decades as scholars started to look into the processes and mechanisms that enable knowledge creation in organizations (Lagerström and Andersson 2003; Nonaka et al. 2000; Regnér and Zander 2011). Empirical evidence has been steadily increasing, and many contributions have come from IB, but there is still room for further contributions coming from IB in terms of how knowledge could be defined ontologically and epistemologically in knowledge creation research.

Regnér and Zander (2011: 825), reflecting on Shenkar’s (2004) provocative argument that IB is dominated by atheoretical research, claim that the MNC – IB’s favorite child – should be used as a source of empirical strength when theorizing on knowledge creation in MNCs. Based on Roth and Kostova’s (2003) initial ideas on how we should treat the MNC in IB research, Regnér and Zander (2011: 825) argue “that the interaction between semi-integrated MNC units in the unique context of cross-border and culturally complex operations in knowledge creation processes offers extraordinary opportunities to examine big, relevant and theoretically central questions”. Although IB as a discipline could devote more time to debating the ontological dimension of knowledge, I believe – in line with Regnér and Zander (2011), and Roth and Kostova (2003) – that IB holds potential in terms of generating novel and nuanced findings on knowledge creation in MNCs.

Knowledge sharing research, on the other hand, has mainly dealt with interpersonal dynamics, and organizational boundaries and barriers. That is to say, knowledge per se has not been the main focus, but instead it has
focused on what kind of interpersonal and organizational characteristics make it possible.

### 3.5 Conclusion

In this chapter I have covered contemporary and seminal works on knowledge-related research in three organizational levels: interfirm, intrafirm, and individual. It has been by no means an easy task to exhaustively carry out because scholars use different concepts to talk about same phenomena (Alavi and Leidner 2001; Spender and Scherer 2007), and since they come from different academic disciplines (Lloria 2008; Nonaka and Peltokorpi 2006). Despite the diversity of contributions, the three aforementioned levels have served as analytical anchors, as through them I have been able to critically review studies looking at knowledge from different perspectives and with varying agendas.

One of the main purposes of conducting literature reviews is to take stock on the existing research by organizing it so that new research avenues can be constructed (Buckley 2002; DuBois and Reeb 2000; Griffith, Cavusgil and Xu 2008; Inkpen and Beamish 1994). Here my aim has been to investigate the discourses revolving around the ontology of knowledge in studies looking at knowledge in organizational settings, and the four following contestable issues emerged during the review.

First, most studies seem to have explored knowledge from a historical perspective – what has been, rather than how something continues to be and emerges in the future. Perhaps one of the few examples comes from Nonaka and his associates’ work (Nonaka et al. 2000, Nonaka et al. 2008) where knowledge is created along a continuous temporally and spatially located spiral. However, I am not claiming other works to be driven by a certain naïveté in the sense that knowledge is created in a vacuum. On the contrary, while this might be the case in some studies, most do recognize that knowledge builds on and interacts with existing knowledge, but solid theoretical arguments and constructs to support this are more or less missing. As a result, what is required is an approach to knowledge that effortlessly moves between past, present, and future.
Second, perhaps the most authoritative conceptualization of knowledge comes from Polanyi (2009) who defined knowledge to contain both tacit and explicit dimensions. This definition seemingly possesses sound qualities, but as has been shown before (Gourlay 2006b, Jorna 1998; Tsoukas and Vladimirou 2001), scholars have not exposed it to adequate philosophical scrutiny and as such it has been taken at face value. Moreover, we also have to remember that Polanyi’s work first emerged during the 1950s – a turbulent time in academia as Kuhn’s (1962) defense for qualitative research emerged more or less at the same time. In fact, Polanyi’s main emphasis seemed to have been on arguing that the work scientist do in laboratories is not always based on scientific facts, but hunches and intuition also play a role in making scientific breakthroughs. Building on this, in my reading of Polanyi’s work it should be taken as a historically relevant piece of pursuing a certain political program, not as a blunt weapon for shaping knowledge in a quantifiable form.

Third, building on the above, as scholars turned to Polanyi to conceptualize knowledge, most studies have approached knowledge from an unnecessarily limited and shallow perspective meaning that it is only seen as either tacit or explicit (as Tsoukas and Vladimirou [2001] point out, this is a somewhat misunderstood reading of Polanyi’s work). This claim can be attacked from several perspectives: a scholar of semiotics, for example, would question the notion that tacit knowledge is tacit for everyone, while an advocate of sociomateriality (Latour 2005; Orlikowski 2007) would argue for a more central role for inanimate actors. Furthermore, it also seems that knowledge has – to a large extent – been understood as a cognitive process, thereby omitting bodies and sensory experiences from the picture. Hence, knowledge creation is not a social endeavor, but a cognitive agenda, which is why we need to expand knowledge from the mind to the world.

Fourth, although numerous studies mention manuals, meetings, training sessions, and online databases as forms of explicit knowledge, they do not really acknowledge the role these artifacts possess in terms of shaping knowledge processes. Explicit knowledge, in other words, is only seen as a repository of knowledge without an agency of its own. Consider the famous example of the bread making machine in Nonaka and Takeuchi (1995), for example: an employee is observing a chef at work while she has a revelation about how the machine should twist and weave the dough to produce

---

*Personal Knowledge* (London: Routledge) was published in 1958.
superior bread. If we accept the notion that knowledge processes are social endeavors, how can we at the same time talk about the animate–inanimate interaction? Building on assumptions about the social in sociomaterial research (Barad 2003; Latour 2005), we need to rethink the way we understand knowledge processes as humanistic or social.

To conclude, this chapter has looked into the ontology of knowledge in knowledge-related studies in organizations and MNCs more specifically. Above I have identified four notions that require more work, and in order to do so, we must turn to look at knowledge, which is why the next chapter focuses on knowledge and knowing.
4 What is knowledge? From object to action

4.1 Introduction

Knowledge and knowing have been some of the most attractive topics in philosophy, and recently also in IB and organization studies. Questions such as ‘what can we know?’ and ‘what is knowledge?’ have attracted scholars from numerous disciplines to have their say on the nature of knowledge. In fact, one could say that knowledge has been and remains to be the Holy Grail for many scholars. As I argued in the previous chapter, a vast majority of knowledge-related studies within IB and organization studies have adopted a somewhat narrow definition of knowledge as something either tacit or explicit, and in this chapter I am building on Polanyi’s (2009) original idea on knowledge as tacit and explicit by drawing on performativity and sociomateriality. Hence, this chapter looks into knowledge and provides an account of the visual turn in knowledge as one potential avenue for contributing to the way knowledge is understood in IB and organization studies.

Knowledge creation research has to date been mainly interested in the question, “how do individuals create knowledge within organizational boundaries?” So far our understanding of knowledge creation has been expanded tremendously by such prominent scholars as Nonaka and his colleagues (Nonaka and Konno 1998; Nonaka and Takeuchi 1995), Grant (1996), Spender (1996), and Tsoukas (1996). The main bulk of the most dominant knowledge creation studies were published during the 1990s, but the aforementioned scholars have also continued to build on their work during the first decades of the 21st century (Nonaka et al. 2008; Tsoukas 2009). As a result, knowledge creation research has continued to burgeon for over two decades now, with other scholars entering the field and exporting it to new fields.
As I mentioned in the previous chapter, I agree to a large extent with Polanyi’s dualistic take on tacit and explicit knowledge, and the way it has been refined within the confines of knowledge creation research by Nonaka et al. (2008) as a continuous flow between tacit and explicit knowledge. However, while this perspective has become widespread in our discourses, and it seems we all recognize the importance of knowledge in contemporary organizations, explicit accounts on what knowledge is are a in a minority.

In connection to the notion pointed out above, there is also much disagreement in terms of where knowledge resides. In Nonaka and Toyama (2005) we saw a first glimpse of knowledge being located in ecosystems, but more often than not it is believed that knowledge resides within an organization’s boundaries. During the course of this chapter my aim is to discuss the nature of knowledge and organizations, as they are inextricably connected to each other. More precisely, knowledge here is not understood as residing independently of actors, but instead it is embedded in interaction and action in fluid organizations. Next, I will move on to discuss the ontology of organizations in knowledge creation research, after which I move to analyze various accounts provided for knowledge. Building on these two sections, I will conclude this chapter by offering an account of the visual in knowledge that paves way for the theoretical framework that I will present in the next chapter.

4.2 What is an organization? Setting the scene for knowledge

Currently most knowledge creation scholars seem to have conceptualized the organization as a confined bubble that does not allow ideas and knowledge to travel freely from and to them (Andersson et al. 2005; Grant 1996, Spender 1996), implying that knowledge creation takes place within a certain framework without much outside influence, or interaction between the organization and the outside world. However, with the current technological advances – such as tablets, social media, and virtual teams – and conceptual advances – e.g. open innovation and microtasking – most of the work can be done outside organizations’ physical premises, consequently challenging the notion of organizations as closed systems.

Building on this line of thought, knowledge creation scholars seem to have adopted a relatively modernist take on organizations when they, implicitly
or explicitly, regard an organization to be more or less an entity with clear borders. Few exceptions do exist, however: for Nonaka and his associates (Nonaka et al. 2008; Nonaka and Toyama 2005), Tsoukas (2009), and Amin and Cohendet (2004), organizations are understood to be more sponge-like with technology, knowledge, and people traveling between various institutions (be it firm, university, public organization, family, or competitors). Especially in Nonaka’s later work (Nonaka et al. 2008; Nonaka and Toyama 2005), ecosystem thinking has received more attention than in his earlier studies on knowledge creation, but apart from the works introduced above, most knowledge creation scholars seem to have defined organizations as having distinguishable boundaries\(^8\) from knowledge’s perspective.

However, if we look at knowledge-intensive organizations, many changes have taken place since knowledge creation research became part of the dominant discourse in organization studies during the 1990s. There have been many changes shaping the organizational landscape, but in the light of knowledge creation research, three significant abstract and concrete shifts can be identified:

<table>
<thead>
<tr>
<th>Abstract</th>
<th>Concrete</th>
</tr>
</thead>
<tbody>
<tr>
<td>The rise of the creative class and knowledge worker (Florida 2004)</td>
<td>Ease of travel and sinking costs of cross-border collaboration and traveling (Friedman 2007)</td>
</tr>
<tr>
<td>Job fragmentation, and the blurred boundary between work and private life (Lash and Urry 1994)</td>
<td>Project-based work and new communication technologies (Sydow, Lindkvist and DeFillippi 2004; Whyte et al. 2008)</td>
</tr>
<tr>
<td>From products and services to experience economy (Pine and Gilmore 1998, 1999)</td>
<td>Social media as means of communication and interaction (Lietsala and Sirkkunen 2008)</td>
</tr>
</tbody>
</table>

What these mean from the OKC perspective is that they illustrate how the organizations in which we work have become fluid, and hence arguments towards exclusive organizations do not seem to hold ground. The shifts presented above should be seen as interconnected and by no means exhaustive; however, discussing the shifts taking place both globally and nationally have already been covered (Boisot and McKelvey 2010; Chia

\(^8\) For a discussion on firm boundaries, see Paukku (2013).
1995; Lash and Urry 1994, Mommaas 2004; Pratt 2000), and hence my aim here is only to illustrate some of the main shifts taking place and what they mean for OKC studies.

The first shift describes the increasing influence of creative industries to the way we regard work and where we work. One of the central tenets in Florida’s work on the creative class (2004), for example, is that people belonging to the creative class – people such as scientists and engineers, designers, artists, and musicians (Florida 2004: 8) – do not adhere to the traditional organizations, but instead operate on a more ad hoc basis. More often than not collaboration within the creative class takes place through projects, and organizations are relatively small in size. In this light, what we are witnessing is a shift from huge corporations to a mesh of corporations and small organizations.

Similarly, studies on creativity and creative industries emerged relatively late in relation to the coinage of the concept ‘knowledge worker’ (Alvesson 2001; Drucker 1999, Machlup 1980), although they possess similar characteristics and creative industries have existed for numerous centuries now. Nevertheless, the increasing interest to study creativity (Amabile 1988; Baer 1993; Woodman, Sawyer and Griffin 1993) and creative industries (Cohendet, Grandadam and Simon 2010; Drake 2003; Garnham 2005) has marked an implicit shift in the way we work. While immediately after the Second World War work was mainly characterized through bureaucracy and processes (Weber [1930] 2001), since the 1990s the focus has increasingly been on work that is characterized by abstractions and intangible products.

The second shift, job fragmentation and blurring boundaries, refers to the notion that we no longer live in a world where work ends once you leave the office (Hill, Miller, Weiner and Colihan 1998; Johns and Gratton 2013). Studies have shown that increasingly work is being conducted on a project basis (Project Management Institute 2004; Sydow et al. 2004; Whyte et al. 2008) and due to current advances in communication technology (such as smartphones, laptops, and tablets) the connection between work and predefined physical space has become weaker. From the knowledge creation perspective this means that not only is knowledge created outside the headquarters but it is also becoming more common that knowledge is created with individuals outside the organization in which the individual is working.
The third, and final, shift is mostly concerned with the transition from physicality to immateriality, signs, and experiences. In other words, this implies that companies are no longer producing ‘merely’ products or services, but experiences targeted at fulfilling customer needs or adding value to the customer’s life (Pine and Gilmore 1998, 1999). In addition to this, with the introduction of social media applications we are now witnessing a transition in the way companies interact with their customers: what used to be a ‘simple’ relationship between a buyer and a seller, has turned into a fuzzy network or mesh of communication between companies and consumers (Kaplan and Haenlein 2010: Mangold and Faulds 2009).

All of the three shifts presented and discussed above lead us to rethink the way we conceptualize organizations within knowledge creation literature. Moreover, the same need has also been raised amongst knowledge creation scholars, especially by Nonaka and Toyama (2003) and Tsoukas and Vladimirou (2001). For Nonaka and Toyama (2003: 8) organizations are regarded as a complex mesh of baś (see Nonaka and Konno 1998), while Tsoukas and Vladimirou (2001: 975, 980) call for a theory of organization – namely, organization-as-theory – that is incorporated with a theory of knowledge. In line with the shifts presented above, and Nonaka and Toyama (2003), and Tsoukas and Vladimirou (2001), I will treat organizations as fluid entities that do not work as borders for knowledge but instead as fertile soil for new knowledge to emerge. In the section below, I will discuss knowledge in more detail and show why we need this kind of take on organizations from the knowledge perspective.

4.3 Knowledge in knowledge creation literature

Despite the burgeoning literature on knowledge creation, our understanding of knowledge within this field is still in its infancy (Alvesson 2004; Tsoukas and Mylonopoulos 2004; Tsoukas and Vladimirou 2001). As Tsoukas and Mylonopoulos (2004: 8) aptly put it, “one of the common fallacies concerning organizational knowledge is what we may call the apple-tree fallacy”, that is to say, scholars seem to believe knowledge is something that can be picked up from a tree and consumed at will. This approach to knowledge was also illustrated in the previous chapter, and in this section my aim is to contribute to a more nuanced foundation for knowledge within the context of (organizational) knowledge creation.
Ever since the beginning of the 1990s, knowledge as one of the most pivotal building blocks for organizations has entered both academic and managerial discourses. Quite interestingly, the importance of knowledge and knowing from the organization perspective had been highlighted much earlier (Hayek 1945), but after Nonaka’s seminal articles published around the beginning of the 1990s (Nonaka 1991, 1994), knowledge truly started to attract scholars from diverse fields (Nonaka and Peltokorpi 2006). Today, scholars are looking at multiple dimensions and functions of knowledge; such as organizational learning (Levitit and March 1988; March 1991), knowledge management (Alavi and Leidner 2001), communities of practice (Brown and Duguid 1991; Lave and Wenger 1991; Wenger 1998), and knowledge creation (Nonaka et al. 2000, 2008; Tsoukas and Mylonopoulos 2004; Tsoukas and Vladimirou 2001). Despite scholars from these streams occasionally refer to works belonging to other streams, it can be argued that they are somewhat separate based on their ontological and epistemological foundations. This is illustrated in Scarborough and Burrell (1996:178 in Alvesson 2004: 45) who claim knowledge to be “a slippery and elusive concept, and every discipline has its own secret realization of it”. Thus, as the focus of this work is on OKC what follows is a discussion on knowledge within OKC literature.

At this point I have only touched upon the tricky concept of knowledge without many references to information and data. The distinction between knowledge, information, and data has been troubling scholars for quite some time (Boisot and Canals 2004; Nonaka and Takeuchi 1995; Zins 2007), and some have made somewhat artificial distinctions between each of these. But like tacit and explicit knowledge, data, information, and knowledge cannot be separated as their interpretations might differ from individual to individual. It is often argued that they exist independently of individuals in a hierarchical order, with data being the foundation for information and knowledge, respectively. Hence, knowledge is seen as the ultimate goal that is achieved through data and information. While this might be the case, we also have to remember that someone’s knowledge is information for someone else: knowledge is relative, but this distinction leads us to tautological arguments such as knowledge is information is data is knowledge, and so forth.

For many OKC scholars, Plato’s definition of knowledge as “justified, true belief” has been the safe haven, although in the 1960s Gettier (1966) illustrated that Plato’s definition was partially flawed. Gettier’s main
argument was that knowledge can be justified based on certain premises that might or might not be true beliefs. In the article, Gettier (1966) gives an example of two job applicants, Mr. Smith and Mr. Jones: Mr. Smith is told to have strong evidence for Mr. Jones getting the job and having ten coins in his pocket, and hence Mr. Smith is able to reason that the person who will get the job will have ten coins in their pocket. Here, Gettier encourages us to imagine further by supposing that Mr. Smith would get the job and that, unbeknownst to him, he would also have ten coins in his pocket. Then the original proposition – the person who will get the job will have ten coins in their pocket – is justified, but not based on true belief. Although Gettier’s example contributed to revitalizing philosophical debate on the nature of knowledge, OKC scholars seem to have ignored his article and instead relied on Plato’s contested definition as one of the main foundations to knowledge.

Furthermore, by unpacking Plato’s definition of knowledge, Alvesson (2004: 50) invites us to ponder upon what is meant by ‘justified’ and ‘true’ in “justified, true belief”. For Alvesson (2004), Plato’s definition is problematic as it does not take into account who is making the truth claims and based on what kind of arguments: as Gettier (1966) also showed, what is seen as truth or as a justified belief might not be so in the next moment. As a result, Plato’s definition of knowledge is a good starting point, much intellectual and empirical work is still required if we are to broaden and solidify our foundations for knowledge within OKC.

Similarly, Polanyi’s (2009) groundbreaking work on knowledge has been widely accepted as one of the main authorities: in short, Polanyi’s argument is that knowledge has both tacit and explicit dimensions, and as such knowledge always has a personal dimension. As discussed in the previous chapter, this continuum has become popular in studies looking at knowledge matters in organizations, although in most cases Polanyi’s work has been threaded lightly. Recognizing the potential of Polanyi’s work, Tsoukas and Vladimirou (2001: 975) contest the prevailing norms in knowledge creation literature as follows:

Polanyi’s work, for the most part, has not been really engaged with. If it had been it would have been noticed that, since all knowledge has its tacit presuppositions, tacit knowledge is not something that can be converted into explicit knowledge.
Despite the popularity of Polanyi’s work on knowledge, others, too, have noted how his work has been partially misinterpreted: “[h]owever, while frequently (mis)used to justify it, Polanyi’s approach undermines the logic of dividing knowledge into different forms” (Alvesson 2004: 45). Alvesson is right in pointing this out: as Polanyi (2009: 20) himself puts it, “[b]ut suppose that tacit thought forms an indispensable part of all knowledge, the ideal of eliminating all personal elements of knowledge would, in effect, aim at the destruction of all knowledge”. Hence, the notion of tacit knowledge being converted to explicit knowledge and vice versa is partially flawed, as knowledge is always personal – embodied – and explicit – disembodied.

Both Plato and Polanyi have received criticism from scholars after them, for example Gettier (1966) showing that the “justified, true belief” assumption can be falsified, and pragmatists (Dewey 2009; Rorty 2009) arguing that we cannot separate knowing from practice. Furthermore, the tacit dimension of knowledge has been criticized for its epistemological dimension, namely how can we study it (Gourlay 2003, 2006a, 2006b). While the critiques presented above have been valid, the problem has been that most scholars have not been able to expand knowledge from its linguistic boundaries although we should be looking at knowledge from a wider perspective (Alvesson 2004; Amin and Cohendet 2004). Hence, knowledge is not only linguistic, but it is also connected to the visual.

Regardless, the tacit–explicit knowledge conversion was popularized in Nonaka and Takeuchi (1995), and in Nonaka’s later work (Nonaka et al. 2008) ontological difficulties related to the tacit–explicit conversion were acknowledged by arguing that knowledge flows between tacit and explicit dimensions. Nonetheless, although the tacit–explicit distinction provides us with useful concepts and vantage points to knowledge (Gourlay 2006b; Tsoukas and Vladimirou 2001), scholars seem to have taken it at face value, meaning that works constructively criticizing and building on Polanyi’s concept of tacit knowledge are few and far between.

Quite interestingly, however, we are exposed to multitude of definitions of knowledge, despite many scholars drawing on Polanyi’s work. Consider the following definitions of knowledge, for example:

“Knowledge as a social and cultural phenomenon situated in practices”
(Hong 2012: 201)
“There are two kinds of knowledge: explicit knowledge and tacit knowledge” (Nonaka and Konno 1998: 42)

“Knowledge is the judgement of the significance of events and items, which comes from a particular context and/or theory” (Bell 1999 in Tsoukas and Vladimirou 2001)

“Knowledge as justified true belief” (Nonaka 1994: 15)

“In terms of defining knowledge, all I offer beyond the simple tautology of ‘that which is known’ is the recognition that there are many types of knowledge relevant to the firm” (Grant 1996: 110)

“Instead, the emphasis falls on knowing in the process of enactment, in which all these ‘actors’ are merged into one and the same ontological plane, such that no differentiation between knowledge stimulus and knowledge agent can be found” (Amin and Cohendet 2004: 8)

“Knowledge that resides within individuals is often referred to as tacit knowledge...In contrast, explicit knowledge can be expressed in codified form and can therefore be diffused throughout the organization in the form of rules and guidelines” (Nonaka 1991, 1994 in Lagerström and Andersson 2003: 85)

What do these definitions tell us about knowledge then? First, that knowledge comes in many forms and shapes (Grant 1996; Hong 2012), second, that knowledge is both tacit and explicit (Lagerström and Andersson 2003; Nonaka 1994; Nonaka and Konno 1998), and third, knowledge is deeply interconnected with the environment (Amin and Cohendet 2004; Tsoukas and Vladimirou 2001). As was shown above, the tacit–explicit distinction has been shown to be problematic and often misread, and as Alvesson (2004: 41) argues “[T]he problem is that enthusiasts have great problems in theoretically defining knowledge or empirically describing it”. Despite that research on organizational knowledge creation for most parts seems to be characterized by an intellectual shallowness, there are scholars who have made interesting and fruitful contributions to the field (e.g. Alvesson 2004; Amin and Cohendet 2004; Nonaka et al. 2008; Tsoukas and Vladimiriou 2001). Especially the notion that knowledge and knowing are inextricably connected with the environment seems to possess potential for further development, and it is exactly this line of thought that I aim at building on in this dissertation.
Looking at the contemporary debates on knowledge in organizations, it can be said that there are two main intellectual camps: the first sees knowledge as something that can be stored, transferred, and created at will, and as something existing independently of individuals, while the other camp sees knowledge and the individual as intertwined. With this dissertation my aim is to contribute to the latter stream of OKC by drawing on performativity (Bolt 2004; Steyaert et al. 2012) and sociomateriality (Latour 1987, 2005; Orlikowski and Scott 2008). To do this, I will set out the following argument that I will elaborate on in the two sections below:

Knowledge and knowing are multisensory by nature, and situated in action and interaction; we cannot treat senses separately, and as such knowledge creation is also a multisensory endeavor. Furthermore, there exists no hierarchy between individuals and inanimate objects when it comes to knowledge creation: we are all bound together in creating knowledge in networks that are formed over time and space. Consequently: knowledge creation is a multisensory experience that yields new actors that are legitimized or cast away by the network.

In the claim above I have referred to knowing (Orlikowski 2002), which has somewhat different intellectual roots than discussions on knowledge. Drawing mainly on sociology and anthropology (e.g. Giddens 1984; Lave 1988; Suchman 1987) the core idea behind knowing literature is “what it is people do every day to get their work done” (Orlikowski 2002: 249, original emphasis). In Orlikowski (2002), knowledge is not seen as a static element that exists externally of individuals, and by replacing knowledge by knowing we are able to depart from static concepts towards practice that is imbued with knowledge. “All doing is knowing, and all knowing is doing” (Maturana and Varela 1998: 27, 29 in Orlikowski 2002: 251). This idea has also been dealt with in Nonaka et al. (2008) as they see knowledge as a process: however, although Nonaka (Nonaka et al. 2008; Nonaka and Konno 1998; Nonaka and Takeuchi 1995) acknowledges the importance of inanimate objects in knowledge creation, sociomaterial research goes beyond acknowledgment by seeing the relationship between animate and inanimate as interactive, and this notion is crucial also here.

Thus, by departing from pure knowledge towards knowing we are suggesting that knowledge and agents are inseparable, because without agents there can be no knowing. Furthermore, this stance also questions the possibility of transferring or sharing knowledge, as “[a]t best, what can be
transferred or moved here is data or information” (Orlikowski 2002: 271), and even then knowing tied to that data or information is prone to yield new interpretations and actions of knowing. What is travelling, then, is not knowledge but artifacts or boundary objects (Carlile 2002, Star and Griesemer 1989) that were created based on knowing in a specific temporal and spatial setting.

I started this chapter by discussing what has been said to date about organizations and knowledge, and it appears that most research seems to have adopted a closed view on organizations and a static stance to knowledge. That is to say, in most studies knowledge exists within certain physically limited spaces (such as a factory or headquarters) and this knowledge can be transferred across time and space. This view has been argued to be problematic not only empirically but also ontologically as it assumes boundaries where they do not actually exist (von Hippel 2005; Tsoukas and Dooley 2011; Tsoukas and Vladimirou 2001). To counter this, I have drawn attention towards knowing as an enacted activity: knowledge and action are inseparable in a given temporal and spatial setting. But the story is not complete yet: what we are lacking are notions of senses and artifacts. How is knowing connected to senses? How can we study ‘new’ knowledge and knowledge creation? Here, I argue that senses and knowing are inseparable – although senses have not received as much attention as they deserve in OKC literature – and knowledge creation can be studied through artifacts, which is why I will address these two issues in the next section.

4.4 Taking the visual turn in knowledge

I began this chapter by introducing two shortcomings that have characterized knowledge creation research – knowledge as a consumable essence, and the lack of the visual in OKC literature – and now I believe the time is ripe to summarize my take on the issue by introducing my view on organizational knowledge creation. I will refer to this approach as the visual turn in knowledge and knowing. The visualization below illustrates how I aim to expand our understanding of knowledge and knowing in organizations:
Figure 7. How does this dissertation aim at expanding our understanding of organizational knowledge creation?

Traditionally, OKC research has been mostly cognitive as for many OKC scholars knowledge would still be created if the world comprised only individuals and their cognitive capabilities. To some extent this holds, but since we can convincingly argue that the reality is more than a cognitive concept, we need to develop a perspective to knowledge and knowing that takes the visual (Meyer et al. 2013; Pink 2007, 2009, 2011) and materiality (Orlikowski 2002, 2006, 2010; Orlikowski and Scott 2008) into account.

As has been discussed earlier in this dissertation, most OKC research has assumed written and oral communication to be the sole sources and enablers of knowledge creation. A focus on linguistic and social interaction is evident in Nonaka’s work (Nonaka and Toyama 2005; Nonaka et al. 2000) – “[s]ynthesis in knowledge creation is achieved through dialogue” (Nonaka and Toyama 2005: 426, original emphasis) – and in Tsoukas’s (2009: 942) reasoning: “to theorize how face-to-face dialogues make it possible for new organizational knowledge to emerge”. Other scholars have followed suit, and hence it seems that there is still a certain theoretical and methodological bias towards language as the main source for data. Or in other words, written and oral communication are implicitly understood to be more important than other forms of communication (Bell and Davison
2012), and in terms of the senses, vision and hearing seem to be regarded as more powerful than other senses (Kress 2005; Pink 2011). Thus, my intention here is to bring the visual to the core of organizational knowledge creation research.

In Ewenstein and Whyte (2007: 689) we can find an enticing take on the intersection between the visual – and other means of communication – and knowledge: “[a]esthetic knowledge is embodied. It comes from practitioners understanding the look, feel, smell, taste and sound of things in organizational life”. Closely connected to Orlikowski’s (2006) reasoning on knowing and Pink’s (2009) work on multisensory ethnography, Ewenstein and Whyte (2007) claim that knowledge is not restricted to only certain senses, but instead, all senses are of relevance during the acts of knowing. While this claim seems reasonable and easily accepted, it is, however, difficult to accept the lack of senses in the majority of OKC studies. Accordingly, my approach to knowing and knowledge in this dissertation highlights the presence of all senses in enacted knowing, although my main interest lies in visual manifestations of knowing. By doing so, I am building on Nonaka et al. (2008) work on knowledge as something aesthetic and embodied.

Thus far, we have arrived at an argument that states that knowledge and knowing are inseparably connected to the visual, and now I turn to address the notion of artifacts and sociomateriality in knowledge creation and knowing. In knowledge creation literature, one of the main tenets is that knowledge can be externalized and as such it becomes partially explicit (Nonaka et al. 2008; Nonaka and Takeuchi 1995) in various forms: manuals, new products, and societal norms, for example. However, if we assume the position that knowledge and knowing are inseparably connected to actors, how can we claim that knowledge can be externalized to manuals and norms? This is where sociomateriality enters the scene: by expanding from individuals to actors (comprising not only human but also nonhuman actors) we are able to transcend the narrow take on social or organizational life. Knowledge and knowing emerge not only from the interaction between individuals, other actors also play a role in knowing and knowledge creation practices. Consider Nonaka and Takeuchi’s (1995) well-known example of the bread-making machine: Nonaka and Takeuchi (1995) describe a case where a company employee came up with an innovation on how bread-making machines should work by following chefs at work. The observer was reported to have had a moment of epiphany when they were studying the way the chef’s hands were working with the dough. Hence, a new technique
was developed for bread-making machines and this new type of machine was implicitly claimed to have been a form of explicit knowledge. Based on this, it is relevant to ask whether the bread-making machine is explicit knowledge for everyone experiencing the machine? Moreover, is the knowledge similar across individuals in time and space? In fact, explicit knowledge is not knowledge, but new actors that are the result of various knowing practices.

Allow me to elaborate the last claim in the previous paragraph a bit further. Once an artifact has been created – think of the bread-making machine – it no longer changes, but rather the ways other actors perceive and relate to it change. Furthermore, as has been shown before, knowledge is difficult (Szulanski 1996) or impossible (Orlikowski 2002) to share and transfer, but information and data, on the other hand, are transferrable through time and space. For example, we can admire the ancient Pyramids in Egypt, but the types of knowing and knowledge we have of them might be different from the people who actually built them. Thus, actors can travel through time and space, but meanings and knowing connected to them change when we interact with them.

Consider another example, perhaps somewhat closer to our profession and organizational life: in academia new journal articles and books are published at an astonishing speed and they represent artifacts imbued with knowledge from the authors’ perspective – for the authors the article is intertwined with their knowing, but for the rest of us our knowing most likely differs from theirs (Latour 1987; Polanyi 2009). Thus, it is the artifacts that travel, not knowledge, and by adopting this view we can evade the criticism pointed towards the tacit–explicit, and knowledge conversion discussions (Gourlay 2006a, 2006b). Furthermore, this leads us to depart from representationalism towards performativity that wishes to abolish the distinctions between knowing and knowledge, and object and subject (Barad 2003; Orlikowski and Scott 2008).

If we accept the claim that there exists no pure external knowledge because knowing is performative, then it becomes natural to build on this thought by drawing on sociomaterial research (Orlikowski and Scott 2008: 455) that takes as its starting point “a move away from focusing on how technologies influence humans, to examining how materiality is intrinsic to

---

* Pink (2009, 2011) has also convincingly illustrated how even the senses are closely connected to cultures and societies. The Western conception of five senses, for example, does not hold ground universally.
everyday activities and relations”. That is to say, the sociomaterial approach to organizational life questions the “automated plumbing” metaphor (Zammuto, Griffith, Majchrzak, Dougherty and Faraj 2007: 751 in Orlikowski and Scott 2008: 436) on technology by investigating how human and non-human actors jointly constitute organizing activities. Backtracking a bit to the discussion on knowledge and knowing, how can we transfer this line of thought to OKC?

In fact, in OKC literature we have already seen some interest towards the material dimension (Ewenstein and Whyte 2007, 2009; Nonaka et al. 2008; Orlikowski 2002, 2006, Sunaoshi et al. 2005), but to date mainstream OKC research seems to have focused on the cognitive and socially constructed dimension of knowledge creation. To counter this, I have turned to sociomaterial research that acknowledges the existence and active participation of non-human actors (Latour 2005; Orlikowski and Scott 2008) and sensory ethnography (Pink 2009: 1) that deals with “a way of thinking about and doing ethnography that takes as its starting point the multisensoriality of experience, perception, knowing and practice”. That is to say, I am broadening our ontological and epistemological maneuverability: ontology of knowledge creation is broadened through a sociomaterial approach to organizing and knowing, and epistemology of knowledge creation is advanced by taking senses into account. Calls for such extensions to our current understanding of OKC have been raised already in Nonaka et al. (2008) and Tsoukas (2009), for example, although their arguments have been somewhat different. In Nonaka et al. (2008), emphasis has been put on the aesthetic and embodied nature of knowledge, while Tsoukas (2009) has suggested our research designs should better incorporate the inanimate dimension of organizations.

This chapter started with a discussion on organizations and knowledge in OKC research. Traditionally, knowledge creation has been seen to take place in temporally and spatially confined organizations: knowledge creation is a cognitive and a social process (Kogut and Zander 1992; Nonaka et al. 2000, 2008; Nonaka and Takeuchi 1995; Spender 1996). But, sociomaterial scholars would ask, is it really social if we leave out technologies and other non-human actors (Orlikowski and Scott 2008)? Is it not the case that the ‘social’ is much more than linguistic processes taking place between people in various spaces (Barad 2003)? It is exactly through sociomateriality that we are able to expand and advance knowledge creation theories, because knowing is not limited to phenomena taking place between individuals.
By accepting the claim that human and non-human actors alike interact with each other to meet various ends (organizing, knowing, creating, evading, etc.) we simply cannot rely on only a few senses with which we – as social scientists – are most comfortable (Atkinson and Silverman 1997). Echoing Orlikowski and Scott (2008: 466) here: “[t]here will be studies for which existing theory and approaches will be suitable, but there will be many more that necessitate a fresh perspective”. As sensory ethnography (Pink 2009) and research within visual communication (Bolt 2004) have been flirting with and drawing on performativity, I believe this approach to sociomaterial OKC to yield novel insights and theoretical advancements.

Indeed, if we look at the sociomaterial approach to organizing and knowing as an ontological approach that tightly weaves the social and the material together (Orlikowski and Scott 2008: 456), it is reasonable to ask how do we employ our senses within this sociomaterial assemblage? Do we assume this ‘new’ relationship to be built on written and oral communication, or do we dare to open yet another black box by taking the senses fully into account? In fact, Nonaka and Takeuchi (1995), and many other OKC scholars have touched upon this issue, but to date most OKC research has not dared to depart from the cognitive domain towards sensory and material knowing. To counter this, the sociomaterial and performative stance to visualizing knowledge and visual knowing builds on previous OKC studies that have adopted phenomenology as their philosophical foundation.

To draw together what has been said in this section, my take on knowledge and knowing is as follows: knowledge creation and knowing involve all kinds of communicative means – not only written and oral – and in terms of interaction that enables new knowledge to emerge, non-human actors are also present in the process. With this I wish to broaden our scope in OKC by questioning the prevailing dominant position of individuals and language. Furthermore, by drawing on a performative stance to the visual, I support my stance to knowledge set out above by claiming that the visual does not merely represent, but it also performs. Through performativity, then, the visual and sociomaterialism are inextricably bound together: This is visualized below:
With this perspective on knowledge and knowing in organizations we are able to open up new avenues for theorizing about knowledge in organizations as we are opening up rather than limiting our ontological and epistemological foundations.

4.5 Conclusion

This chapter has looked into the elusive concept of knowledge that has been troubling scholars for many millennia. Perhaps one of the reasons scholars within OKC have been reluctant to give a thorough account of knowledge is the idea that there simply is no single unifying theory of knowledge. But it is exactly this multitude of theories we have for knowledge that I find fascinating: we as researchers of knowledge should engage in meaningful intellectual debates about the nature of knowledge in order to expose our thinking to external scrutiny. Far too often knowledge has been defined in a tautological manner, which is why the theoretical foundations of OKC have been somewhat shaky (Alvesson 2004). However, interesting openings have been made previously: Cook and Brown (1999) weaved together knowledge and knowing, Nonaka et al. (2008) drew attention to the aesthetic qualities

Figure 8. The visual and sociomateriality are inextricably bound together through performativity
of knowledge, and Tsoukas (2009) called for research designs that are more sensitive towards the inanimate side of organizations and organizing.

The visual take on knowledge I have presented in this chapter joins the debate by drawing on such scholars as Pink (2009, 2011) and Latour (2005), and I have aligned myself with such scholars as Alvesson (2004), Amin and Cohendet (2004), Nonaka et al. (2008), and Tsoukas (2009). There are also other scholars who more or less fall within the same category those I have just listed, but in my reading of the OKC literature the ones I mentioned represent the trajectory I wish to follow. To recall what was said earlier in this chapter, I believe knowledge and knowing to be inseparably connected to various forms of communication, and to both human and non-human actors.

**Figure 9.** Knowing extends beyond the verbal domain

The next chapter, then, draws on performativity and sociomateriality to provide a definition of knowledge that invites rather than rules out debate in OKC research.
5 A theoretical framework for visualizing knowledge and visual knowing

5.1 Introduction

The theoretical framework for visual knowledge creation and knowing presented in this chapter is based on my fieldwork and existing literature, especially in sensory and visual ethnography (Pink 2009, 2011), knowledge creation and knowing (Nonaka et al. 2008; Orlikowski 2002; Tsoukas 2009; Tsoukas and Mylonopoulos 2004), and sociomateriality research (Bogost 2012; Latour 1987; Orlikowski 2006; Orlikowski and Scott 2008). Accordingly, my aim here is to show that OKC theories can be further developed by building on a theoretical foundation that takes into account the visual and the sociomaterial world. The illustration below brings forth the three aforementioned streams of research.

Figure 10. The three streams of research before connections are established between them
The exemplars given on the right side above should not be understood as being similar, but rather as belonging to the same broad research agenda. As such, I do not wish to advocate that we should equate the studies found on the right side in the figure, but here they are illustrative examples of what kind of inquiries have been conducted in the three streams. In the following sections of this chapter I will weave these streams of research together, and in the figures that follow connections will also be visualized. For now, presenting them separately gives a broad overview of what are the building blocks for this chapter.

Preceding chapters focused on knowledge and knowing, and visual communication from the perspective of organizational knowledge creation. Building on the literature review on knowledge-related research in IB and organization studies, I argued that we require a more nuanced approach to knowledge and knowing, and this, I believe, can be achieved by drawing on the visual and the sociomaterial approach. By opening the black box and broadening our scope of knowledge creation we are departing from a purely socio-cognitive approach that has been previously criticized (Carlile 2002; Latour 2005; Orlikowski and Scott 2008; Star and Griesemer 1989), although these insights have not yet been fully incorporated in to OKC research.

In the sections to come, I will introduce three key theoretical components, the theoretical framework, and describe how the papers of this dissertation contribute to it. But first, allow me to recap the research question presented earlier in this dissertation: What kind of sociomaterial and performative practices of visual knowing and visualizing knowledge are there in knowledge-intensive organizations?

5.2 Of knowledge and knowing, the visual, and sociomateriality

The purpose of this section is to remind the reader of the three key theoretical components that establish the foundations of the theoretical framework, namely: sociomateriality, visual communication, and knowledge creation and knowing. I will go through these one by one by opening them up and showing their relevance in the framework.
First, sociomateriality (Bogost 2012; Latour 1987; Latour and Woolgar 1986; Orlikowski 2006, 2007) refers to the notion that “all things equally exist, yet they do not exist equally” (Bogost 2012: 11). This means that sociomaterial research acknowledges the existence of, say, PowerPoint presentations and Lego figures the same way as OKC scholars acknowledge the existence of an individual as the locus of knowledge creation (Cook and Brown 1999; Nonaka and von Krogh 2009; Nonaka and Takeuchi 1995; Tsoukas 2009). From the knowledge creation perspective, granting agency to objects might seem unorthodox, as knowledge creation is seen to be a social endeavor (von Krogh et al. 2012; Nonaka and Peltokorpi 2006) whereas objects (such as the ones presented above, and memos, prototypes, and ideas, for example) are ‘merely’ seen as containers of explicit knowledge. In Nonaka and Toyama (2005: 421) we find the following claim on the relation between knowledge and individuals:

*Knowledge cannot exist without human subjectivities and the contexts that surround humans. ‘Truth’ differs according to who we are (values) and from where we look at it (context).*

Drawing on the phenomenological and interpretative tradition, Nonaka and Toyama (2005) claim that individuals create knowledge through experiences of the world and that new knowledge in turn helps in shaping the world. The spiral metaphor for knowledge creation was previously introduced in Nonaka and Konno (1998) and Nonaka et al. (2000) and it has several connecting points to learning theories (Senge 2006).

Approaching sociomateriality rather more than Nonaka and his associates, Cook and Brown (1999) discuss knowledge and knowing from a pragmatist standpoint. Discussing interaction with the world Cook and Brown (1999: 389) illustrate an example from an artisan:

*The master puts out ideas by giving shape to the material, and “hears back” from it as he or she discovers and explores what the material can and cannot make possible. Part of what it means to master any craft is to learn how to turn the constraints of its materials into opportunities for design.*

Here, Cook and Brown (1999) come relatively close to sociomateriality by describing the interaction between the master and their material as the master gains knowledge about the material’s characteristics. However, pragmatism does not grant agency to objects other than humans, as one of
its main concerns is mind–body co-existence (Dewey 2009; Peirce 1986; Rorty 2009) and how that affects the way we perceive ourselves, and the world that surrounds us. Taking the argument set forth by Cook and Brown (1999) and Nonaka and Toyama (2005) a little further, it can be argued that once the master has altered the material to produce something else, this object does indeed enter the world, but from that point on its relevance is pushed aside. Proponents of sociomaterialism (Bogost 2012; Latour 1987; Latour and Woolgar 1986; Orlikowski 2006; Orlikowski and Scott 2008), on the other hand, would argue that the object continues to talk and hear back from the master as time passes and new actors enter and old actors exit the world.

In terms of sociomateriality within the domain of visual knowledge creation and knowing, consider the following two pictures from the data set collected for this dissertation.

**Picture 3.** An example of sociomateriality in visual knowledge creation and knowing (Paper #2)
Sociomateriality is evident in the two pictures above in two crucial ways: first, their production has involved technological manipulation as they have been taken with a camera and later compiled into a presentation using relevant software (such as Microsoft’s PowerPoint or Apple’s Keynote), and second, content-wise they portray non-human elements of the social, such as signs and bus stops. In terms of the pictures above, sociomateriality can be approached from at least two levels: production, and content, and both of these possess potential for increasing our understanding of visual knowing and visualizing knowledge.

Second, knowledge and knowing have been central themes in OKC discussions, and especially Polanyi’s (2009) tacit–explicit duality has become one of the landmark works. In short, Polanyi claims that there are two types of knowledge: tacit – that which is difficult to articulate – and explicit – that which exists ‘outside’ the mind in the form of speech or a manual, for example. However, although the tacit–explicit continuum has often been connected to knowledge within OKC, it is in fact knowing what Polanyi wanted to emphasize (Orlikowski 2002; Tsoukas and Vladimirou 2001). Knowing has been claimed to be converted to knowledge in order to develop and test theories (Orlikowski 2002), which in turn has shied us away from theorizing on knowing as an enacted and evoked practice. Approaching knowing from my data’s perspective, the following pictures portray how knowing can be analyzed.
Above, knowing is manifested in visual form through the pictures as they temporally capture – through interacting with various technologies (pens, wooden blocks) – metaphors of organizations and organizational activities. One of the guiding ideas here is that these pictures ‘tell’ more than if they were verbalized: by utilizing communicative means that are somewhat ‘unconventional’ to the respondents we are able to see different aspects of knowing – visual knowing. Hence, images are able to tap into our subconsciousness because visual communication does not rely on (institutionalized) grammar, but on deeper meaning-making processes.

Third, we communicate our sensory perceptions and experiences to others (humans and objects alike) through various forms of communication, of which written, oral, and visual are of interest here. This multimodality has recently gained popularity especially in communication studies (Kress and van Leeuwen 2001), and it has certain connecting points with sensory ethnography (Pink 2009, 2011). Proponents of multimodality and sensory ethnography both see senses as interconnected, but whereas the former argue that different senses enable different experiences, the latter claim, in line with phenomenologists (Bogost 2012; Nagel 1974; Zahavi 2003), that senses cannot be separated. Consider this example: when attending a concert, is it possible to ‘switch off’ all the other senses and simply focus on
listening? Even further, when looking at the following picture can we reject the visual dimension?

![Picture](image.png)

**Picture 7.** Can we ignore the visual dimension in the picture above? (Paper #2)

The picture above can be analyzed from various perspectives; performativity, visual discourses, composition, colors, representation, and so forth, of which performativity is of interest here. This is done by looking at not only the picture but also who made it and what it does. By combining a picture of a robot (signifying high technology) with a picture of a lady holding a bunch of pillows (indicating emotions and warmth), the picture as a whole not only creates a mathematical equation visually (high technology + warmth = superfurniture), but most importantly makes it possible for the viewer to imagine what superfurniture would look like and how does it relate to their life. Hence, an image does not only represent something, but according to the performative standpoint adopted here it also enables and evokes action. Moreover, from the creation perspective the image performs knowing while at the same time from the perception perspective it evokes knowing in intended and unintended ways.

How do these components work for my case in this intellectual endeavor? First, sociomaterialism (Bogost 2012; Latour 2005; Orlikowski 2006; Orlikowski and Scott 2008) makes it possible to rethink the ‘social’ (Latour 2005) in social sciences by acknowledging the role non-human actors have in shaping social and organizational life. Second, knowing – marking a
distinct departure from positivist-inspired knowledge research – ties the person and the object inescapably together, hence claiming that knowing is practice (Orlikowski 2002) and that knowledge cannot be separated from action (Maturana and Varela 1998). Third, in extant OKC research senses have not been explicitly addressed (apart from Nonaka’s most recent works [Nonaka et al. 2008; Nonaka and Toyama 2005]), but rather they have been ‘abused’ through illustrative exemplars to prove the point that knowledge creation is a cognitive process. To counter this, I have embraced the visual in the research design (Pink 2009, 2011). Fourth and finally, visual communication – albeit an attractive field of inquiry within IB and organization studies in general (Davison et al. 2012; Meyer et al. 2013; Steyaert et al. 2012) – has been almost left out of knowledge creation research\textsuperscript{10} as most scholars seem to have a certain fetish towards the cognitive and linguistic dimensions (Atkinson and Silverman 1997).

Consequently, the three key theoretical components presented and discussed above provide me with the necessary intellectual building materials to move on to the theoretical framework. By recalling the visualization of these three components presented earlier I will now tie them together in the figure below.

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{figure11.png}
\caption{The three streams of research after connections are established between them.}
\end{figure}

\textsuperscript{10} Such accounts as Ewenstein and Whyte (2007, 2009) and Sunaoshi et al. (2005) have been previously introduced in this dissertation.
One of the biggest challenges in contemporary OKC research has been to resolve the “apple-tree fallacy” (Tsoukas and Mylonopoulos 2004): it has been often claimed that knowledge can be externalized, but at the same time scholars debate, to a large extent, on the nature of knowledge, and hence we still seem to lack a unified body of knowledge in terms of knowledge itself. Whether a single definition of knowledge is attainable or even desirable is debatable, and hence my point here is not to further fragment the field, but instead contribute to what has been said already.

Building on this, I have drawn on sociomaterial and visual research by combining them with literature on knowing as practice (Orlikowsi 2002, 2006), thereby resulting in foundations for a theoretical framework on visual knowing and visualizing knowledge that is more attuned to phenomena outside the verbal sphere.

To summarize what has been said in this section: knowledge creation and knowing are idiosyncratic processes that employ various communicative means, and that take place within such social settings that acknowledge the existence of non-human actors. With this in mind, I will now turn to the actual theoretical framework utilized and developed in this study.

5.3 Framework for the study – visual knowing and visualizing knowledge in knowledge-intensive organizations

In the previous section I introduced three critical theoretical components in the framework, and here my aim is to describe that framework. As highlighted in previous research (Adenfelt and Lagerström 2008; Amin and Cohendet 2004; Cook and Brown 1999; Nonaka and Konno 1998; Nonaka and Toyama 2005; Tsoukas 2009), organizational knowledge creation is built on the foundations that encompass people, spaces, and interaction between people, consequently emphasizing the cognitive dimension and social interaction. To move beyond this, I am drawing on a sociomaterial line of thought as well as visual ethnography (Pink 2009, 2011) in order to bring the visual and the material dimension of the social to the core of OKC research. The visual below illustrates the theoretical framework:
Figure 12. The theoretical framework for multisensory knowing

In relation to previous research within OKC, the framework presented here has two major intellectual contributions: first, by acknowledging the role that sociomateriality has in knowledge creation and knowing we are able to develop more fine-grained analyses of how knowledge is created and how knowing is connected to actions, and second, knowledge creation and knowing is not only cognitive action but also sensory action, therefore bringing the body back to the picture. Below I will further elaborate on these two contributions.

First, sociomateriality (Latour 2005, also tiny ontology [Bogost 2012] or relational ontology [Orlikowski and Scott 2008]) embraces non-human actors: that is to say, this take on the social appreciates “thinking and talking about the social and the material worlds as inseparable, as constitutively entangled” (Orlikowski and Scott 2008: 463). Once we adopt this stance to the social in OKC, we are able to theorize on the interplay between individuals and artifacts, thereby resulting in more fine-grained analyses of how knowledge is created and knowing emerges. This entanglement of various aspects of the social becomes apparent in the following picture:
The two constructions above (‘Organized mess’ and ‘Controlled chaos’) illustrate how knowledge creation and knowing are sociomaterial by temporally ‘freezing’ knowing in action. Through the constructs, and by understanding the aesthetic qualities of the single building blocks, the respondents shifted between the cognitive and the material in order to produce a visual construction of their organization. Had this been carried out verbally an important element of visual knowing would have been left out because analysis would not have been fully able to touch upon the visual dimension of knowing. Accordingly, knowledge creation and knowing are practices that are inextricably intertwined with the material and the visual, and hence they should not be ignored.
Furthermore, consider the following: given that one of the underlying assumptions behind OKC research is how organizations create new competitive advantages, and that these organizations usually do something (be it intangible or tangible outputs), how can we ignore the material aspect of the social in terms of creating something? As a result, knowledge creation is not solely a cognitive process, but instead, a mesh of cognitive, material, and sensory actions. The challenge here is not so much about scholars treating knowledge creation and knowing as cognitive processes, but this is also a methodological issue: if we only deal with surveys and interviews, how can we know what is beyond language?

Second, the sensory domain and the visual have not been extensively dealt with in OKC, although in organization studies most scholars are starting to value the theorizing potential they have (Ewenstein and Whyte 2007; Meyer et al. 2013; Steyart et al. 2012; Strati 1996, 1999; Witz et al. 2003). Why have most studies excluded the senses and the visual from OKC? One reason might be that the field has focused on the cognitive dimension; an equally valid reason might be that we simply do not know how to deal with the visual. However, when we acknowledge that knowledge creation and knowing are much more than cognitive processes, it is difficult to go back to the confines of the purely cognitive aspect of the social.

In the picture above we can see a take on the theme ‘sustainability’ that was the focus in the second paper. Here, the respondent has visualized their company’s take on sustainability by directly highlighting nature and indirectly the durability of their products. One of the strengths of pictures is that they are able to yield rich data: through words the picture above would be nearly impossible to describe exhaustively as a conversion process from the visual to the verbal would be present. Moreover, by drawing on the example above I wish to emphasize our responsibility as OKC scholars to
adopt a more inclusive stance towards studying knowledge creation and
knowing: by focusing on verbal data the picture above would not have been
recognized as being an essential part of knowledge creation and knowing,
and as a result something potentially interesting would have been left out of
the picture. However, when talking about knowledge creation and knowing
it has to be pointed out that I do not believe the picture above contains
knowledge per se.

While some scholars have advocated the possibility of externalizing
knowledge so that it becomes explicit knowledge (von Krogh 1998; Nonaka
et al. 1994; Nonaka and Takeuchi 1995), I rejected this notion by drawing
on phenomenological and sociomaterial thought. For sociomaterialists, it is
the relationship between things (living and non-living) that evokes knowing,
while in phenomenology we can never acquire ‘complete’ knowledge of
something external to us, but instead representations and metaphors of the
Other.

For Nagel (1974), for instance, it is impossible for humans to experience
or know what is it like to be a bat. In a similar vein, Bogost (2012) discusses
object–oriented ontology (OOO) that deals with the same issue Nagel was
discussing: namely, how do we know how it feels like to be a thing? The
answer, according to phenomenologists, lies in metaphors (Lakoff and
Johnson 2003), which enable us to create knowledge about phenomena and
other actors (be it humans or inanimate objects). Continuing this line of
thought, according to phenomenological thought, we cannot acquire
universal explicit knowledge, but instead representations of it through
various communicative and cognitive means. That is to say, when tacit
knowledge becomes explicit it is no longer knowledge for everyone, but
instead it is information. Consider the following example:

A team of designers has spent numerous months working on a prototype
for a new type of computer that has the potential for revolutionizing the
personal computer industry. The team observed people using their
computers and smartphones, attended numerous conferences and
meetings, and scrapped numerous alternative ideas for the new product
before creating the first prototype. Later, when the prototype was turned
into a product and sold globally, it became a huge hit and it did, in fact,
revolutionize the PC industry.

For the team of designers, the final product could be understood as a form
of partially explicit knowledge. But what about the consumers who ended
up using the product? Would they be able to sense and experience the same knowledge that the designers have about the product? Drawing on phenomenological thought (Merleau-Ponty 2002; Nagel 1974; Zahavi 2003), the answer would be ‘no’: we can interact with other actors in the world, but we can never fully understand the way they perceive and make sense of the world.

Following this line of thought, the theoretical framework devised and utilized in this dissertation aims at opening up rather than excluding, at three levels: first, knowledge creation and knowing are tightly connected not only to the cognitive, but also to the sensory and the material, second, humans are not the only ones granted agency, and third, organizations (as discussed previously in this dissertation) are not closed entities in terms of knowledge, but rather knowledge creation and knowing can take place within and outside organizations.

Figure 13. Visual knowing and visualizing knowledge are not bound by organizational boundaries

To conclude, whereas contemporary theories on organizational knowledge creation have emphasized the external qualities of knowledge and the cognitive dimension of the knowledge creation process, I have drawn on sociomaterial thought that has recently started to gain currency in organization studies in order to reveal the importance of the visual in knowledge creation. Furthermore, as I have departed from knowledge’s “apple-tree fallacy” (Tsoukas and Mylonopoulos 2004), emphasis has been
placed here on performativity. Or in other words: visual knowing and visualizing knowledge are processes that do not merely reflect the reality, but instead constitute it by evoking and revoking.

In the next section I will further elaborate on the theoretical framework by discussing how the papers of this dissertation support the claims put forward in this section.

5.4 How do the papers contribute to the theoretical framework?

From the methodological perspective, this framework has been approached from three perspectives: knowledge creation outputs, individuals, and aesthetics. In addition, two conceptual papers contribute to the whole in two ways: the first paper is conceptual, while the second answers the call that scholars should explore alternative methods to written communication for presenting their work. I will now go through these five papers by elaborating their contribution to the whole work.

First, the article published in the Journal of Business Communication (Lehtonen 2011) looks at Nonaka’s knowledge creation theory from the semiotic and visual perspective with the aim of tackling the semiotic issue in the theory (Jorna 1998). Nonaka’s theory has been previously criticized for lacking a semiotic dimension – that is to say, knowledge is understood to be the same regardless of who is involved – and in the article I draw on Peirce’s work on semiotics in an attempt to argue that knowledge creation contains a semiotic dimension. By looking at PechaKucha presentations – a form of PowerPoint presentation, which contains twenty slides that are shown twenty seconds at a time – I proposed “that knowledge, and knowledge management, should be viewed in more holistic terms, not only by combining written, oral, and visual communication but also by bringing knowledge management and semiotics together” (Lehtonen 2011: 478). This first paper, then, can be understood as a gateway paper to the relationship between knowing, the visual, and the senses.

Second, the paper originally presented at the Tsinghua-DMI symposium in Hong Kong looks at PechaKucha presentations on sustainability from the aesthetic perspective. My coauthors and I invited representatives from Finnish design-intensive firms to give a PechaKucha presentation on
‘sustainability’ in Tokyo, Japan, during a Finnish design export initiative called Hirameki, and we analyzed the presentations based on what kind of communicative means the presenters utilized to talk about their knowledge about sustainability. Previously in OKC literature, the actual knowledge outputs have not received much attention (Ewenstein and Whyte 2007, 2009 being fine exceptions), which is why we wanted to explore them. This paper should be regarded as a prelude to the performative side to the theoretical framework: pictures not only represent reality, but they also perform certain functions by excluding and including, and through framing and control. The main methodological contribution, however, lies in exploring the different ways of visualizing knowledge about sustainability and interpreting those visual artifacts.

Third, the paper looking at visual metaphors of organizations (initially presented at the EGOS Colloquium in Helsinki, Finland) highlights the potential of raising abstraction levels in studying knowledge and knowing. By utilizing Chigo blocks (Japanese children’s toys that come in three basic shapes) I wanted to investigate how knowing can be illustrated through relying on basic shapes instead of words. The main argument here was that words often function as a golden cage for our expressive means: what would happen if we explored knowing through objects that we have forgotten but that still remind us of moments in the past? Data in this study was researcher-generated and as such it presented me with interesting and fruitful data on how people make sense of their organization. The main methodological contribution is connected to materiality and performativity: materiality in the sense that non-human objects were deeply present in the study and performativity as I approached the final constructs as performing various functions. Here, then, I also aimed at breaking away from the stance that understands the visual as mere representations.

Fourth, the paper on doing cultures at workplaces is perhaps the most refined in terms of methodology and theoretical developments, mainly due to the fact that it is the most recent piece of work in the dissertation. Here performativity is emphasized even more than in the previous paper, as I am also analyzing the visuals based on what is not communicated through them. While the previous two papers are dealing more with non-human actors (visual of organizations and sustainability) this paper focuses more on the interaction dimension, and how the visuals can unearth connections between people that previously were believed not to exist.
Fifth, the manga – a form of Japanese comic – was created based on a workshop I held together with my colleagues at the University of Tokyo in Tokyo, Japan. A team of six researchers and students from Aalto were invited to host a five-day workshop at the University of Tokyo’s interdisciplinary program called i.school on the future of shopping, and the manga tells the story before, during, and after the workshop. By describing the methods we employed during the workshop through manga, we hoped to answer the call that researchers should explore novel ways to communicate their research to peers and broader audiences. Originally we were asked to write a final report on the process and the outcomes of the workshop, but after discussing with our colleagues at i.school we decided to produce a manga out of it.

The story and the characters for the manga were created in a collaborative dance between the Japanese artist and the then director of i.school, and me and my colleague from the original workshop facilitator team. While not necessarily theoretically influential, the manga is a perfect example of how we as scholars can rethink the different ways we have at our disposal for communicating our research. In a sense, then, the manga illustrates the theoretical contributions in this dissertation by putting them into action.

To conclude, in this section I have looked at the five papers from the methodological perspective by illustrating their contribution to the theoretical framework. While the first paper conceptually paved way for the theoretical framework to emerge during the course of this dissertation project, the following three papers draw on empirical data to back my claims on multisensory knowledge creation and knowing. The final paper, on the other hand, is my take on the quest to break away from predominantly verbal academic publishing. Or, as Meyer et al. (2013: 536) put it: “[i]t [visualization] is an ideal way of reducing complexity and making the interpretive processes of researchers transparent for the audience”. While I do not fully agree with Meyer et al.’s (2013) notion that visualizations can reduce complexity – they can, but I do not believe we should always strive towards less complexity – what they are advocating is nonetheless a worthy cause.
5.5 Conclusion

The purpose of this chapter has been to expand the current theoretical foundations of OKC by bringing in two intellectual ventures: sociomaterialism and performativity. The rationale for this stems from questioning (Alvesson and Sandberg 2011; Sandberg and Alvesson 2011) the current norms and taken-for-granted assumptions in OKC that seemed to have assumed knowledge creation to be a socio-cognitive endeavor. This, then, led me to ask the following two questions: why is it only cognitive, and how does knowledge creation research understand the ‘social’. With the visual below I am recalling the contributions set out in the previous sections of this chapter.

![Figure 14. Contributions of this dissertation crystallized](image)

By both theoretically and methodologically exploring visual knowing and visualizing knowledge, I have sought to unravel an important aspect of OKC that has been left almost without attention in the literature. Building on this, I have argued that the visual in OKC is inherently connected to sociomateriality, as it is dependent on artifacts and objects external to individuals. This approach questions the currently prevailing understanding of knowledge creation as a cognitive process that in the end yields externalized knowledge as outputs.
I am not rejecting the cognitive dimension of OKC with the framework presented in this chapter. On the contrary, the framework embraces both the cognitive and the material as the ‘social’ is equally about mental metaphors and artifacts that exist externally. As a result, I have highlighted practice and relationships between human actors and the sociomaterial world as visual knowledge exists as visual knowing between actors. With this in mind, I shall now turn to describe the methodology devised in this dissertation for studying visual knowing and visualizing knowledge.
6 Methodology

The purpose of this chapter is to build on the preceding chapters by introducing the methodology utilized in this dissertation. Informed by research in organizational knowledge creation, visual ethnography and Actor-Network Theory, I will illustrate here how these domains can be brought together to study visual knowledge creation and knowing. To analyze and theories on these topics I have employed interviews, observations, and visual data in the empirical papers of this dissertation.

As my stance towards the visual and knowledge/knowing here is a performative and sociomaterial one, they have been integrated into the research designs in each of the papers. That is to say, I have been interested in the performative power the visual has in various contexts, hence implying that I do not believe the visual to hold ‘merely’ representational capabilities. What is more, as performativity cannot be ontologically separated from actors (Barad 2003; Bolt 2004; Orlikowski and Scott 2008), this approach works extremely well with sociomaterial research that assumes interdependencies between human and non-human actors.

This chapter introduces the research design devised to study visual knowledge creation and knowing, and the data I collected to support my arguments. In the next section I will elaborate on my ontological and epistemological stance, after which I shall move on to focus on the research design. Thereafter, a section describes the data collection and analysis process, and this is followed by a section where I discuss the quality of my work. Finally I will present and discuss the limitations of my chosen methodology, and in the conclusion I summarize the chapter.
6.1 On the ontology and epistemology of visual knowing and visualizing knowledge

In terms of OKC, this dissertation has been influenced by Nonaka’s and his associates’ work (Nonaka 1991, 1994; Nonaka et al. 2000; Nonaka and Konno 1998; Nonaka and Takeuchi 1995) based on their theorizing on knowledge creation taking place within and between organizations. However, where I differ from and build on their work is that my stance towards knowledge creation and knowing is a performative one: the production of knowledge-related artifacts and knowing are explicitly reflexive processes between actors and the environment (Carlile 2002; Orlikowski 2006, 2007, 2010; Star and Griesemer 1989). Building on this line of thought, empirical data collected in this research is analyzed with the assumption that there is no single discoverable truth, but what we are seeing are processes of negotiation and renegotiation, situating and resituating, and power and control.

But what is this thing called ‘performativity’? Performativity can be seen as a counterforce to representationalism that subordinates objects to subjects: representationalism “orders the world and predetermines what can be thought. Representation becomes the vehicle through which representationalism can effect this will to fixity and mastery” (Bolt 2004: 13). Approaching performativity from an art perspective, Bolt (2004) questions why representation has been left largely untouched, and the same can be seen in organization studies, where the absence of materialism in theorizing has been noticed (Barad 2003; Orlikowski 2007). Criticizing the absence of materiality Orlikowski (2007: 1436) notes that “[A] quick perusal of much organization literature reveals the absence of any considered treatment or theorizing of the material artifacts, bodies, arrangements, and infrastructures through which practices are performed”. Building on this, performativity questions, and goes beyond, the notion that objects are subjugated to subjects, individuals.

In knowledge creation literature knowledge has been treated, albeit implicitly, representationally: knowledge can be externalized to objects and therefore every subject has the potential to understand and absorb that knowledge. As a result, it is social interaction – without the material world – that matters when it comes to knowledge creation. With this notion I do not wish to portray knowledge creation research as a unified stream with a single agenda: as has been discussed previously here and elsewhere (Nonaka and Peltokorpi 2007) knowledge-related studies are more of a
'mixed bag’ with different ontological and epistemological traditions contributing to it. However, what does seem to bring them together is their stance on materiality, as it is a topic that has not been discussed extensively before, yet its importance has been acknowledged (Nonaka and Takeuchi 1995; Tsoukas 2009).

Here, then, I have transcended representationalism – or “the apple-tree fallacy” (Tsoukas and Mylonopoulos 2004: S3) – by approaching the visual from the performative standpoint: I understand the visual to hold capability not only to represent but most importantly also to perform. Moving along this line of thought, performativity assumes connections between the material and the social, which is why objects cannot be analyzed in isolation from subjects. Hence, instead of talking about visual knowledge, I am adopting an ontological standpoint that focuses on visual knowing and visualizing knowledge. As a result, representation (‘knowledge’) begins to perform (‘knowing’, ‘visualizing’), and this forms the ontological foundations of this dissertation.

While in performativity the ontological standpoint to visual knowing and visualizing knowledge assumes the social as comprising both the social and the material (sociomateriality), what can we say about it from the epistemological perspective? Questioning the human-centered approach to knowledge, Bolt (2004: 49) draws on Heidegger’s notion of handlability:

'[R]adically, Martin Heidegger argues that it is not consciousness that forms the basis of our understanding. He proposes that we do not come to know the world theoretically through contemplative knowledge in the first instance. Rather, we come to know the world theoretically, only after we have come to understand it through handling.

For Bolt (2004: 50) this means “in practice we can never predict what will happen in advance. Rather, it is through the encounter between tools, materials, knowledges, objects and bodies that movement happens. The work of art is this movement”. Therefore, from the epistemological point of view, visual knowing and visualizing knowledge assume knowledge emerges from the interaction between subjects and objects, and this relation, drawing on the proponents of sociomateriality (Barad 2003; Bogost 2012; Latour 2005; Orlikowski 2007), forms the locus of performativity.

When I am investigating the visual data I have collected during the course of this dissertation, I am not treating it as merely representing something.
Instead, it is always in connection to other subjects and objects that the visual gains and gives meaning. Knowing and knowledge do not emerge without acknowledging the interaction between subjects and objects, and with this our focus in organizational knowledge creation theories can be shifted from seeing knowledge to exist ‘out there’ to existing in connections.

6.2 Research design

6.2.1 Overview of the research design

In designing the research methodology for this dissertation my work has been greatly informed by that of Silverman (2010a, 2010b, 2011) on qualitative methodologies and that of Pink (2007, 2009, 2011) on sensory and visual ethnography. Furthermore, as I am interested in the visual as part of enacted knowing (Orlikowski 2002), the research methodology in this dissertation adopts a performative lens to study the visual: “knowing is an ongoing social accomplishment, constituted and reconstituted in everyday practice” (Orlikowski 2002: 252). That is to say, I am looking at the visual as a form of communication that enables knowing to emerge in various practices. What is more, as this dissertation argues for mainstreaming the visual in organizational knowledge creation research, it is worthwhile to further elaborate on the approach I have chosen to study visual communication.

6.2.2 Levels and units of analysis

I have approached visual knowing and visualizing knowledge in this dissertation from the individual and suborganizational levels, since in sociomaterial research multiple levels can be present at the same time due to its flat ontological standpoint (Latour 2005). Units of analysis, on the other hand, focus on individuals and objects because I have sought to explore the visual through materiality. I will now go through levels and units of analysis in each of the three empirical papers in detail.
In the first paper, which focused on visualizing knowledge about sustainability, the level of analysis focused on the individual, as I was interested in the different manifestations of knowing in PechaKucha presentations. The unit of analysis, then, in this case was the PechaKucha presentation.

The level of analysis in the second paper was suborganizational, meaning that I was looking at three physically co-located academic units from the same university. Although the units had their own identity, it could also be argued that they shared a common identity as most of the organizational activities involved all three units. Here, the unit of analysis was the set of thirteen pictures taken from the constructs of organization built with Chigo blocks.

The third paper looked into visualizing knowledge about cultures in a financial unit within an MNC. This unit was located in one of the company’s manufacturing plants in Tokyo, and hence the level of analysis was one team within a subsidiary. The unit of analysis in this case was the individual, as my focus was on investigating the various ways knowledge about cultures was visualized.

To sum up, I studied visual knowing and visualizing knowledge from three different levels and in two different units. Although the levels cannot be compared as such, research design from this perspective nonetheless matches both knowledge creation and sociomaterial research as they both deal with multiple levels.

6.2.3 Data collection

As one of my aims in this dissertation is to bring the visual to the core of OKC research, I have collected written, oral, and visual data in order to argue why the visual should be included in studies exploring knowledge creation and knowing.

Currently we can find two broad research paradigms for studying the visual in various environments (Banks 2008; Barnhurst, Vari and

---

11 PechaKucha presentation is a form of PowerPoint presentation that consists of twenty slides that are each shown for twenty seconds.
Rodriguez 2004; Bell and Davison 2012; Davison et al. 2012) that are portrayed with examples in the table below.

**Table 2. A categorization of visual research**

<table>
<thead>
<tr>
<th>Pre-existing visual data</th>
<th>Research-generated visual data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Key characteristics</strong></td>
<td><strong>Key characteristics</strong></td>
</tr>
<tr>
<td>• Focuses on pre-existing visual data found in organizations</td>
<td>• Usually employed alone or with ethnographic methods</td>
</tr>
<tr>
<td>• Used in connection with other non-visual research methods</td>
<td>• Evokes constructed meanings through the interplay between the respondent and the researcher</td>
</tr>
<tr>
<td>• Grants ‘voice’ to individuals behind the visual</td>
<td>• Goes beyond linguistic practices</td>
</tr>
<tr>
<td>(Steyaert et al. 2012)</td>
<td></td>
</tr>
<tr>
<td>Guthey and Jackson (2005) on CEO portraits</td>
<td>Meyer (1991) on the visual in organization research</td>
</tr>
<tr>
<td>Sunaoshi et al. (2005) on the visual in heavy industry</td>
<td>Slutskaya, Simpson and Hughes (2012) on photoelicitation and working men</td>
</tr>
<tr>
<td>Whyte et al. (2008) on project-based work</td>
<td>Venkatraman and Nelson (2008) on photo-elicitation and Starbucks</td>
</tr>
</tbody>
</table>

As the table above illustrates visual data can be collected either from pre-existing sources (such as newspapers, websites, doodles, and paintings) or can be generated by the researcher during the fieldwork period. Especially in such fields as anthropology, communication, and sociology (Berger 1972; Moore 2003; Moriarty and Barbatsis 2005; Pink 2009, 2011) the visual aspect of life has been acknowledged for quite some time now, whereas in management studies the visual is still a relatively nascent object of study (Bell and Davison 2012; Meyer et al. 2013; Steyaert et al. 2012).
Based on the categorization above, this dissertation consists of research-generated data since I am interested in the performative dimension of visual knowing and visualizing knowledge. That is to say, by producing the visual data during the data collection process I have been able to focus on the type of visuals that specifically deal with knowledge and knowing. The table below further elaborates on the type of data collected in each of the papers.

<table>
<thead>
<tr>
<th>Papers (in chronological order)</th>
<th>Nature of the study</th>
<th>Type of data</th>
<th>Time period</th>
<th>Author(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper #1</td>
<td>Conceptual</td>
<td>N/A</td>
<td>2009-2010</td>
<td>Miikka Lehtonen</td>
</tr>
<tr>
<td>Paper #2</td>
<td>Qualitative</td>
<td>Seven PechaKucha presentations and their slides, collected during a Finnish design export event in Tokyo, Japan, in October 2010</td>
<td>2010-2011</td>
<td>Miikka Lehtonen, Rebecca W. B. Lund and Taru Kesävuori</td>
</tr>
<tr>
<td>Paper #3</td>
<td>Qualitative</td>
<td>13 pictures of Chigo Blocks constructs of organizations made by the respondents</td>
<td>2011-2012</td>
<td>Miikka J. Lehtonen</td>
</tr>
<tr>
<td>Paper #4</td>
<td>Qualitative</td>
<td>Initial online questionnaire for the teams in India and Japan, on-site interviews with eleven informants in Japan complemented by pictorial data (three pictures per informant), and ethnographic observation with field notes in Japan</td>
<td>2011-2012</td>
<td>Miikka J. Lehtonen</td>
</tr>
</tbody>
</table>

Table 3. A summary of methodological choices in the papers
More specifically, in all of the empirical papers I have collected research-generated visual data, because one of my aims has been to show that visual research methods are equally capable of yielding insights about knowledge and knowing in organizations. What is more, as I do not adhere to the claim that knowledge is ‘out there’ but instead it exists within relations between actors, drawing on research-generated visual data to tease out knowledge and knowing seemed like the most suitable way to proceed.

The first empirical paper looks mainly at the aesthetic qualities of visualized sustainability in an attempt to understand what the output of knowing looks like. In the second paper, on the other hand, I approach the visual constructions of organizations as metaphors to knowing that emerge from the interaction between the respondent and the Chigo blocks. In the final empirical paper the visual plays a crucial role in terms of methodology, as I utilized visual research methods to theorize on how cultures are constructed in multicultural organizations and collaboration processes.

The first paper, published in Journal of Business Communication (Lehtonen 2011), is conceptual, and it mainly draws on semiotics (Peirce 1986) and knowledge creation research (Nonaka and Takeuchi 1995; Nonaka et al. 2000) to argue how competences can be communicated through PechaKucha presentations. The paper is a manifestation of my early works and thoughts within visual knowledge creation, and as such it illustrates the philosophical roots (pragmatism and semiotics) on which this dissertation draws. In addition, it also paved the way for the second paper that looks at actual PechaKucha presentations.

The second paper, originally presented at the Design Management Institute’s Symposium in Hong Kong (December 2011), investigates how individuals working in design-intensive companies visualize ‘sustainability’ in PechaKucha presentations. Data for this study was collected during Hirameki, a design export event led by Design Forum Finland, in Tokyo, Japan (October–November 2010). In total, seven PechaKucha presentations were videotaped for data collection purposes and the presenters also provided my co-authors and me with the original presentations. More precisely, data collection took place during a PechaKucha event we organized during Hirameki, and invitations to...
participate in the event were sent to the participating companies of Hirameki two months before the actual event took place. As we were interested in the visual manifestations of ‘sustainability’, we focused on collecting visual data that we dealt with as narratives. In addition, all of the presenters were informed of the presentation format and the purpose of the event as a form of data collection.

Research design in the paper number two was set up to collect new visual data as opposed to analyzing existing visual material (Bell and Davison 2012; Steyaert et al. 2012), and it was informed by knowledge creation theories (Amin and Cohendet 2004; Nonaka and Takeuchi 1995; Nonaka et al. 2008; Tsoukas 2009). The purpose was not to treat the PechaKucha presentations as static representations – or windows to the respondents’ world – but as objects that perform and enact sustainability (Bolt 2004; Emmison 2011).

The third paper, originally presented at the European Group for Organizational Studies conference in Helsinki (July 2012), adopted a somewhat experimental and unorthodox approach to collecting visual data on organizations by utilizing Japanese wooden blocks called Chigo blocks. Informed by studies dealing with researcher-generated visual data (Bell and Davison 2012; Davison et al. 2012; Emmison 2011), I invited members of an academic community to portray their organization by Chigo blocks. Furthermore, the informants also named their constructs after which the names were recorded and the constructs photographed.

Picture 11. An example of Chigo blocks constructs
The rationale for this venture came from both theory and practice: on the theoretical side, I was fascinated by the idea of going beyond language to study organizations as a majority of studies looking into the ontology of an organization employed written and oral texts as their empirical data (Atkinson and Silverman 1997; Schein 2004; Smircich 1983). In this regard, it is ‘easy’ to define one’s organization as a place where ‘passion for exploration’ is allowed, but what does it really mean? Given that organizations are much more than texts (Strati 1996, 1999), how could we step back and portray them through other communicative means (Barry and Meisiek 2010)?

From the practical perspective, on the other hand, motivation for this study came from the desire to explore alternative ways for individuals to ‘talk’ about their organizations and challenges related to them. Drawing inspiration from Barry and Meisiek (2010), Star and Griesemer (1989), and Carlile (2002) I undertook this study in order to highlight the power of transcending rituals and norms (Barry and Meisiek 2010: 1506):

*By calling attention to an analogous world that temporarily transcends immediate concerns, the artifact fosters mindfulness with a playful orientation, where new possibilities can imaginatively arise as the boundaries between ‘artifact’ and ‘analogy’ blur, and our habitual understandings are drawn into doubt.*

Building on this, data collection with the respondents proceeded as follows. First, I asked the respondents if they had a few minutes to spare for my experiment and after consent had been reached (everyone but one agreed to do the task) I showed them the blocks and told that they could use any amount of blocks they felt necessary (between 1 to 88 blocks). Once they were done with the construction I asked them to name it and to show me from which perspective I should photograph it. During the construction process I did not initiate any dialogue with the respondent, but instead allowed them to define the pace, as I wanted to provide them with a sense of being artists giving shape to their vision from the blocks. Finally, each process was treated with full anonymity and they were organized in such a space where no one else could come and see what was being done. As the topic (collaborative dynamics between three academic units that are physically close to each other) and the context (the researcher being part of the context) were highly sensitive, the research design here was built based on sensitivity.
Finally, the fourth paper, the most recent version submitted to the *Journal of International Business Studies* (April 2013) and then further refined, loosely followed Pink’s work on visual and sensory ethnography (Pink 2009, 2011) by looking at how cultures are performed in a Japanese unit of a North European company. More specifically, I was interested in how cultures (Brannen and Salk 2000; Collier and Thomas 1988; Jameson 2007; Witte 2012) are studied visually and what kind of knowledge is unearthed in this process. Data in this study consisted of observations at the Japanese site, an initial survey for the Japanese team under investigation and their Indian counterpart (the teams in India and Japan had the same manager who was located in Japan), interviews with the Japanese team members and pictorial data that were collected during the interviews.

Data collection within the team was initiated by an initial phone meeting with the team’s leader in early 2011, after which I signed a non-disclosure agreement (NDA) and proceeded with the survey that was aimed at employees located in India and Japan. Actual fieldwork, however, took place only in Japan, as I was mainly interested in investigating cultures in that team in situ. I spent two weeks onsite in May 2011 during which time I interviewed the eight members of the Japanese team (excluding one who was on sick leave during that period) and three expatriates who expressed interest in my research. I spent roughly eight hours every weekday with the team and during that time I conducted interviews and observed the team at work, as my desk was located right next to their unit. Moreover, after leaving the site I would write additional reflections at home every night.

Interviews with the respondents lasted between 15 to 90 minutes and they were all conducted in English. I recorded the interviews and transcribed them, after which I sent them to the respondents to check that everything was in order. During the interviews I presented the respondents with three drawing tasks that were based on matters closely related to their work (“a Japanese person walking home”, “an Indian project manager, and “our project’s budget has been exceeded”) in order to go beyond linguistic expression to unearth examples of visual knowing and visualizing knowledge. Below is an example of one of the drawings the respondents drew during the interviews.
I advised the respondents to use mainly visual communication, and in case they needed elaboration on the guidelines I asked them to use as little verbal communication (i.e. text) as possible so that they would focus their attention on visually expressing the task. The idea here was to look at knowing from the visual perspective by investigating how respondents ‘froze’ their knowing and knowledge of cultures into a single picture. Furthermore, pictures were analyzed from the perspective of performativity: what they visualize and what not.

### 6.2.4 Data analysis

The objective of data analysis has been to unearth ways by which my informants visualized various aspects of their work and how visuals perform and what kind of functions. To accomplish this, I have drawn on content analysis and visual narratives for studying the performative aspect of visual knowing and visualizing knowledge (Silverman 2010a). I will now explicate on the data analysis in each of the empirical papers separately.

First, in terms of the paper looking into visualized knowledge about sustainability, my co-authors and I analyzed the PechaKucha presentations by drawing on content analysis (Silverman 2010a: 243-244). Content analysis has the potential of revealing discrepancies and patterns within the data, which is why we utilized it in order to see whether there were any common patterns on how the informants visualized knowledge about sustainability.
The paper dealing with the Chigo blocks and organizational constructs, on the other hand, relied on visual narratives for analyzing the data. I was interested in seeing how my informants ‘tell’ a story by using almost no verbal communication at all. Accordingly, I analyzed the thirteen pictures both individually and together in order to find common patterns.

The last empirical paper, visualizing knowledge about cultures, was more challenging as it relied on mixed methods (Creswell 2008) for generating empirical data and content analysis for analyzing the data. This, however, enabled me to analyze a rich corpus of data encompassing visual data, interview transcriptions, and fieldnotes during my visit onsite. The main focus in data analysis was on the visual data although I contrasted it with the rest of the data in order to find what the visual data revealed about cultural knowledge.

6.2.5 Ethical issues

Ethics of research have been considered here in two aspects, data collection and writing, as they both inherently involve questions related to what is ethically just research and how we conduct research that does not cause harm to the participants. The discussion below on the ethics of this research is informed by Silverman’s (2010a: 152) five principles: participation to the study is voluntary, research participants are protected, benefits and risks to the informants is assessed, acquiring approval for the study, and ensuring no harm is inflicted.

During the three data collection processes I informed my respondents where I would be using the data and for what purposes, and from what perspective I would be analyzing the data. In addition, as I strongly believe in reciprocity, I devised the research design so that it would allow my respondents to get something in return for their time and effort. In the PechaKucha paper, for example, the presenters were able to showcase their company to an international audience, while in the Chigo blocks paper the respondents learned new means to reflect on their organization through visual and tactile means. During the data collection process for the third empirical paper, on the other hand, I produced a guideline for visual communication to use in their work.

12 For exemplars on studies with questionable ethics, see Humphreys (1970), Jones (1981) and Rokeach (1964).
The writing phase of this dissertation project has been informed especially by research on visual communication, because using visual data in research has the potential for revealing more than textual data. Moreover, and perhaps most importantly, analyzing and presenting visual data invites multiple interpretations and sometimes these can be harmful for the informants, which is why it is crucial to be sensitive to ethical issues, and therefore I decided to grant anonymity to all of my respondents. Below, I will further elaborate on the notion of ethics in each of the three empirical papers.

In the first paper I removed company logos from the PechaKucha presentations and referred to presenters as either designers or company representatives. Due to the fact that design industry is inherently based on uniqueness, full anonymity might be difficult to attain as someone can always recognize the works used in this paper. However, the respondents were informed that the presentations would be used in an academic publication and the topic of the study was not a sensitive one, which is why it is safe to say this study followed ethically sound practices.

The second paper was a bit more challenging from the ethics perspective as the level of analysis can be recognized by some, although I assured the participants that I would not use their names or any other recognizable information during the actual paper. As the topic was a relatively sensitive one – visual narratives of organizations – I wanted to make sure that the participants could create their constructs in situations where no one else would be able to see them.

Regarding the data collected for the third paper, I have signed an NDA, which is why the name of the company I was working with is omitted. In terms of the respondents, however, I did not sign any agreements, but after discussing this issue with the team’s manager I decided to treat the respondents anonymously by only referring to their profession and nationality, because revealing the name would not have brought anything substantial to the analysis. In terms of writing about this study, on the other hand, there is a potential danger that the team members can identify each others’ drawings, but I have made sure not to portray respondents in a bad light or analyze their drawing skills: instead, I have aimed at treating every

---

13 This is mostly a practical issue as a picture usually takes less space than an interview excerpt.
6.3 Evaluating the quality of the study

Much discussion has been devoted to quality and more specifically validity and reliability in qualitative research (Seale 1999; Silverman 2010; Spencer, Ritchie, Lewis and Dillon 2003; Symon and Cassell 2012). Notions of validity and reliability have been often found somewhat artificial in qualitative approaches as they have been originally adapted from quantitative studies where no difference is made between the natural and the social world (Silverman 2010a: 289), which is why Guba and Lincoln (1989 in Symon and Cassell 2012) offered to replace validity with credibility and reliability with dependability. While replacing words with new ones might be seen as an eccentric move, I believe this to contribute to a healthy discussion on quality in qualitative research in its own terms. As a result, as there are competing takes on how to evaluate qualitative research, I have opted for the following framework:

- Building useful theories (Silverman 2010a: 294-295)
- Credibility (Guba and Lincoln 1989)
- Dependability (Guba and Lincoln 1989)
- Making a practical contribution (Silverman 2010a: 297)

Accordingly, I am not evaluating the quality of my dissertation based on a rigid set of methodological questions, but instead I am following Silverman’s (2010: 293-294) notion of simultaneously assessing methodological, theoretical, and practical issues. I have chosen to follow this set of criteria as the contributions of the study are not only theoretical, but there are also practical ramifications for bringing the visual to the core of knowledge-related research in organizations.

First, in terms of building useful theories, Silverman (2010a: 303-304) argues that in social sciences research should strive for building new theories or in other ways increasing our understanding of social life. In this dissertation I have looked at visual knowing and visualizing knowledge in three empirical and two conceptual papers, and by doing so I have revealed the importance of the visual in knowing processes. By carefully reviewing
the existing theories and research on organizational knowledge creation I have unraveled some of the taken-for-granted assumptions regarding the visual and the social, which is why I turned to sociomaterial research and visual research methods to explain why knowledge creation is also inherently visual.

Second, credibility is evaluated based on the fit between constructions made by the informants and my reconstructions of them (Guba and Lincoln 1989: 237 in Symon and Cassell 2012: 206). From this perspective visual research data can be extremely powerful, as we can simultaneously show and tell what was happening in the research setting, and I have attempted to display as much visual data as possible in order for the reader to evaluate my arguments. With visual data, however, one has to be extra sensitive to ethical issues since visual data can easily reveal the informant and present them in a certain light. For example, in some of the PechaKucha presentations, corporate logos were visible, but here I have omitted them, as I wanted to respect the anonymity of my informants.

More specifically, credibility has been achieved through various means in the three empirical papers of this dissertation. First, in the study looking at visualized knowledge about sustainability, we used visual exemplars from the empirical data in order to allow the reader to judge whether the claims we set forth are sound or not. Second, in the paper where I look at visual narratives of organizations, credibility arose from the research setting’s physical premises: as the three academic units were located in the same floor, ‘organization’ in this sense was framed according to the floor and those three academic units, hence ensuring that we were talking about the same construct. Third, credibility was achieved mainly by drawing on progressive subjectivity (Guba and Lincoln 1989 in Symon and Cassell 2012: 207) in the study looking at how cultural knowledge was visualized. Research design in this paper was constructed based on an iterative process between my contact person in the organization and me, as we wanted to ensure both anonymity and that I would be asking the relevant questions. In addition, during the fieldwork period I took fieldnotes and kept a research diary to reflect on what had happened during each day.

Third, dependability – or reliability in more positivistic terms – refers to methodological transparency (Guba and Lincoln 1989). In Silverman (2010a: 287) dependability is achieved through fieldnote conventions and inter-coder agreement, while Guba and Lincoln (1989) talk about it as an audit process for research (Symon and Cassell 2012: 207). In terms of my
methodology, I have strived towards transparency in describing the actions I have taken and also explaining why they were taken. More specifically, dependability in the empirical papers was based on rich descriptions of the research context (Marschan-Piekkari, Welch, Penttinen and Tahvanainen 2004; Welch, Piekkari, Plakoyiannaki and Paavilainen-Mäntymäki 2011) and further bolstered by showing through visual data what kind of data was collected. This interplay between contextual description and explicit portrayal of visual data was present in all of the empirical papers.

Fourth, Silverman (2010a: 306-307) talks about practical contributions when evaluating the quality of research: “[R]esearch instruments...have an important part to play in areas like health which affect us all”. That is to say, quality of a qualitatively oriented study can be, in certain cases, evaluated based on what kind of knowledge it gives back to the practitioners. This stance can be interpreted as having a political undercurrent, and one of the contributions of my research here has been to increase practitioners’ awareness of the visual in their work and organizations. As a result, this work is political in the sense that I have sought to make people more aware of the visual in their work, as organizational life is to a large extent highly visual.

To conclude, when evaluating qualitative research scholars can adopt different criteria ranging from purely methodological evaluations to more large-scale assessments. Here I have chosen to follow the latter route by drawing on Silverman’s (2010a) holistic criteria, and Guba and Lincoln’s (1989) work on credibility and dependability, as they seemed to fit best with the research design and theoretical approach I have adopted.

6.4 Limitations

Based on my data and research design I have identified four limitations that can also be regarded as avenues for further investigation: no process data, focus on single organizations rather than translocal phenomena, the interviews in paper four were not carried out in respondents’ native language, and no theorizing on the perception side of the visual. Below, I will go through these shortcomings separately, after which I offer an account on how these limitations can be turned into new research opportunities.
First, process data has become an increasingly popular approach to studying organizational phenomena (Clarysse and Moray 2004; Langley 1999), and has the potential of studying the visual and/or multisensory from a novel perspective. As my research was carried out in various spatiotemporal contexts I did not collect process data in this study. Process data would have shed more light on how visual artifacts, for example, are created and treated over time: as it is now, I am ‘only’ capable of theorizing on the meanings and construction strategies within a certain point of time.

Second, my scope of analysis was focused on single organizations’ units and individuals within them without any inquiry into translocal forces shaping those units. In ANT, for instance, the translocal plays an important role, as actors are not assumed to be located only in certain local spaces, but are also connected to phenomena that travel through localities. For example, it would be worthwhile to study how visualized sustainability is constructed in design-intensive organizations in different parts of the world: this, in turn, would potentially enable us to see connections between actors that might not be connected through communicative acts, but through concepts that travel across these spatially bound local sites (Czarniawska 2004).

Third, in the paper number four the interviews were conducted in English as the company’s corporate language was English, although none of the respondents spoke it as their native language. Being able to conduct the interviews in the team members’ native language would have been advantageous in the sense that it would have contributed to achieving additional trust among the respondents while at the same time they could have been able to express themselves more elaborately in their own language. Thus, further inquiries along this path should attempt to conduct interviews in respondents’ native language.

Finally, I have not touched upon the perception side of the visuals or the artifacts in this study, but nevertheless it presents itself as a highly lucrative field of study, because OKC studies have not looked in detail at how knowledge is perceived. Here, studies drawing on psychology and sensory ethnography would be extremely useful, as well as research methods that utilize still and moving images.

By acknowledging the limitations of the research design I have devised for this dissertation I am opening fruitful avenues for further investigations into visual knowledge creation and knowing in organizations. As I have
mentioned earlier, we have just begun to open the black box of the visual in organizations, and much work needs to be done, but hopefully the limitations presented above serve as a springboard for further inquiries.

6.5 Conclusion

The purpose of this chapter has been to illustrate the methodological framework by arguing why it is a sound option for studying visual knowledge creation and knowing in organizations. Although we are starting to witness increasing numbers of organization and IB studies investigating the visual or the senses in organizations (Ewenstein and Whyte 2007, 2009; Meyer et al. 2013; Steyaert et al. 2012; Sunaoshi et al. 2005; Whyte et al. 2008), our discipline, nevertheless, is still lacking solid theoretical and methodological foundations that would enable us to look at these issues credibly.

In this dissertation I have adopted a performative stance to visual knowledge by not treating it as only representing something but also as enabling actions. Hence, when looking at the pictures analyzed in the fifth paper, for example, I did not look only at their representative capabilities but most importantly what they perform, and what they reveal and hide. Furthermore, this approach to the visual has been matched with the sociomaterial approach that assumes material to be an integral part of the social. Although my main interest focuses on visualizing knowledge and visual knowing, I have, however, also utilized other research methods that draw on non-visual techniques: this decision was justified with the notion that the visual is not a separate entity, but instead is intrinsically connected to other means of communication.

When it comes to evaluating the quality of the research design, it can be said that visual data is extremely potent also from this perspective as it is easy to show what kind of data has been collected. By showing the type of visual data I have collected during the data collection processes, I am also making it possible for the reader to evaluate better the claims I have made based on my data.
7 Concluding remarks

7.1 Contributions to organizational knowledge creation research

This dissertation has explored visual knowing and visualizing knowledge from the sociomaterial perspective in knowledge-intensive organizations. I started with the following research question:

What kind of sociomaterial and performative practices of visual knowing and visualizing knowledge are there in knowledge-intensive organizations?

Building on this, I ventured on to collect empirical data from three organizational settings to illustrate how the visual could be studied and why we need to study it in the light of OKC theories. It seems IB and organization studies are starting to become more receptive to the visual, which is why a lot of work still needs to be done in order for the visual to become better incorporated into our analysis and theorizing. Accordingly, in this and the following sections I will discuss the contributions and implications of this dissertation, and finally I offer some concluding remarks by suggesting potential future research agendas.

This dissertation has yielded two major contributions to OKC research: sociomaterialism, and the visual. First, by drawing on sociomaterial research, I hope to have shown that knowledge creation is not only cognitive, but also a sociomaterial practice. For example, how can we theorize on knowledge creation within the bread-making machine context if we do not take into account the role the actual machine plays in the process? Or is it possible to talk about visual knowing without talking about the tools involved in visualizing knowledge? Furthermore, what about all the prototypes, mockups, and storyboards used in the process? If we were
blind to these in our research, our understanding of knowledge creation remains awfully limited.

Second, in terms of the visual, much attention has been granted to seeing knowledge existing ‘out there’, while in fact knowledge does not exist independent of actors, but rather as a process – knowing process – between different actors. Here the connection between the visual and sociomaterialism becomes apparent: knowledge creation does not imply that new knowledge is created to the ‘external world’, but instead what is created is new artifacts that in turn enable knowing to emerge between the knower and the artifact. Thus, it is not only about the cognitive dimension in this relationship, but the performative visual dimension is also of importance: the visual is not only a representational text, but rather a form of communication that evokes and revokes action.

Accordingly, in the next two sections I shall further elaborate on the implications this research has for practitioners and researchers, and what kind of issues we could study in the future within the domain of the visual.

### 7.2 Implications for research and practice

In terms of academic implications, research looking at the visual within the OKC context yields the research community with both methodological and theoretical contributions that can push OKC research forward. A lot of attention has been paid to leadership (von Krogh et al. 2012; Nonaka and Takeuchi 2011) and social processes (Tsoukas 2009) within OKC, but currently our conception of knowledge and knowing has been mainly limited to the cognitive. However, when we acknowledge the active existence of the visual and sociomateriality, we are standing at the verge of new theoretical and empirical insights. Furthermore, by re-evaluating – and re-reading – Polanyi’s archaic tacit-explicit dualism we are also compelled to move away from the tautological ‘knowledge is either tacit or explicit’ argument.

As has been discussed earlier in this dissertation, the performative approach to the visual is but one analytical lens and there are also other equally rewarding standpoints. Regardless of one’s analytical foundations, research looking into the visual in OKC – and in IB and organization studies more broadly – is needed because the visual is an integral part of organizational life: although organizations are, to a large extent,
constructed through linguistic means, the visual, however, is everywhere and it can be safely argued that all organizations also have a visual dimension to them. This also implies that knowledge creation in organizations is of a visual nature: we see objects and other people around us; we create storyboards, doodles, and prototypes; and interact with corporate logos and brands.

The all-pervasive nature of the visual in organizations and knowing processes means that we as scholars need to rethink the way we study knowing and knowledge creation. During the course of this dissertation I have experimented with various visual methods – drawings, PowerPoint presentations, physical objects – and similarly scholars working within design, anthropology, and sociology have developed research methods that go beyond texts. Integrating the visual into research design has at least two major implications for doing and writing research: first, it expands our empirical domain, and second, using visual empirical data when writing research has the potential for creating more compelling and stronger arguments. For example, instead of telling about my data, I have used actual pictures so that the reader can be better informed of my line of thought.

When it comes to practical implications, paying more attention to the visual can not only foster employees’ creativity, but also new ways of organizing, as the visual possesses certain qualities that enable individuals to see old matters in a new light. But we should not be lulled to the idea that the visual brings only good things: for some, the visual might be harmful, as there are people who do not cope with visual communication or whose visual literacy does not match the organization’s expectations. When we talk about the visual’s implications for practice, we should not only focus on the good things, as there will most certainly be matters that are also harmful. Nonetheless, I strongly believe that by taking the visual into account, organizations can break away from the linguistic cage that has forced people to adopt – at times void of meaning – organizational jargon.

7.3 Conclusions – where do we go from here?

Throughout this dissertation I have sought to argue for a more central role for the visual in IB and organization studies and, as others have noted (Meyer et al. 2013), this is an important yet challenging a task, as our
disciplines have been plagued with textual fetishism for so long. This has meant, among other things, that we are lacking solid foundations for the visual in our disciplines (Meyer et al. 2013: 537):

However, despite a growing number of contributions from an impressive variety of conceptual and methodological perspectives, neither a clear and broadly shared “body of knowledge” has emerged yet, nor has a common “language” of how to talk about visuals been established.

The same idea has been echoed elsewhere (Davison et al. 2012; Steyaert et al. 2012), so yours truly and Meyer et al. (2013) are by no means alone. While I do not naïvely believe this dissertation to solidify the foundations for visually oriented research in IB and organization studies, I do believe, however, that once we reach critical mass the visual can no longer be ignored or used as anecdotal evidence. Bearing this in mind, I will now offer three stimulating and potentially rewarding avenues for further research.

First, as has been convincingly argued before (Bolt 2004; Steyaert et al. 2012) and previously in this dissertation, approaching the visual from the performative lens opens up avenues for investigating affordances that might not be visible if we adopted a representationalist viewpoint. This is not to say a representationalist take on the visual is not useful or relevant: on the contrary, but we need to go beyond representation if we are to grasp the true potential of the visual. Hence, crucial question is not what visuals represent, but what they do.

Second, adopting a sociomaterial – or ontologically flat – standpoint to knowledge creation and knowing in organizations has not been adequately investigated to date, and as such it definitely shows promise. Some bold research openings have already been made (Amin and Cohendet 2004; Orlikowski 2006, 2007), but more mainstream OKC theories should still gain much intellectually if they were unpacked and repacked with a sociomaterial approach embedded within them. Moreover, as I have argued earlier, knowledge creation and knowing are not purely cognitive, but also sociomaterial processes where machines and other non-human actors also play a role.

Third, and finally, incorporating visual methods to studies in general within IB and organization studies should be by now no less than self-evident. Of the three avenues presented here, this one might be the one
with most far-reaching implications and consequences, as it requires from
us that we develop new skills in terms of methods and theorizing. However,
this path might be a necessary, and highly lucrative, one, as Buckley (2002:
371) has noted the absence of grand ideas in contemporary IB: “[p]erhaps
there is a need for international business researchers to discover a new 'big
question’”. Although I do not fully agree with the possibilities Buckley
(2002) wished to open up for IB scholars, I do agree with his claim that we
need to reflect on the future of IB – if we truly want one.

If I were to pin down my hopes for the future of the visual in IB and
organization studies into two points, what would those be? First, I hope this
dissertation serves as a source of inspiration for current and future scholars
within our fields to incorporate the visual into their research. Not only
would it warm my heart, but also, most importantly, it would enable us to
shift from importers of research ideas to major exporters. Second, as I have
been experimenting with visual methods and visual representations of
research, my sincere hope is that this encourages my peers to do the same.
As Atkinson and Silverman (1997) claimed almost two decades ago that we
are living in an interview society, I hope to have shown during the course of
this dissertation that it is indeed possible to move beyond the text and treat
the visual as a fully-fledged part of the data.
8 Summary of papers

8.1 Communicating competence through PechaKucha presentations

This conceptual article titled *Communicating competence through PechaKucha presentations* is a single authored piece on how individuals can visually communicate their competences by utilizing the PechaKucha presentation format. It was published in the *Journal of Business Communication* in a special issue on displaying competence, edited by Geert Jacobs, Chris Braecke and Sylvain Dieltjens. I was invited to submit a manuscript to the special issue by the editors, together with other participants in the Discourse in Organizations workshop that was held in Ghent, Belgium, in September 2009.

The purpose of this paper was to discuss how knowledge of our competences (e.g. what we can/ cannot do) can be communicated visually and what kind of implications this has for organizational activities.

8.2 Visualizing knowledge about sustainability: case PechaKucha presentations

Originally presented at the Design Management Institute’s Symposium in Hong Kong (December 2011), this revised version looks at how individuals working within design-intensive companies visualize their understanding of ‘sustainability’. Drawing on seven PechaKucha presentations (a form of PowerPoint presentation consisting of twenty slides that are shown twenty seconds each) we set out to explore visual discourses concerning visual knowing of sustainability.
Our findings suggest that the organizational context inspires and influences the individual’s conception of sustainability. For some, it can be understood as market sustainability (how do we maintain and/or increase our market share?), while others draw on it as a source of inspiration for their products. Consequently, the paper serves two purposes: on the one hand, it further deepens our understanding of the intersection of visual communication means and knowledge creation, and on the other hand, our findings contribute to the growing body of literature on sustainability, but from a fresh perspective.

8.3 How do people construct their organization using Chigo blocks? An exploratory investigation into visual knowing

This paper was originally presented at the 28th EGOS Colloquium in July 2012 in Helsinki, Finland, and it looks at alternative ways to ‘talk’ about organizations. I invited members of an academic community to portray their organization using Japanese wooden blocks, Chigo Blocks. I was interested in exploring what happens when we cross the abstract-concrete interface by using a tangible medium to construct concrete from abstract.

Moreover, is knowledge creation geared towards the organization or the individual? This led me to look at Chigo blocks as a transformative medium for creating new knowledge. Bringing together research on knowledge and mindfulness, I argue that knowledge creation research has paid too much attention to reason while emotions have been marginalized. Findings from this study highlight the importance of simultaneously being present and distancing oneself in terms of creating new knowledge.

8.4 A visual approach to studying cultural knowing at workplaces: Evidence from Japan

The most recent version of this paper was submitted to the *Journal of International Business Studies* (JIBS) in April 2013 after a revise and resubmit decision from JIBS’s Special Issue on language matters (winter 2012). This paper was afterwards further revised, and it looks at culture and
knowledge from the visual perspective by adopting a performative approach.

Language and culture has been a curious couple in international business (IB) research for a while now, and it seems that written and oral communication have been given precedence over other forms of communication when it comes to culture. This line of thought, however, is problematic for two reasons: first, it neglects the role the visual has in constructing and negotiating reality and second, it limits the array of methods we have for collecting research data. Accordingly, the purpose of this paper is to lay the foundations for a visual approach to cultures and cultural knowing in workplaces.

8.5 Ultra Innovation Force 4: Aalto & i.school saving the future of shopping + accompanying text

This paper discusses unorthodox ways of disseminating research findings by taking as an example a manga – a form of Japanese cartoon – that was published based on a workshop held by a team from Aalto University (Helsinki, Finland) in the University of Tokyo’s i.school program (Tokyo, Japan) in fall 2011. Several scholars within International Business (IB) and organization studies have already questioned the textual fetishism in academia, but to date experiments with other forms of communication are still few and far between. This paper argues that manga – and cartoons in general – can be utilized equally as well as purely verbal communication, as they are not culturally less sophisticated or information rich. On the contrary, visual communication of research can complement more traditional forms of research dissemination by opening up new avenues for further theorizing and information exchange.


Baer, J. (1993), Creativity and Divergent Thinking: A task-specific approach, Hillsdale: Lawrence Erlbaum


Barad, K. (2003), 'Posthumanist performativity: Toward an understanding of how matter comes to matter', Signs, 28 (3): 801-831


Berg, M. (2012), Human abilities to perceive, understand, and manage
**multidimensional information with visualizations**, Doctoral dissertation, Espoo: Aalto University School of Science


Bogost, I. (2012), *Alien Phenomenology: Or what it’s like to be a thing*, Minneapolis: University of Minnesota Press


Brown, J. S. and Duguid, P. (1991), ‘Organizational learning and


Deleuze, G. and Guattari, F. (1987), A thousand plateaus, Minneapolis: University of Minnesota Press

Dewey, J. (2009), Art as experience, New York: Perigee Books


Drake, G. (2003), ‘“This place gives me space”: place and creativity in the creative industries’, Geoforum, 34 (4): 511-524


Studies, 36 (6): 676-687

Gagliardi, P. (1990), Symbols and artifacts: Views of the corporate landscape, Berlin: de Gruyter


Gerybadze, A. (2004), 'Knowledge management, cognitive coherence, and equivocality in distributed innovation processes in MNCs', Management International Review, 44 (3): 103-128

Gettier, E. (1966), 'Is justified true belief knowledge?', Analysis, 23 : 121-123


Gibson, J. (1979), The Ecological approach to visual perception, Boston: Houghton Mifflin


and learning', *Organization Science*, 7 (5): 502-518


Lietsala, K. and Sirkkunen, E. (2008), *Social Media: Introduction to the tools and processes of participatory economy*, Tampere: University of Tampere


Mahnke, V. and Venzin, M. (2003), ‘Governance of knowledge-teams in the


Minbaeva, D., Pedersen, T., Björkman, I., Fey, C. and Park, H. (2003),


Mowery, D. C., Oxley, J. E. and Silverman, B. S. (1996), ‘Strategic alliances and interfirm knowledge transfer’, *Strategic Management Journal*, 17 (Special Issue): 77-91


Schein, E. H. (2004), *Organizational culture and leadership*, San Francisco,
CA: Jossey-Bass


Tsoukas, H. (2009), ‘A dialogical approach to the creation of new
knowledge in organizations’, Organization Science, 20 (6): 941-957


Tuft, E. (2001), The visual display of quantitative information, Cheshire, CN: Graphics Press


Villi, M. (2010), Visual mobile communication: Camera phone photo messages as ritual communication and mediated presence, Doctoral dissertation, Espoo: Aalto University School of Art and Design


Ware, C. (2004), Information visualization: Perception for design, Amsterdam: Elsevier


cost approach’, *American Journal of Sociology*, 87 (3): 548-577


Part II: Papers


Paper 2: Lehtonen, Miikka; Lund, Rebecca; and Kesävuori, Taru (Unpublished). Visualizing knowledge about sustainability: case PechaKucha presentations. An earlier version of this paper was presented at the Tsinghua-DMI International Design Management Symposium, 3-5 December 2011, Tsinghua University, Hong Kong.

Paper 3: Lehtonen, Miikka J. (Unpublished). How do people construct their organization using Chigo blocks? An exploratory investigation into visual knowing. An earlier version of this paper was presented at the 28th EGOS Colloquium, 5-7 July 2012, Aalto University and Hanken School of Economics, Finland.


DOI:10.1177/0021943611414542.

Copyright © 2011 SAGE Publications. Reprinted with permission.
Communicating Competence Through Pechakucha Presentations
Miikka Lehtonen

DOI: 10.1177/0021943611414542

The online version of this article can be found at:
http://job.sagepub.com/content/48/4/464
The aim of this article is to contribute to laying a theoretical foundation for visually communicating competence through PechaKucha presentations. PechaKucha is a PowerPoint presentation format consisting of 20 slides that are shown for 20 seconds each. This article argues that the PechaKucha presentation format can be aligned with Nonaka’s SECI model (socialization, externalization, combination, internalization) to look at competences from a knowledge creation perspective. From a managerial perspective, the theoretical discussion in this article can be used in organizational settings to share knowledge through PechaKucha presentations between people with different backgrounds. On the other hand, from a research perspective, this article has at least two implications. First, by combining semiotics with knowledge management this article attempts to renew the call for a semiotic/linguistic perspective to knowledge management. Second, by combining visual communication with written and oral communication, the author calls for a more holistic approach to knowledge-related research in organizational settings.

**Keywords:** visual communication; knowledge management; culture; competence; multinational corporations

Multinational corporations (MNCs) can be regarded as complex ecosystems that gather people from all over the world with different backgrounds and competences. Previously, nationality was seen as the main source for cultural differences, but during recent years our understanding of cultures in organizational settings and multicultural collaboration has been enhanced remarkably (Holden, 2002). How individuals communicate with each other in multicultural settings (Louhiala-Salminen, Charles, &
Kankaanranta, 2005; Peltokorpi, 2007) and how we should understand culture (Jameson, 2007) are topics that have received growing interest during the first decade of the current millennium.

Furthermore, while cultural knowledge is becoming an important asset for global workers to possess, at the same time questions regarding effective knowledge sharing and creation have also become crucial (Gupta & Govindarajan, 2000; Holden, 2002; Leonard & Sensiper, 1998). Thus, it seems that individuals working in multicultural settings are—in addition to their daily work—required to effectively share and create knowledge with different kinds of people while at the same time be capable of understanding cultures other than their own. To make matters more challenging, knowledge workers (Alvesson, 1993, 2000) are supposed to understand each other’s competence.

By discussing PechaKucha presentations as a common ground to communicate knowledge visually, this article attempts to increase our understanding of visual knowledge communication when using PechaKuchas in communicating competence. Competence, in this context, should be understood as a type of knowledge that both enables individuals to understand their colleagues’ professional capabilities and is closely linked to notions of credibility and professionalism. Previously competence studies (Boyatzis, 1982) have not dealt with the intersection between knowledge and competence, but in this article, I wish to argue for a connection between those two that is facilitated during PechaKucha presentations. Thus, for clarity’s sake, the reader should keep competence in mind when knowledge is being discussed and vice versa.

1. Multinational corporations (MNCs) can be regarded as complex ecosystems that gather people from all over the world with different backgrounds and competences.

However, in terms of knowledge sharing and creation, cultural and linguistic matters have received less attention, thus resulting in two gaps that this article aims to bridge by presenting the PechaKucha presentation format as a means to share knowledge and communicate competences. First, in terms of communication, knowledge management literature has so far
focused mainly on written and oral communication, thus undermining visual communication. Despite several scholars’ efforts (Eppler, 2006; Eppler & Platt, 2009; Whyte, Ewenstein, Hales, & Tidd, 2008), visual communication research in knowledge management is still minuscule and mainly focused on its instrumental aspect. Second, recent studies (Lehtonen, 2009; Lehtonen & Kampf, 2009; Louhiala-Salminen et al., 2005) show that members of multicultural teams have a tendency to interpret written and oral communication differently, thus resulting in challenges in collaboration and understanding each other’s competences. Indeed, as Jorna (1998) has claimed, Nonaka’s knowledge-creation theory (Nonaka, 1994; Nonaka & Takeuchi, 1995; Nonaka & Toyama, 2005; Nonaka, Toyama, & Hirata, 2008) lacks a semiotic dimension and this in turn can lead to situations where both researchers and practitioners alike neglect differences between individuals. The lack of semiotics can also be seen in other knowledge-creation theories and concepts (Choo, 1998; Wenger, 1998), which has resulted in an implicit assumption that transmitted knowledge equates with received knowledge. Thus, for clarity’s sake, semiotics within the context of this article should be understood as the study of culturally produced signs and symbols that are attached to both tangible and intangible objects.

Given that our current understanding of knowledge sharing and creation in multicultural settings is expanding rapidly, why do scholars still ignore semiotics in knowledge sharing? Moreover, why are we scared to both investigate and use visual knowledge communication?

The remainder of this article is structured as follows. First, the PechaKucha presentation format is presented and discussed, after which current literature on knowledge management is reviewed. Second, the proposed semiotic extension to Nonaka’s theory of the knowledge-creating firm (Nonaka & Toyama, 2005; Nonaka et al., 2008) is introduced and related to PechaKuchas. Then, in the third section, PechaKucha presentations and their applicability in terms of knowledge sharing and creation will be discussed. Finally, future directions and concluding remarks mark the end of this article.

2. In terms of communication, knowledge management literature has so far focused mainly on written and oral communication, thus undermining visual communication.
PECHAKUCHA—20 SLIDES, 20 SECONDS EACH—AND THE SECI MODEL COMBINED

The PechaKucha presentation format was originally created in Tokyo in February 2003 by two architects, Astrid Klein and Mark Dytham, from Klein Dytham architecture. The format itself is simple: 20 images or slides are shown 20 seconds each, thus resulting in a presentation of no more than 6 minutes and 40 seconds. The idea was that architects should spend less time on presenting their ideas and more time on developing those ideas through discussion and dialogue with the participants. The term PechaKucha (ぺ cháクチャ) applies well to this concept as it comes originally from Japanese and it is an onomatopoeic word for the sound of conversation.

PechaKucha presentations are typically given during specific events called PechaKucha Nights. Today, PechaKucha Nights are organized in more than 230 cities all over the world. However, despite the concept’s relatively widespread status, it is still mainly used by individuals working within various creative industries such as architecture, music, and marketing. While there is a growing interest in PechaKucha and PechaKucha Nights as platforms to share knowledge, no research based on them has been published so far. One possible explanation for this could be that they have not been used in corporate settings.

With this theoretical article, I aim to argue that PechaKucha can be harnessed for corporate uses by regarding it as a common ground for people with different backgrounds to share and create knowledge with each other and about each other. Drawing on the discussion in this article, it can be argued that PechaKucha can be used in organizational settings in brainstorming sessions, multidisciplinary teams, and training sessions, to name but few possible applications.

I argue that written and oral communication might not always be sufficient to help one’s audience grasp the information that is regarded as knowledge, because without visual cues it can be difficult to illustrate the context where the knowledge was acquired. In terms of cultural knowledge, for example, it may be more fruitful for presenters to communicate holistically—that is, using written, oral, and visual communication—how they understand what their responsibilities require from them.

PechaKucha presentations are usually followed by informal discussion, where participants can focus on matters they find relevant. In terms of Nonaka’s SECI model (socialization, externalization, combination, internalization), this refers to the combination phase, “Explicit knowledge is collected from inside...
or outside the organization and then . . . processed to form more complex and systematic sets of explicit knowledge” (Nonaka et al., 2008, p. 23). In other words, after the presentations, when each presenter’s knowledge has been made explicit, individuals can deepen their understanding by discussing the presentations or parts of them, for example.

Finally, during the internalization phase, individuals reflect on the presentations and the discussion to situate this new knowledge in their existing contexts (Nonaka et al., 2008). This knowledge, then, can be used as a platform to start the process again.

3. Written and oral communication might not always be sufficient to help one’s audience grasp the information that is regarded as knowledge, because without visual cues it can be difficult to illustrate the context where the knowledge was acquired.

Above, I have attempted to illustrate how PechaKucha presentations can be aligned with Nonaka’s SECI model (Nonaka & Takeuchi, 1995, Nonaka, Toyama, & Konno, 2000; Nonaka et al., 2008). While the model itself seems to be rather linear, it should be pointed out that in reality it is usually continuous (hence Nonaka et al., 2000, refer to it as a spiral) and overlapping. Therefore, it might be impossible to separate the different phases from each other. Thus, the SECI model should be understood as a visual construction not as an actual pattern of thought.

**COMPETENCE, CULTURE, AND KNOWLEDGE**

I have argued that PechaKucha presentations can be used in corporate environments to share knowledge about culture and competences among the participants, but how should we understand them? Especially in multicultural settings culture, knowledge and competence should be understood as interrelated concepts. While most of the knowledge management literature—for conceptualization purposes—has reduced culture’s role in international business settings to a single variable, Holden (2002) suggests
that this kind of reductionist approach is problematic since culture is one of the most crucial elements in knowledge management. Thus, making culture a resource, rather than an obstacle, knowledge management requires both managerial and academic efforts.

If we presume Holden’s (2002) argument regarding culture as a simple variable in knowledge management to be true, what kind of consequences does this have for communicating competences in multicultural settings? Or in other words, if culture is seen as an obstacle, how are companies able to tap into their employees’ multicultural pool of knowledge and experiences?

There are, roughly speaking, two ways of understanding and defining culture. Following the pioneering works of Hofstede (1980), Hall (1959), and Trompenaars (1994), researchers have—until recently—tended to equate culture with country or nationality. This type of cultural naiveté has created a situation where researchers across disciplines (King, 2008; Sussman, 2000) reduce culture as a variable that only covers nationality, or as Hofstede (1994 in Holden, 2002) puts it, “In research on cultural differences nationality—the passport one holds—should therefore be used with care.” Thus, while Hofstede himself has warned of the dangers related to oversimplifying culture, scholars have been too content with working only with his country-specific scores (Hofstede, 2002; McSweeney, 2002).

In contrast to the studies regarding culture either as a static variable or an equation to nationality, another strand of research has emerged already during the second half of the 1990s. Research conducted by various scholars all over the world (Holden, 2002; Jameson, 2007; Kampf & Kastberg, 2005; Lehtonen, 2009; Louhiala-Salminen, 1997) has attempted to move toward a more dynamic conceptualization of culture. In response to equating culture with nationality, Louhiala-Salminen (1997) argues that culture is more much more than nationality. Moreover, Kampf and Kastberg (2005) used Hofstede’s systemic model of culture in their research, thus attempting to move the focus from Hofstede’s quantitative data to his actual work on culture. Furthermore, Holden (2002), as mentioned above, understands culture in relation to knowledge management, implying that culture is not only an obstacle but also a source for learning and inspiration. Finally, Jameson (2007) discusses the concept of identity where culture is a contributing, not a defining, element.

What we are now witnessing is a shift in our understanding of culture. Previously, culture was seen as something imposed on and inherited by individuals, but today researchers (Holden, 2002; Jameson, 2007) are suggesting that people are participating in “constructing” cultures. Furthermore, we are also moving from national cultures to multiple cultures, implying
that we are interpreting the world around us based on our individual cultural backgrounds that comprise elements such as occupation, educational background, nationality, and native language, for example.

While this shift does justice to individuals over cultural stereotypes, it also brings with it a certain semiotic or cultural fragmentation: given that we interpret and make sense of our surroundings based on our individual backgrounds, how are we able to convey that to others and vice versa? Consider the following definition of effective job performance by Boyatzis (1982, p. 12), for example: “effective performance of a job is the attainment of specific results (i.e., outcomes) required by the job through specific actions while maintaining or being consistent with policies, procedures, and conditions of the organizational environment”. Furthermore, Boyatzis (1982) discusses competence, which he relates to skills, knowledge, social roles, or traits that an individual is using. Boyatzis’s definitions of both competence and effective job performance may have been somewhat uncontested, but recent research suggests (Lehtonen, 2009; Lehtonen & Kampf, 2009) that individuals working in the same team understand work-related documents and their functions differently. A study focusing on a Finnish-Indian IT consulting team (Lehtonen, 2009; Lehtonen & Kampf, 2009) found that Finnish and Indian team members had different conceptions of the so-called project specification document. While the former regarded it as a framework to guide the project, the latter understood it as a guideline that could be altered if something came up. The challenge here, then, lies in how we understand the world surrounding us. Given that there are differences in how individuals understand work-related competences, for example, how could we secure that these differences become a resource rather than an obstacle to competitive advantage? One possible solution could be to use the PechaKucha presentation format in multicultural corporate settings as a platform to communicate knowledge and competencies.

**THE SEMIOTIC THEORY OF THE KNOWLEDGE-CREATING FIRM**

Numerous authors (Dixon, 2001; Drucker, 2005; Nonaka & Takeuchi, 1995; Wenger, 1998) have emphasized the importance of knowledge in effectively managing organizations. So far, however, knowledge management research has regarded knowledge as something functional, implying that knowledge in itself is not an end but a means to increased performance
or better profitability, for example. Moreover, as I have previously argued, conveyed knowledge has been equated with received knowledge, suggesting that there is a universal pool of knowledge, which we all can use in the same manner. By suggesting tacit knowledge to be something individuals can obtain from their environment “through action and perception,” Nonaka et al. (2008, p. 20) implicitly suggest that what Individual A understands as knowledge is similarly understood by Individual B. This lack of semiotic dimension in their theoretical framework was acknowledged by Lehtonen (2009) by incorporating Peirce’s (1986) semiotics in it. In terms of communicating competencies, the combination of semiotics and knowledge management has at least two implications. First, by assuming that individuals can have different conceptions of what is regarded as knowledge, knowledge about how other people understand knowledge becomes as important as the actual knowledge. Second, once we become aware of our different backgrounds, we are able to turn it into a competitive advantage since we now have a better understanding of how our colleagues work.

To make the connection between PechaKucha presentations and knowledge management more explicit, it can be argued that the presentation format can be broken down into four steps that correspond with Nonaka’s SECI model (Nonaka & Takeuchi, 1995; Nonaka et al., 2000; Nonaka et al., 2008), viz., socialization, externalization, combination and internalization phases. Table 1 illustrates how these can be combined.

During the socialization phase, Nonaka et al. (2008, p. 20) argue, “Individual tacit knowledge is shared through shared experiences in day-to-day social interaction to create new tacit knowledge.” Tacit knowledge, adopted from Polanyi (1998) by Nonaka and Takeuchi (1995), should be understood as a type of knowledge that is highly personal and contextual and as such difficult to communicate. The other side of the coin—explicit knowledge—is defined as quantifiable and transferable knowledge.

4. To make the connection between PechaKucha presentations and knowledge management more explicit, it can be argued that the presentation format can be broken down into four steps that correspond with Nonaka’s SECI model.
Table 1. PechaKucha Presentation Steps Combined With the SECI Model

| Individual elaboration of the presentation | Socialization |
| Presentation given to the rest of the group | Externalization |
| Discussion after the presentations | Combination |
| Individual reflection | Internalization |

The socialization phase involves spending a considerable amount of time in the actual environment in order to be able to turn experiences into knowledge (Nonaka et al., 2008). Mentorship and work-related training are forms of this type of knowledge creation, but in terms of cultural knowledge, living in the actual environment is also a possible and fertile ground for knowledge. Furthermore, when it comes to making the actual PechaKucha presentation, individuals are reflecting on their relation to the environment and how they want to communicate this to their audience.

In the externalization phase when the presentations are given, presenters share their knowledge with the audience, thus extending their personal boundaries. During the externalization phase, knowledge “is made explicit through language, images, models, and other modes of expression” (Nonaka et al., 2008, p. 22). Since the PechaKucha presentation format strictly regulates the technical boundaries of the presentation, it ensures the creation of a common ground—or ba, as Nonaka and Konno (1998) put it—where individuals can both share and receive knowledge regarding their competencies and skills.

The knowledge-creation theory originally introduced by Nonaka and Takeuchi (1995), and further developed by Nonaka et al. (2008), seems to be highly dependent on gaining tacit knowledge through direct interaction in and with the environment by taking advantage of all our senses. Turning tacit knowledge explicit during the SECI model’s externalization phase, on the other hand, does not require direct contact with the environment, but the focus here lies in transcending personal boundaries through interaction with other people (Nonaka & Konno, 1998; Nonaka et al., 2000). Theoretically speaking, the PechaKucha presentation format seems to be well aligned with the SECI model since both of them can be broken down into four, overlapping, phases. Furthermore, since PechaKucha is a rather rigid form of presentation, it provides the participants with a common ground in terms of communicating their competences to others.

The actual value of combining Peirce’s semiotics with Nonaka’s theory of the knowledge-creating firm in PechaKucha presentations comes from the notion that differences in participants’ backgrounds—when discussed
and reflected upon (Nonaka & Konno, 1998)—can be switched from being an obstacle to gaining common ground to forming the basis for common ground. Thus, once we understand that the way we interpret and understand the world around us may differ from that of others, we are actually in the process of converting knowledge from tacit to explicit through discussion and observation (Nonaka et al., 2008).

**DISCUSSION**

I have argued that communicating knowledge can be somewhat challenging, since it cannot be taken for granted that communicated knowledge always corresponds with received knowledge. Previously, these differences have been said to stem from differences in national cultures, but as recent research (Jameson 2007; Lehtonen, 2009; Lehtonen & Kampf, 2009; Louhiala-Salminen, 1997) suggests, we should expand our understanding of culture to cover more aspects and dimensions than just nationality. From the visual knowledge communication perspective, this has interesting and important implications for communicating competences and work-related knowledge in multicultural settings.

For reasons unknown, knowledge management literature (Choo, 1998; Dixon, 2001; Nonaka et al., 2008) has not looked into differences in how we understand what constitutes knowledge in different settings, while there has been an explicit call for individuals to transcend their personal boundaries in order to create new knowledge (Nonaka & Konno, 1998; Nonaka et al., 2008). Whether or not researchers have taken differences in thinking into account, this naiveté about knowledge can lead to a situation where nothing is questioned and thus no transcendence takes place. Regarding the semiotic theory of the knowledge-creating firm presented above, this matter should be approached from three perspectives: culture, semiotics, and language.

5. Communicating knowledge can be somewhat challenging, since it cannot be taken for granted that communicated knowledge always corresponds with received knowledge.
Culture has often been labeled as a variable or an obstacle when it comes to knowledge management and creation (Holden, 2002). Isolating culture from the rest of the organizational environment can pose tremendous challenges to both researchers and practitioners as they focus solely on national culture. In a recent study concerning Russian, Chinese, and Brazilian employees (Ardichvili, Maurer, Li, Wentling, & Stuedemann, 2006), one of the main conclusions was that intracompany knowledge management systems introduced in new countries or regions should be adjusted to match the norms and values of the relevant national culture. While this kind of approach seems most feasible and cost-efficient, it also reduces individuals to mere pawns under the omnipotent power of culture. Culture should not be regarded as a collection of stereotypes but as a way of making sense of your surroundings. Furthermore, more emphasis should be put on cultural identity (Jameson, 2007) to acknowledge the different elements that shape our identity.

Semiotics, on the other hand, has been largely neglected in knowledge management literature. While Nonaka and Konno (1998) speak of transcending personal boundaries to create new knowledge, they do not mention semiotics at all. This, however, contradicts communication theories (Shannon & Weaver, 1949) that, for example, take into account noise.

Finally, how we communicate and use different means of communication are also important issues to be dealt with. Recent studies on language competences of individuals working in MNCs (Babcock & Du-Babcock, 2001; Charles, 2007; Charles & Marschan-Piekkari, 2002; Louhiala-Salminen et al., 2005; van den Born & Peltokorpi, 2010) emphasize the importance of being understood by one’s colleagues when one or more of the parties is communicating in nonnative language(s). Indeed, acquiring an adequate level in corporate language is important if employees are expected to manage their work successfully. However, as Charles (2007) and Louhiala-Salminen et al. (2005) point out, utilizing a common language, or BELF (Business English Lingua Franca), is not adequate per se, because using the same language does not necessarily imply that everything is understood identically. For example, as Lehtonen (2009) found, members of a Finnish-Indian IT consulting team had different conceptions of project specification documents.

How, then, does the semiotic theory of the knowledge-creating firm and the discussion on culture and semiotics relate to communicating competence through PechaKucha presentations? As recent studies on language and cultural matters in MNCs (Aritz & Walker, 2010; Charles, 2007; Louhiala-Salminen et al., 2005; Mäkelä, Kalla, & Piekkari, 2007; van den
Born & Peltokorpi, 2010) illustrate, companies are facing challenges arising from cultural differences and inadequate means of communication. Since we as individuals see and interpret things differently, we are also facing the danger of not understanding others and vice versa. Moreover, as Clark (1996) points out, the use of language consists of both individual and social processes that take place on common grounds. I argue that by combining written, oral, and visual communication in PechaKucha presentation settings, individuals could be better able to communicate their competences to others while at the same time understanding others in a more thorough fashion.

The intersection between the SECI model and the PechaKucha presentation steps illustrates Clark’s (1996) notion of common ground and the interplay between the individual and the group. During the first step—socialization—individual elaboration of the presentation—individuals reflect on their competences in a way that enables them to make them explicit during the next step. Next, in the externalization phase, presenters communicate their competences in a way that enables their audience to grasp the key messages. In the combination phase, common ground—or ba—is further advanced by discussing issues brought up during the PechaKucha presentations. Finally, after the presentations, individuals—ideally—reflect on what they have read, heard, and seen.

What I have attempted to describe in the beginning of this article is a four-step process that challenges individuals to reflect on their competences so that they are able to communicate them to others by using written, oral, and visual communication. Nonaka and his associates (Nonaka & Konno, 1998; Nonaka et al., 2000; Nonaka et al., 2008), however, have already discussed how individuals create knowledge during the SECI model, so how do visual communication, semiotics, and culture take into account our increased understanding on how to better communicate competences to other people?

The notion of common ground is essential to Clark’s work (1996) on language use: Without a shared recognition of common ground, no action is possible since without mutual understanding nothing gets done. In other words, if employees do not know their colleagues’ capabilities and competences, how can they rely on them participating in achieving the common goals and objectives? Nonaka and his associates seem to take it for granted that knowledge creation within and between organizations takes place, but studies (Mäkelä et al., 2007; Peltokorpi, 2007) have shown that especially in multicultural environments collaboration tends to be challenging for various reasons. By becoming aware of possible challenges
through the combination of the SECI model and PechaKucha presentations, I argue that individuals can better understand each other when they communicate their competences by using written, oral, and visual communication. Furthermore, not only could PechaKucha presentations help in converting challenges into resources, they also participate in creating and expanding the common ground (Clark, 1996) or, in other words, ba (Nonaka & Konno, 1998).

Even though people seem to rely most on their eyesight in capturing external stimuli, research on using visual communication in organizational settings is still scarce and unsystematic. The call for more systematic research regarding visual communication was raised by Kostelnick (1988), who argued that visual communication in organizations should be functional or rhetorical rather than superficial or decorative. Since Kostelnick’s (1988) article, little has happened in terms of establishing more systematic research dealing with visual communication. However, a few exceptions do exist: Eppler and his associates (Eppler, 2006; Eppler & Platts, 2009) have investigated how visuals can enhance knowledge sharing and collaboration, while Whyte et al. (2008) looked at ways knowledge can be visualized in project settings. Although it can be seen that these two examples do not justify ignoring Bergström’s (2008) notion that pictures are regarded as our enemies, while words are our friends. Berger (1972, p. 7) also emphasizes the importance of seeing as follows: “[I]t is seeing which establishes our place in the surrounding world; we explain that world with words, but words can never undo the fact that we are surrounded by it.” Approaching the same issue from slightly different angles, Berger (1972), Kostelnick (1988), and Bergström (2008) all speak for the importance of visual communication, yet in organizational settings it has received little attention.

By approaching competence communication in multicultural settings from the combined PechaKucha and the SECI model’s combined perspective, I wish to participate in laying a systematic groundwork for future visual communication research in MNCs. This is particularly important in knowledge-intensive companies (Alvesson, 1993, 2000), which are characterized by complex problems and their ability to solve these in a creative manner—where being able to communicate one’s competences to one’s colleagues becomes crucial. The emphasis is not on mitigating differences arising from different cultural aspects (e.g., education, job description, or native language) but acknowledging these differences as possibilities to transcend personal boundaries (Nonaka & Konno, 1998) and as such potential platforms for creating new knowledge. Thus, communicating
competences through PechaKucha presentations serves at least two purposes. First, the participants become aware of each other’s competences, and second, knowledge related to work and/or cultures can also be created and advanced.

**IMPLICATIONS, LIMITATIONS, AND DIRECTIONS FOR FUTURE RESEARCH**

The theoretical discussion on incorporating means of visual communication in communicating competences has at least three limitations regarding research and practice. First, is it possible to teach visual grammar? Second, is everyone able to communicate visually? Even though this question could be asked regarding written and oral communication, it is more crucial in terms of visual communication since we are taught—to varying extent—how to communicate through written and spoken language. Finally, does the combination of written, oral, and visual communication necessarily imply that knowledge is understood better between individuals since they have a wider range of communication means at their disposal?

While the three questions presented above can seem to pose tremendous obstacles in terms of holistic knowledge of communication research, they are also recognized as interesting avenues for further investigation. Despite the fact that research dealing with visual (knowledge) communication has been and is being carried out (Eppler, 2006; Kienzler, 1997; Kostelnick, 1988; Whyte et al., 2008), we still lack a systematic approach to how knowledge and competences can be better communicated in holistic terms. To bridge this gap, further research—both quantitative and qualitative—is required if we are to better understand how individuals can communicate knowledge in a manner that suits them best. But instead of producing generalizable findings, I propose holistic knowledge communication to be researched through ethnographic research in single case settings (Yin, 2003).

Finally, this article has at least three implications for both researchers and managers. Research implications focus on holism in communication, the notion of cultures, and the combination of semiotics and knowledge creation. While we need a more systematic approach to visual knowledge communication, we also need to treat written, oral, and visual communication as equals. On the other hand, in terms of managerial implications, the PechaKucha communication method has the potential of contributing to increased organizational creativity as it may help achieve a better
understanding of different cultures and competences. The proposed combination of the SECI model and PechaKucha thus serves as a platform for companies and researchers to investigate how visual communication can enhance knowledge and competence communication in various organizational settings.

CONCLUSION

During the course of this article, I have argued for incorporating visual communication in knowledge management research and practice. One of the key challenges relates to subjectivity since what one person understands as knowledge or competence might not always be understood similarly by other people. I propose that knowledge, and knowledge management, should be viewed in more holistic terms, not only by combining written, oral, and visual communication but also by bringing knowledge management and semiotics together. Thus, with the proposed combination of the SECI model and PechaKucha, I wish to provide the scientific community with an application that offers a novel perspective on semiotics and knowledge management.

ACKNOWLEDGMENTS

The author would like to thank Francesca Bargiela and Stefania Marzo for their mentoring and helpful comments and suggestions, Rebecca Waters Boldsen Lund, Geert Jacobs, and Chris Braecke for their comments, and Alison Gizzard for proofreading the manuscript. For financial support, the author is grateful for Liikseivistysrahasto (Foundation for Economic Education) and their continuous support for research in the field of visual knowledge communication.

NOTES

1. For an in-depth description of PechaKucha, see http://www.pecha-kucha.org/what
2. Clark’s (1996, p. 92) definition of common ground is as follows: “common ground is a sine qua non for everything we do with others—from the broadest joint activities to the smallest joint actions that comprise them.” Quite interestingly, Nonaka and Konno’s (1998, p. 40) definition of ba, “a shared space for emerging relationships,” resembles Clark’s concept of common ground. Thus, in this article, they should cautiously regarded as interchangeable.
REFERENCES


Lehtonen, Miikka; Lund, Rebecca; and Kesävuori, Taru (Unpublished). Visualizing knowledge about sustainability: case PechaKucha presentations. An earlier version of this paper was presented at the Tsinghua-DMI International Design Management Symposium, 3-5 December 2011, Tsinghua University, Hong Kong.
Visualizing knowledge about sustainability: case PechaKucha presentations

Miikka Lehtonen, Rebecca Lund and Taru Kesävuori
Aalto University School of Business,
Department of Management Studies
P.O. Box 21210, FI-00076 AALTO, Finland
+35840 353 8451
miikka.j.lehtonen@aalto.fi

Abstract. Sustainability has recently become one of the most pivotal elements of driving especially design-intensive firms’ operations, but at the same time the concept itself is shrouded in mystery, as nearly every firm seems to have their own understanding of it. In an attempt to shed light on this black box, we turned to knowledge creation theories to look at how knowledge about sustainability is visualized. Based on our empirical data of eight PechaKucha presentations (20 slides, 20 seconds each) we build on existing theories on knowledge creation by illustrating the need for more studies explicitly incorporating artifacts in their data and theorizing.

Keywords: visualizing knowledge, knowledge creation, PechaKucha
Introduction

Sustainability has recently become one of the most pivotal perspectives to business and it has received much scholarly attention (Carroll 1994, 1999; Garriga and Melé 2004; McWilliams and Siegel 2001, 2011; Votaw 1972). Especially Corporate Social Responsibility (CSR) – the umbrella concept of sustainability that situates firms as active actors in societies – has gained traction in both public and corporate discourses due to larger societal shifts that have highlighted the importance of firms operating in a responsible manner. However, as several scholars (Garriga and Melé 2004; McWilliams and Siegel 2011) have pointed out, a huge amount of CSR literature has focused on investigating the connection between CSR activities and company performance, and at the same time the amount of different CSR definitions have blurred the field (van Marrewijk 2003; Dahlsrud 2008). Hence, given that nearly every firm has their own understanding of sustainability and what it means to run a sustainable business, this leads us to ask how companies make sense of sustainability, and what kind of knowledge is created in this context as it has been argued that firms differentiate themselves through knowledge (e.g. Nonaka and Toyama 2005).

Thus, what do we really mean when we talk about sustainability and how do we communicate our understanding of it to others? The authors of this paper asked seven Finnish design-driven company representatives to give a PechaKucha presentation on sustainability. The decision to utilize visual means for data collection was twofold: first, we wish to highlight the importance of explicitly bringing the visual closer to the core of knowledge creation research, and second, with visual research data we are able to give a more transparent description of the data, thus enabling the reader to better evaluate our analysis.

We set out to investigate, how company representatives visualize their understanding of sustainability, and building on this, we have adopted a knowledge creation approach to studying visualizations of sustainability: the visualizations are seen as phenomenological and sociomaterial artifacts that offer us accounts to the interplay between the respondent and the world.

In this paper, then, we extend phenomenological foundations with sociomateriality (Barad 2003; Orlikowski and Scott 2008) to illustrate how

---

1 PechaKucha presentation format consists of twenty PowerPoint slides that are each shown for twenty seconds.
knowledge creation is situated between the social and the material: thus, following this line of thought we see knowledge creation as an enacted process that is inseparably connected to objects and individuals. Similarly, building on the previous work on knowledge creation by Nonaka and Takeuchi (1995), we argue that knowledge creation (of sustainability in this study) is a social event, and knowledge is thus contextualized and socially constructed. By approaching knowledge creation from the artifacts’ perspective, we are answering Tsoukas’s (2009) call for more studies looking into the artifacts within the confines of knowledge creation. Building on this perspective, our research question is as follows:

What kind of visual strategies the respondents employed to communicate their knowledge of sustainability in the PechaKucha presentation?

In this study, then, we are looking at the PechaKucha presentations as artifacts of knowledge about sustainability. However, we do not wish to claim them to contain one discoverable truth, but instead we acknowledge the multitude of interpretations they might trigger. Thus, what is of importance here is communication: how do we interpret the images as artifacts of knowing (Carlile 2002; Star and Griesemer 1989; Tsoukas 2009).

The rest of the paper is structured as follows: first, we will briefly present and discuss relevant literature in knowledge creation and sustainability research, while the following section describes our research methodology and methods. Next, we will turn to present the context in which we conducted our study, while the fourth section deals with our findings and analysis. Conclusions and directions for further research, on the other hand, mark the end of this paper.

**Literature review**

The purpose of this paper is to approach sustainability – and CSR in more broad terms – from the knowledge creation perspective: sustainability is chosen as the context in which we are looking at knowledge creation. Reasoning behind this is connected to understanding how the respondents enact and illustrate their knowledge about sustainability, as it has been shown to be an elusive concept. As Tsoukas (2009) has pointed out in knowledge creation research, more work is required at the intersection between individuals and artifacts. Before moving on to discussing knowledge creation
research, let us first cover studies on CSR to illustrate why it is a relevant context for knowledge creation studies.

One of the main challenges in CSR-related research seems to be that there are many definitions of CSR (Votaw 1972; van Marrewijk 2003; Dahlsrud 2008) within the scientific community and the amount of definitions rockets when we include companies, NGOs and public organizations in the discussion. In a study conducted in 2008, Dahlsrud (2008) identified a total of 37 definitions that were used to capture the meaning of CSR. The definitions were constructed mainly by academics, NGOs, and public organizations and they illustrate the diverse nature of the parties involved in CSR-related research.

Another perspective to CSR definitions can be found in Carroll’s (1999) work where he looked at the CSR definition from the temporal perspective, mapping discussions revolving around it from 1953 when Bowen’s landmark book was published. Thus, what we are looking at is a myriad of definitions ranging disciplines and decades.

Where do all these definitions take us, then? Consider the following often cited argument on the definition of CSR from Votaw (1972):

*The term is a brilliant one; it means something, but not always the same thing, to everybody. To some it conveys the idea of legal responsibility or liability; to others, it means socially responsible behavior in an ethical sense; to still others, the meaning transmitted is that of “responsible for,” in a causal mode; many simply equate it with a charitable contribution; some take it to mean socially conscious; many of those who embrace it most fervently see it as a mere synonym for “legitimacy”, in the context of “belonging” or being proper or valid; a few see it as a sort of fiduciary duty imposing higher standards of behavior on businessmen than on citizens at large.*

This definition, dating back almost three decades, is still relatively powerful in describing the current situation of CSR definitions. Bearing Dahlsrud’s (2008) study on 37 definitions of CSR in mind, it is interesting to see that although the number of definitions is still relatively huge, many scholars (Garriga and Melé 2004; Votaw 1972; van Marrewijk 2003; Dahlsrud 2008) in the field do not see it as a problem. On the contrary, as Dahlsrud (2008) for example
points out, the important part is not to define CSR, but to understand how it is constructed in a given context.

We agree with Dahlsrud’s (2008) reasoning in that agreeing on a single definition of CSR, or sustainability, could potentially be a lost cause. Following this line of thought, it is more interesting to use different definitions as a starting point for negotiating its meaning in the context at hand. This kind of approach is closely connected to Nonaka and his associates’ (Nonaka and Takeuchi 1995; Nonaka 1991; Nonaka and Konno 1998; Nonaka, Toyama and Hirata 2008; Nonaka, Toyama and Konno 2000) work on knowledge-creation in organizational settings, implying that individuals hold different knowledge about the meaning of sustainability (how they understand it) and these, when combined through social interaction, enable individuals to transcend their definition by drawing inspiration from other individuals in the given context.

The connection between PechaKucha and knowledge-creation has already been theoretically explored in Lehtonen (2011). In short, Lehtonen (2011) building on Nonaka’s work (Nonaka et al. 2008), argues that since knowledge can be understood in many ways (as is the case with CSR, according to some scholars (Votaw 1972; Dahlsrud 2008)), using visual means to communicate both tacit and explicit knowledge can serve as a foundation for further discussions. This paper attempts to build on this argument by looking at the PechaKucha presentations as artifacts evoking knowledge about sustainability.

From the knowledge creation perspective, PechaKucha presentations can be approached as metaphors or analogues of sustainability that draw on various communicative tactics. In Nonaka’s work (2000: 9), for example, these presentations can be understood to belong to the externalization phase of the SECI model: “when tacit knowledge is made explicit, knowledge is crystallised, thus allowing it to be shared by others, and it becomes the basis of new knowledge”. From this perspective, the presentations can be interpreted as an outcome of the presenter operating within PowerPoint’s framework to show what sustainability means for them. Building on this, what is visualized in the presentations is not the presenter’s exhaustive take on knowledge about sustainability, but instead we can see glimpses of it through the images (Nagel 1974).

This artifact-driven approach attempts to extend our current understanding of knowledge creation by paying more attention to the role artifacts have in terms of enacted knowing and knowledge creation: examples of how individuals create knowledge by interacting with artifacts have been
introduced before (e.g. Carlile 2002; Nonaka and Takeuchi 1995; Peltokorpi, Nonaka and Kodama 2007), and here we are building on this body of work by drawing on sociomaterial thought that assumes materiality not to be immutable (Barad 2003), but something that should be better taken into account in our inquiries into the social.

To conclude, within the confines of this study, we are approaching the elusive concept of sustainability from the knowledge creation perspective with an extension to sociomateriality. To this end, sustainability and knowledge about it are analyzed through objects – PechaKucha presentations – in order to further advance our understanding of artifacts in knowledge creation.

Data and context

Data for our study was collected during October and November 2010 in a design export event called Hirameki in Tokyo, Japan, that was organized by Design Forum Finland. The authors organized a PechaKucha event during Hirameki in order to study how seven designers and company representatives visualized knowledge about sustainability for a multicultural audience. All the presenters (seven PechaKucha presentations by nine Finnish individuals from design-intensive companies) were invited to give a talk in the event and six of them were Hirameki participants, while the seventh presenter was an external participant. The participants and their backgrounds are listed in the table below:

<table>
<thead>
<tr>
<th>Company/ designer</th>
<th>Industry</th>
<th>Presenter’s role in the company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Company A</td>
<td>Aviation</td>
<td>Sales Director</td>
</tr>
<tr>
<td>Company B</td>
<td>Energy</td>
<td>Export Manager</td>
</tr>
<tr>
<td>Company C</td>
<td>Clothing</td>
<td>Export Manager</td>
</tr>
<tr>
<td>Designer A</td>
<td>Interior design</td>
<td>Partner</td>
</tr>
<tr>
<td>Designer B</td>
<td>Interior design</td>
<td>Owner &amp; Owner</td>
</tr>
<tr>
<td>Designer C</td>
<td>Interior design</td>
<td>Partner</td>
</tr>
<tr>
<td>Designer D</td>
<td>Interior design</td>
<td>Partner &amp; CEO</td>
</tr>
</tbody>
</table>

Originally there were eight presenters, but one of the participants had to cancel due to sudden illness. Thus, a total of seven presenters shed their light on sustainability from their company’s point of view by utilizing a modified
version of PechaKucha\textsuperscript{2}. However, although the eighth presenter did not present their PechaKucha, we nonetheless had their permission to utilize their PowerPoint slides in our analysis.

Initially the companies were approached by the Hirameki organizers with an invitation written by the authors. The invitation described the event as PechaKucha night with the theme ‘sustainability’. Thus, the participants were invited to give their own take on it and the authors gave feedback to the presenters before the actual event, since most of them were unfamiliar with the PechaKucha format. We did not give the presenters strict guidelines on what to visualize and how, but instead we encouraged them to utilize any visual means necessary to express themselves.

To sum up the nature of our research data, we collected audiovisual material (video, photography, PowerPoint slides) and in addition we took field notes during the presentations. Each of the authors first went through the data individually, after which we discussed our findings together in order to construct a coherent analysis of the data. Main focus in our data analysis was on artifacts, the PechaKucha presentations, as we were mainly interested in studying the various communicative tactics employed to illustrate knowledge about sustainability. Equally interesting would be to integrate the actual presentation to the data analysis, but here we focused solely on the presentations, as the PechaKucha presentations are also supposed to convey the meaning as standalone presentations. However, we do not wish to say everyone looking at the same presentations arrives at the same interpretation: instead, what follows in the analysis section below is based on our interpretations. To show how we analyzed the data, we will go through our research methodology in the next section.

\textbf{Methods and methodology}

As stated above, we are looking at PechaKucha presentations on sustainability from the knowledge creation perspective. Moreover, we are solely looking at the aesthetic qualities of the images (Banks 2008) in an attempt to shed light on what we can say about visualizing knowledge on sustainability. Thus, following this line of thought, our main emphasis was not on how the participants \textit{defined} sustainability, but what kind of visual elements (Arnheim

\textsuperscript{2} Originally a PechaKucha presentation consists of twenty slides that are shown twenty seconds each, but variants of this have been utilized. Hence, and to make the presentations bilingual (English – Japanese), we decided to double the length so each presentation was 20 slides 40 seconds each.
1997a, 1997b; Dondis 1986; Moore 2003), metaphors, analogues, or patterns (Alexander 1977; Alexander, Ishikawa and Silverstein 1977) they used to communicate their knowledge (Polanyi 2009).

This phenomenological stance to the images echoes with the performative approach to the visual (Bolt 2004) as they are both positioned more or less against representationalism that “fixes the world as an object and resource for human subjects” (Bolt 2004: 12). When we look at the images, we do not see knowledge about sustainability in its purest explicit form, but instead a combination of tacit and explicit knowledge that draws on metaphors, analogues, and other communicative means to make sense of the world with which we interact. Or in other words, the images are not copies of reality, but they partly constitute the reality. What we are looking are not representations of something that is, but something that is experienced. In effect, our data analysis is built on looking at the PechaKucha presentations as visual metaphors of the respondents’ knowledge about sustainability.

To conclude, this study draws on phenomenological and sociomaterial thought to look at the PechaKucha presentations as visual metaphors on knowledge about sustainability. The presentations are not seen as independent entities per se, but as artifacts that have been created from the interaction between the individual and the world. Thus, we as researchers also acknowledge our role as constructing the reality by analyzing the visual constructions of sustainability in the presentations.

**Discussion and analysis**

When we look at how individuals visually communicate knowledge about sustainability, we are talking about the interplay between tacit and explicit knowledge through various communicative means (Nonaka and Takeuchi 1995; Konno 2009). Based on our analysis of eight PechaKucha presentations, we follow Nonaka and Polanyi in a sense that visualized knowledge about sustainability moves along the explicit (evoking images of products and services) and tacit (images of emotions, stories, spaces) continuum. For example, describing a product from sustainability’s perspective communicates what the company the individual represents does, whereas illustrating a certain process or space where the product and/ or service is embedded in connects to how and why the company or designer operates. In essence, no presentation should be regarded as purely tacit or explicit, but instead as varying combinations of these two. Thus, we are interested in investigating
how the interaction between the individual and the world manifests itself in the presentations.

To structure our analysis we first discuss tacit and explicit knowledge separately, after which we will synthesize them. It is necessary to first discuss them separately because, as our analysis will illustrate, there are different communicative elements and patterns related to tacit and explicit knowledge. However, these two manifestations should not be seen as separate, but intertwined, as they both constitute to constructing knowledge about sustainability.

**Knowledge about sustainability – explicit visual perspective**

With explicit visual representations of sustainability-related knowledge we refer to images and visual elements that describe products and services. The purpose of these representations is to illustrate the sustainable dimension (e.g. materials, function, or an outcome of consumption) of the products and/or services in which the company or designer is involved. One of the participants, for example, showed a picture of a refugee camp (Appendix 1) with numerous tents to illustrate that the products their company produces help in giving shelter to refugees. Another example comes from two designers who, by showing a picture of a redesigned chair with the text ‘new from old’ (Appendix 2), illustrated how they turn old products into new ones by redesigning everything else but the core of the chair.

Thus, when it comes to explicit visual representations, we argue that these are used to tell the audience what the company or designer does and how they are sustainable. Rhetorical means to convey meanings of sustainability were achieved by either images (tents with the Red Cross symbol printed on them) or words (‘new from old’) or a combination of those two. In a similar fashion, Designer A’s presentation contains images of trams (Appendix 6) in Helsinki that they designed: trams, and public transportation in general, evoke meanings of sustainability, and as such knowledge about sustainability is materialized in the form of trams.

The examples presented above are seemingly uncomplicated representations of knowledge about sustainability – a company provides durable tents to refugee camps, a tram evokes images of public transportation (and hence also of sustainability), and designers redesign a chair without wasting additional resources to produce the same chair – but what about images that employ less...
direct elements and metaphors? In the section below we turn to investigate the other side of the coin: namely, images in our data set that utilize more tacit tactics.

**Knowledge about sustainability – tacit visual perspective**

Whereas visual representations focusing on explicit knowledge drew on *what* the company/designer does, tacit images deal with metaphors, emotions, and spaces to illustrate *how* and *why* sustainability is connected to what the company/designer does. Difference between explicit and tacit images is that whereas the former are nearly always connected to something tangible (e.g. a product, service or a combination of both), the latter do not necessarily point to anything tangible, but to more personal opinions, values, insights, metaphors and emotions (Nonaka and Takeuchi 1995; Lakoff and Johnson 1980; Nonaka et al. 2008; Polanyi 2009). Although there are differences between tacit and explicit representations, they nonetheless complement each other, as the former shows *how* and *why*, while the latter illustrate the *what* aspect of the company’s/designer’s work.

In the PechaKucha presentations we analyzed, there were diverse ways to communicate knowledge about sustainability by using tacit visual tactics, but roughly speaking the presenters relied on single pictures and narrative forms to show how tacit knowledge connected with explicit. To illustrate what sustainability means for them, Designer B, for example, had created a storyline that covered the whole PechaKucha presentation. They showed pictures of themselves with short sentences illustrating how their work and life is environmentally and socially sustainable³ (Appendix 4 and 5). In their presentation, knowledge about sustainability was visualized by using narrative means and where main emphasis was on emotions, metaphors, values, and opinions, not on products. In addition to narrative-based representations, some of the presenters relied on single pictures in conveying sustainability-related knowledge by portraying different objects and spaces. By comparing company representatives and designers, it seems that designers were keener on using visuals and supporting them with speech, whereas the company representatives more often used text in illustrating what sustainability means for their company.

---

³ Sentences such as “We don’t need a car” (with a picture of the designers biking), “We can give up unnecessary electrical appliances” (the designers photographed sitting by a table).
Visualizations as artifacts evoking and illustrating knowledge

Above, we have discussed the images from both tacit and explicit dimensions, although this separation has been set up only for illustrative purposes. When it comes to actual experiences, we cannot separate tacit from explicit (Nonaka et al. 2008; Polanyi 2009): similarly Pink (2007, 2009) has argued that our sensory experiences cannot be separated from each other, and this has exactly been our point here. By discussing what kind of knowledge visualizations of sustainability portray, we have paid more attention to the visual and the artifacts that are both seen as essential elements of knowledge creation.

What these images illustrate is the dynamic nature of knowledge creation (Nonaka et al. 2000, 2008; Tsoukas 2009) and the role artifacts play in this process (Barad 2003; Carlile 2002): artifacts, for example PechaKucha presentations, are at the same time metaphorical manifestations of embodied knowledge and platforms for emerging knowledge from the viewer’s point of view. Furthermore, sustainability can also be regarded as an artifact, as it is by no means static or immutable (Barad 2003). That is to say, artifacts play an active role in knowledge creation and in evoking knowing, and the initial findings presented in this paper indicate that more attention should be focused on artifacts and how they shape knowing and knowledge creation.

In conclusion, based on our empirical data we argue that knowledge about sustainability can be visualized as tacit and explicit images based on what the presenter wants to communicate with the slide. Explicit representations deal with products and services (the what dimension), while tacit representations portray emotions, metaphors, and insights (the how and why dimension). Furthermore, we argue that these representations cannot exist independently, but they support each other by visualizing sustainability from different perspectives.

Conclusion, implications, further research

The purpose of this paper has been to investigate how company representatives visualize knowledge about sustainability through artifacts in order to answer Tsoukas’s (2009) call for more artifact-oriented studies within the domain of knowledge creation. Our analysis was first set up so that we focused on explicit and tacit elements separately for clarity’s sake (Nonaka et al. 2008), after which we looked at the big picture.
What we have done here is that we have explored different ways individuals working in design-intensive companies utilize to visualize their knowledge about sustainability. As stated in the methodology section, we have only looked at visual data, but further inquiries should explore the actual PechaKucha presentation in situ, for example. By doing so would yield more holistic data on knowledge creation from the process perspective. Similarly equally interesting would be to incorporate the audience to further studies – this would be in line with Nonaka’s (Nonaka et al. 2008) as well as Carlile’s (2002) and Tsoukas’s (2009) studies on knowledge creation.

To conclude, this paper has shed light on knowledge creation from the artifact’s perspective, and for this purpose we have drawn on visual data from eight PechaKucha presentations as they have been conveniently framed both ontologically and epistemologically. This initial study has contributed to our current understanding of knowledge creation in the sense that we need more studies looking into the visual dimension. Hopefully more knowledge creation studies will incorporate the visual into their research designs in the future.
References


**Appendices:**

Appendix 1

Appendix 2

Appendix 3

Appendix 4

Appendix 5
Lehtonen, Miikka J. (Unpublished). How do people construct their organization using Chigo blocks? An exploratory investigation into visual knowing. An earlier version of this paper was presented at the 28th EGOS Colloquium, 5-7 July 2012, Aalto University and Hanken School of Economics, Finland.
How do people construct their organization using Chigo blocks? An exploratory investigation into visual knowing

Miikka J. Lehtonen
Aalto University School of Business, Department of Management Studies
P.O. Box 21210, FI-00076 AALTO, Finland
+35840 353 8451
miikka.j.lehtonen@aalto.fi

Abstract

Knowledge work in the 21st century is characterised by creativity, increased individual mobility, entrepreneurial mindset, and intangibility – to a large extent, the outputs knowledge workers produce are of intangible nature and more often than not the work processes are fuzzy, chaotic, and not tied to a single physical space. This is especially true in universities, which is why this study focuses on the concept of organization within the context of academic work.

To this end, Japanese wooden toys, Chigo blocks, were used as a transformative medium in data collection for studying knowledge creation. Bringing together research on knowledge and the visual, I extend Nonaka’s work on knowledge creation in an attempt to further move away from seeing knowledge as purely rational. Findings from this empirical study highlight the importance of simultaneously being present and distancing oneself in terms of creating new knowledge. In addition, findings also point towards the importance of drawing also on non-verbal research methods to increase our understanding of knowledge creation.

Keywords: knowledge, organization, visual research, Chigo blocks
Knowledge work in the 21st century is characterised by creativity, increased individual mobility, entrepreneurial mindset, and intangibility – to a large extent, the outputs knowledge workers produce are of intangible nature and more often than not the work processes are fuzzy, chaotic, and not tied to a single physical space. Especially increased individual mobility and independence from a certain physical space have both contributed to our rethinking what organizations really are. Building on this, we may ask what is an organization and what do we know about them?

With this in mind, in this paper I will explore embodied knowing and visualizing knowledge within the context of universities and academic work as they represent knowledge work and have been under major changes during the 21st century. Universities and academic work have attracted considerable amount of scholarly inquiry (e.g. Aspara et al. 2014; Lund 2012) not only because universities themselves are currently undergoing major transformations (mergers, digitalization of teaching, and institutional pressures, for example) but also because they offer a fruitful context for studies looking at knowledge and knowing.

Getting back to the question presented above, what happens when we cross the abstract-concrete interface by using tangible medium to construct concrete artifacts about something as abstract as organizations? Furthermore, could these concrete representations of organizations be regarded as metaphors about embodied knowing? These questions led me to invite university staff - both academic and administrative alike - from one department to construct their organization by using Japanese wooden blocks known as Chigo blocks. With this in mind, my aim in this paper is to contribute to ongoing discussions about knowing and knowledge creation by drawing on my empirical data that brings together the animate (i.e. individual) and the inanimate (the wooden blocks).

The rationale behind this study is to understand how individuals working within a knowledge-intensive organization (a university) make sense of and construct their environment they are embedded in by using a medium that is currently foreign to them in terms of their work that is organized and made sense through texts. Organisations have been previously investigated from various perspectives, namely discourses (Alvesson and Kärreman 2000), aesthetics (Strati 1999), metaphors (Lakoff and Johnson 1980), practices (Gherardi et al. 2013) sense-making (Weick 2001), and knowledge (Nonaka
and Takeuchi 1995), but in majority of the studies the research methods have been such that they enable reflexivity through linguistic means. While organizational studies dealing with the aforementioned perspectives have greatly increased our understanding of and theorizing on organisations and organizing, research that deals with the familiar-unfamiliar (Barry and Meisiek 2010) intersection has the potential of generating novel approaches to studying organisations and knowledge creation.

Questions such as ‘what is an organization?’ and ‘what is understood as organizational culture?’ have attracted academic debate for many decades now (Schein 2004; Smircich 1983), but so far the methods of inquiry have mainly focused on written and oral communication. However, mainly during the 21st century and the last decades of the 20th century, focus has been increasingly shifting towards art-like media, visual communication, and physical objects (Roos et al. 2004) to make sense of organizations, and work within organizations (Barry and Meisiek 2010), as well as the connection between organizations and bodies (Gherardi et al. 2013; Viteritti 2013; Yakhlef 2010). Especially interesting fields of inquiry have been strategy-making (Barry 1994; Roos et al. 2004) and roles of individuals (De Ciantis 1995), suggesting that understanding and making sense of what people do in organizations are of importance. I completely agree with these arguments, but at the same time I wish to draw attention on using tactile and visual communication to produce images and constructs of such abstract a concept as ‘organization’. Thus, the research question I will be dealing with here is formulated as follows:

**What kind of visual knowledge do individuals create about their academic organization through Chigo blocks?**

When we take the stance that organizations can be represented with physical objects, we implicitly argue for a knowledge-based approach to workarts (Barry and Meisiek 2010) that brings together the individual and the world (Nonaka, Toyama and Hirata 2008). I argue that the Chigo blocks serve as an interface between the intangible (organization) and the tangible (physical representation of an organization). Or, to put it in other words, the Chigo blocks facilitate the interplay between tacit and explicit knowledge (Nonaka 1994; Nonaka et al. 2008; Polanyi 2009). Thus, what the constructs reflect are values, patterns, norms, and sense making that are enabled by the use of art-like media.

The rest of this paper continues to support my argument by first discussing the current literature on knowledge creation and visually inclusive research.
Second, I will move on to discuss the theoretical lens that I utilized in this study, after which I describe the method of inquiry. Finally, I will turn to illustrate my main findings, and building on them I will conclude this paper and offer inspiration for practical and research applications.

**Literature review**

This paper seeks to contribute to current literature on knowing and knowledge creation by looking at the Chigo block constructs as mediators and facilitators of knowledge creation: to this end, then, I will draw on tactile and visual research methods and this, in turn, positions this study at the intersection between knowledge creation research and studies in art and design. From this perspective, art and design studies can contribute to knowledge creation research by offering theoretically grounded methodologies on approaching the visual and the tactile. Currently most studies looking at knowledge creation (Brown and Duguid 2001; Nonaka et al. 2008; Nonaka, Toyama and Konno 2000; Peltokorpi, Nonaka and Kodama 2007; Tsoukas 1996, 2009) seem to draw on phenomenological thought, which is well attuned to visual research methods.

In knowledge-related studies looking at organizations one of the main implicit assumptions seems to be that knowledge is good only so far as it can contribute to the organizations profitability. In their landmark article on organisations and knowledge, Kogut and Zander (1992: 385) discuss knowledge from the performance perspective, suggesting that knowledge created by individuals within an organization leads to, for example, new market opportunities or better informed organizing. Taking a slightly more granulated view on knowledge – and also criticizing the isolationist stance adopted by Kogut and Zander (1992), among others – Brown and Duguid (2001) turn to practice and how it can explain why organisations can triumph over markets. According to Brown and Duguid (ibid.), organisations portrayed by knowledge scholars before them were seen as homogenous and unified entities, but this argument is incomplete in that it fails to illustrate how such organisations can over perform the markets. Moreover, organisations do not exist in a vacuum, but knowledge leaks in and out of the organization through various means (Brown and Duguid 2001: 209). This standpoint to knowledge echoes with that of Nonaka’s (Nonaka et al. 2008: 2) who speaks for a more subjective perspective to knowledge: “knowledge is not a static substance or thing but an ever-changing process of interaction in an ever-expanding field of relations”. Furthermore, when talking about relations Nonaka et al. (2008)
refer to individuals and the ‘environment’, but here it seems the latter is subjugated by the former as individual interacts with and shapes the environment, but not the other way round. To build on this, and to contribute to Nonaka’s (Nonaka et al. 2008; Nonaka and Toyama 2005) work, it is assumed here that the relations Nonaka talks about are bidirectional. That is to say, artifacts give rise to and are shaped by knowledge creation. Moreover, this sociomaterial approach to knowledge creation and knowing builds on performativity (Bolt 2004; Steyaert, Marti and Michels 2012): the visual does not ‘merely’ represent reality, but instead it actively participates in shaping it.

The field of knowledge creation research has been argued (Brown and Duguid 2001; Tsoukas and Mylonopoulos 2004) to be flooded with dichotomies and separations, implying that knowledge can be separated from the individual and thus transferred to other locations in the organization. Practice-based approach to knowledge, however, has challenged the dominating paradigm, as it criticizes the straightforward process of knowledge creation. In addition to Brown and Duguid (2001), and other Communities of Practice scholars (Wenger 1998), Nonaka’s work on knowledge creation (Nonaka et al. 2000, 2008; Nonaka and Takeuchi 2011) could be included in the same intellectual counterforce, although he clearly claims his approach to be different from Communities of Practice research (Nonaka and Konno 1998; Nonaka et al. 2000). Differences to the Communities of Practice research are not that remarkable, as both streams of approach deal with spaces that emerge more or less outside the formal organizational procedures. However, and this is the point where I am attempting to carve a contribution to knowledge creation literature, knowledge creation literature still seems to be separated in terms of reason and emotion. Or in other words, knowledge is harnessed to serve the organization’s profitability, and as such individuals are not suggested to look elsewhere or see matters differently (Barry and Meisiek 2010). This claim, however, does not apply to all studies falling in the category of knowledge creation: in Nonaka et al. (2008: 8) “knowledge cannot exist without human subjectivities and the contexts that surround human beings because “truth” differs according to who we are and from where we view it”. Thus, building on Nonaka’s work on knowledge creation, the purpose here is to extend his theorizing by drawing on sociomaterial research and visual studies.

One potential solution for further bringing emotions and creative processes to the core of knowledge creation is through visual studies within the fields of architecture (Alexander 1977; Alexander, Ishikawa and Silverstein 1977), design and art (Arnhem 1997a, 1997b), and organizational studies (Ewenstein
and Whyte 2007; Whyte, Ewenstein, Hales and Tidd 2008). But before venturing into these fields, I am compelled to discuss why we need to get rid of the underlying reason-emotion dichotomy present in most knowledge creation theories. Drawing on the studies in mindfulness (Langer and Moldoveanu 2000), rationality should not be seen as the main driver for creating new knowledge, as although it might be a beneficial approach from the organization’s perspective, from the individual’s perspective, on the other hand, we are facing the danger of subordinating the individual to the whims and desires of the organization, as this approach can potentially lead to considering individuals as mere resources harnessed to serve organizational purposes (this notion was also questioned in Nonaka et al. 2008). If the main purpose for knowledge creation is to create more and better competitive advantages, creativity and the ability to see more and differently (Barry and Meisiek 2010) might be lost. This kind of reasoning has also connecting points with studies looking at the fuzzy front end of innovations and product development (Khurana and Rosenthal 1997), as during this phase idea generation and ‘thinking outside the box’ have been shown to be of great importance (Reid and de Brentani 2004). Thus, building on the different approaches presented in this paragraph, being able to move back and forth beyond one’s existential borders is crucial from knowledge creation’s perspective, as the knowledge creation ‘process’ is never a straightforward one. This is relevant especially within the context of this study: knowledge work and especially academic work are seldom clear in their way of dealing with inputs and outputs (Latour 1987; Latour and Woolgar 1986), and claiming anything else would be harmful, or even counterproductive. Therefore, we need to take claims about the subjective nature of knowledge and knowing (Nonaka et al. 2008; Orlikowski 2002, 2006) seriously, in order to advance our understanding of knowledge creation. One possible solution to proceed comes from the visual.

Within organization and management studies there has been a steadily growing interest towards the visual during the last two decades. Especially since the 1990s, increasing amount of research dealing with the visual and tactile within the domains of organization and management has surfaced. Roughly speaking, research within these fields can be understood to be inspired by art, design (Amabile and Mueller 2008; Barry and Meisiek 2010; Buur and Mitchell 2011; Konno 2009), or anthropology (Pink 2007, 2009). Previously one of the challenges related to the visual has been that is has been treated as representing or reflecting reality, hence emphasizing its imitational qualities (Steyaert et al. 2012). Especially from the knowledge creation research perspective this claim is a dangerous one as it reduces the visual to a
mirror of the reality, although it should be seen as constructing the reality of which it is part. This approach to the visual is often referred to as the performative stance (Bolt 2004), and it implies a departure from the representationalist view by arguing that the visual is not a reflection of reality but instead an active participant. While the visual has not been dealt with in knowledge creation research from this perspective, it is nonetheless promising and compatible an avenue because of their shared ontological roots in phenomenology and practice-based theories.

Organizational and management research inspired by arts has focused on artistic methods, art, and artists in organisations by looking at ways to making work more meaningful. The underlying argument in this approach is that conventional ways of working have relied on maximizing control and minimizing freedom, thus potentially leading to lifeless organisations (Barry and Meisiek 2010: 1522). Going deeper in this line of thought, it is revealed that the efficiency maximization points towards the triumph of reason over emotions as systems such as TQM, and Six Sigma attempt to make the organization as lean as possible. To counter this, arguments for mindfulness (Langer and Moldoveanu 2000), workarts (Barry and Meisiek 2010), and knowledge creation (Brown and Duguid 2001; Nonaka et al. 2008) can be seen as emancipatory acts towards balancing reason with emotion in organizational settings.

Thus, the underlying agenda for balancing reason with emotion has already been undertaken in Nonaka et al. (2008), and Nonaka and Takeuchi (2011) as they argue for a more subjective approach to knowledge creation. This is somewhat a radical departure from the main bulk of knowledge creation studies, as it questions the prevalent hegemony of reason in organizations and organizing, and in knowledge creation more specifically. In Nonaka et al. (2008), for example, we have already seen compelling arguments why knowledge creation is both emotional and rational, and it is this stream of research to which I wish to contribute by looking at knowledge creation from the perspective of sociomaterial performativity of the visual. That is to say, knowledge creation is a creative process that deals with the interplay between individuals and their environment (in the form of artifacts). Moreover, as knowledge creation so far has mainly refrained itself from explicitly and theoretically analyzing the visual, the purpose here is to integrate the visual to knowledge creation research by granting it agency through sociomateriality and performativity.

To conclude, although the connection between knowledge creation and
studies on the visual domain has not been explored as much as it should
deserve, the combination, nonetheless, seems to have natural touchpoints.
Knowledge creation, as I see it, draws on design, creativity, and art literature
as it is about “an ever-changing process of interaction in an ever-expanding
field of relations” (Nonaka et al. 2008: 2). Thus, we should move away from
seeing knowledge as a substance that can be stored, multiplied, or identically
shared between individuals (this argument was set forth in Tsoukas and
Mylonopoulos 2004 and Nonaka et al. 2008). When seeing knowledge as a
process rather than substance, we open up room for multiple interpretations
and diverse ways of communicating and creating knowledge. For example, the
Chigo blocks I used in this study can be seen as a knowledge-facilitator as they,
rather than making sense to anyone else than to the artist, open up
interpretations to produce knowledge about the organization they depict
(Barry and Meisiek 2010).

**Theoretical background and approach**

The intellectual backbone of this paper is built upon Nonaka’s theory of the
knowledge-creating firm, and sociomaterial standpoint to the performative
visual, thus further highlighting the importance of seeing nonhuman actors as
active participants in shaping and constructing the reality. It is contestable
whether individuals externalize their tacit knowledge (Nonaka and Takeuchi
1995; Nonaka et al. 2000; Nonaka et al. 2008) only to participate in creating a
more profitable organization: instead, and building on this notion, we should
also look at how new knowledge transforms the individual itself. This is where
workarts and performativity (Bolt 2004; Steyaert et al. 2012) enter the stage
by further emphasizing the importance of looking outside the profitability
discourse.

Nonaka’s theoretical framework has been widely cited in managerial and
organizational literature, but his definition of knowledge has not been left
uncontested (Gettier 1966; Gourlay 2006a,b). Prior to his theory, Gettier
(1966) for example illustrated that Plato’s ‘justified, true belief’ – the
foundation for Nonaka’s understanding of knowledge – is flawed, but to
Nonaka’s defense it has to be pointed out that Nonaka does not completely
follow Plato but uses his definition as a starting point. More recently, Nonaka
(Nonaka et al. 2008) has moved towards a process-view of knowledge, thus
implying a break from the static and substance view of knowledge. Whereas in
1995, when the landmark book by Nonaka and Takeuchi (1995) was written,
the emphasis was on the tacit-explicit knowledge conversion, in the revised
version of the knowledge creation theory (Nonaka and Toyama 2005; Nonaka et al. 2008; Nonaka and von Krogh 2009) more emphasis has been placed on subjectivity, environment, and time.

Building on this, knowledge creation and knowing in this study are understood as processes that manifest itself in practice, and more specifically the Chigo blocks are seen as performative knowledge creating artifacts manifesting metaphors of how the respondents experience the organization. Thus, the constructs made with Chigo blocks are not understood as static representations of knowledge, but instead they are an active part of the knowledge creation process in that they are a tangible mediator for individuals and their experiences. The epistemological standpoint for this approach is elaborated in the methodology section below, but for now it is worth mentioning that the level of analysis here focuses on the individual interpretations and experiences.

Where does this place the individual, then? I argue that knowledge is equally important for the individual and the organization, but for different reasons. For the organization, knowledge is a source for competitive advantages (Nonaka and Takeuchi 1995), and for the individual it gives meaning and provides a way for self-expression (Barry and Meisiek 2010; Langer and Moldoveanu 2000). In Nonaka (Nonaka and Takeuchi 1995; Nonaka et al. 2008), knowledge creation is geared towards achieving organizational competitive advantages that cannot be acquired through the markets, and this implies that the individual’s main function is to generate new knowledge, which then is leveraged by the middle management to the whole organization. This bottom-up approach is present in other knowledge creation scholars’ work (Brown and Duguid 2001; von Krogh and Nonaka 2009) as well, as knowledge seems to be connected to the notion of leveraging it to larger contexts within (and outside, to some extent) the organizational context. In this study, however, I am only focusing on the individual level although the research design crafted here makes it possible also to look at the organizational level, as well as the interplay between the individual and organizational level.

By drawing on and contributing to Nonaka’s more contemporary (Nonaka et al. 2000, 2008; Nonaka and Toyama 2005) work on knowledge creation the purpose here is to explore how visual methods can increase our understanding it from the individual perspective. By looking at knowledge about organizations I am bringing the organizational level to the research setting, but the level of analysis is nonetheless the individual. By doing so I wish to
contribute to knowledge creation research through sociomateriality and performativity.

**Methods and methodology**

This study deals with visual and tactile metaphors of an organization, which is why I chose to collect data by inviting the respondents to portray their organization with the Chigo blocks and photographing the final works. Although I am mainly looking at photographs of the visual metaphors, another equally aspect to data collection is the notion that I am embedded in the same environment with the respondents (as of writing this paper, I have been employed at the university for almost three years). Therefore I am not only analyzing photographic data, but I am also able to go beyond the image (Emmison and Smith 2007) in my quest to understand the knowledge reflected in the Chigo block constructs. My aim here, however, is not to attempt to uncover the truth, but instead I acknowledge that there are two layers of interpretation present: first, the artist creates their interpretation of the organization through the construct, and second, I interpret the construct based on what I see and the knowledge I have of the organization.

As the title of this paper suggests, I see the visual constructs as visual metaphors of knowing (Banks 2007; Pink 2007; Silverman 2011) that were studied in a setting that Silverman (2011: 323) refers to as a quasi-experimental setting. In my research setting, I gave the respondents a new medium (the Chigo blocks) to describe their organization, and these constructs are then treated as visual metaphors – each of the constructs tells a story about the relationship between the organization and the ‘artist’.

Data for this study was collected by asking thirteen researchers, administrative staff, and visiting scholars to create an image of their organization by using the Chigo blocks. Chigo blocks are made of Japanese cypress and a Japanese company called Chigo Playthings manufactures them. One set contains 16 triangular, 16 rectangular, and 56 cubic pieces, but the participants were told they could use between 1 and 88 pieces to portray the organization.
Once the participant was ready, they were asked to give a name to the construct that would reflect its meaning. This was done to further emphasize the process of participant-as-artist (Barry and Meisiek 2010: 1516-1517) creating a tactile and visual representation of their organization. Thus, instead of relying on words and talk to analyze the organization (Emmison and Smith 2007), I used Chigo blocks as a transformative medium to give the respondents a sense of distance to their organization. One of the respondents for example mentioned after the task that they felt like a child again working with such primitive wooden blocks. Thus, the medium not only transforms the way the respondents ‘talk’ about their organization, it also transforms in the sense that they are able to distance themselves from the current temporal dimension whilst simultaneously being ‘here-now’.

The participants were first asked whether they could spare five to ten minutes of their time for a research project. After the construct was ready, I photographed it from the perspective its ‘artist’ suggested. While the picture was taken, the ‘artist’ was asked to name the piece, after which they briefly explained what the title means. Following the logic of self-expression and seeing differently (Barry and Meisiek 2010), I wanted to give the agency to the respondent by portraying them as the organizational artists during the data collection moment. In contrast to interviews, where the interviewee is usually subjected to a certain frame of reference, I wanted the respondent to create the frame of reference by approaching the task from their preferred perspective. Although I did create certain frames for the respondents by first asking them to portray the organization with the Chigo blocks (tactile frame) and then inviting them to name the construct (semiotic frame), I did not limit the process in any other way.
To put it in other words, the process described above is about the tactile and visual interplay between tacit and explicit knowledge, and the individual and the artifact (Nonaka 1994; Nonaka and Takeuchi 1995; Nonaka et al. 2008) through a process that fosters both artistic self-expression (Barry and Meisiek 2010) and mindfulness (Langer and Moldoveanu 2000: 1-2). As Polanyi (2009) has suggested, tacit knowledge is difficult to articulate, which is why I turned to tactile and visual communication in order to study what they reveal about the tacit-explicit continuum. That is to say, I am not suggesting that the constructs are able to reveal tacit knowledge in its fullness, but instead what we are seeing are metaphors of tacit knowledge in explicit shape (Nonaka et al. 2008).

What is worth noting here is that I by no means argue that the end results, the physical constructs, help making tacit into explicit knowledge so that everyone can understand it: on the contrary, I argue that the main point here is not to be explicit in the sense that everyone else can understand you (Nonaka [1994] refers to explicit knowledge as something that is codified, such as databases and handbooks), but the purpose of making something explicit this way is to open up room for interpretations so that new tacit knowledge can be produced.

**Research context**

The research context for this study is part of a department at the Aalto University, Finland, where I work as a researcher. Aalto University started on 1 January 2010 when three universities (Helsinki School of Economics, Helsinki University of Technology, and University of Art and Design Helsinki) were merged together to form one university. Soon after the merger the three former schools were reorganized so that the university now consists of six different schools (Arts, Design and Architecture; Business; Chemical Technology; Electrical Engineering; Engineering, and Science), thus resulting in some departments joining together or forming new faculties.

The reason I have chosen to study a certain part of one department is that the three separate groups are physically located within the same space (occupying one floor of a building), and they have been in the same space for several years now. In addition, before and during the data collection period I was working as part of the community for almost two and a half years, which in turn provides me as an insider with additional insights to the study. The rest of the department (two other groups) is located within the same building, but
on different floors, which is why I have chosen to leave them out at this stage of my research. Moreover, despite having their different academic agendas, during and before the data collection phase the groups had been closely collaborating either through courses, research projects, or by helping each other out with various administrative and teaching tasks. In fact, the physical and mental space these three groups occupy and construct can be seen, in Nonaka’s terms (Nonaka and Konno 1998; Nonaka et al. 2000), as ba – a shared space.

This narrowing down of the research context can be understood in visual terms as framing (Banks 2007). The physical frame (one floor of a building) and the mental frame (university, department, and finally the group) work together to serve as a canvas of a painting that is then transferred to the construct. From the research perspective this context serves as a frame to limit my research: focusing on the department at whole would produce different kind of theorizing and analysis as both the physical and the mental frame would be expanded.

To conclude, the research context has been framed by following Nonaka’s works on bas, knowledge creation spaces (Nonaka et al. 2000; Nonaka and Konno 1998): research context in this study, in effect, is one ba “where the individual realizes himself as part of the environment on which his life depends” (Nonaka and Konno 1998: 41). Moreover, to further refine this kind of framing, it is not assumed that ba is a closed space, but instead it is open and as such it is assumed that the metaphors of the space that are under investigation here draw on ideas and concepts external to the ba.

Discussion and analysis

Discussion on the findings is structured in two layers here. First, I am looking at the theoretical level, and then I shall move on to describe what the actual constructs allow us to see. Using photographs of the thirteen constructs as my empirical data, I will shed light on how the Chigo blocks work as a transformative medium between work and art, common and foreign, and being and doing. Furthermore, the constructs also reflect space, relations, and identity, and I will combine these with the three transformations describe above.

Theoretical level
On the one hand, the process of portraying an organization with Chigo blocks is an interesting intersection between knowledge-creation and performativity, while on the other hand, the actual portrayals are also relevant in that they at the same time illustrate sense-making (Weick 2001) and open up interpretations that might not be related to the organization in question. Moreover, by rejecting the notion of the constructs representing the organization as is, performativity suggests that the Chigo blocks operate as mediators in making tacit knowledge partially explicit through various permutations and formations.

Indeed, as has been pointed out previously (Polanyi 2009; Tsoukas and Mylonopoulos 2004), explicit knowledge also contains the tacit dimension, and additionally the descriptions are my subjective interpretation of the constructs, which is why we cannot be completely sure whether others see what I see. Then again, from the knowledge creation perspective this universality of interpretations is not relevant or even productive, as the focus is on subjectivity (Nonaka et al. 2008). Thus, what we are seeing is an assemblage of various metaphors about the same organization – or ba – the participants belong to and shape.

First, based on my empirical data and reading of current literature in knowledge creation, the constructs created with the Chigo blocks can be seen as manifestations or metaphors of knowledge the participants have about their organization. As Nonaka (Nonaka et al. 2008: 3) argues that values, ethics, and aesthetics are important for knowledge-creation, so do I see this in the constructs: they embody values (what is a ‘good’ organization?), ethics (e.g. what is a ‘good’ or ‘justifiable’ way of working?), and aesthetics (how does a ‘good’ organization look like?). Moreover, the constructs are not only limited to positive sides as they also have the potential to show gatekeepers, exclusion, and information blockages. Since the medium itself, the Chigo blocks, prevented the respondents to aim at lifelike portrayals of the context, this framing then ‘forced’ the respondents to step back from their communication conventions by utilizing different means to create meaning through their constructs. In some cases, for example, the respondents (Picture 3) used arrows and walls to describe division and even chaos to some extent. Thus, here the respondent’s knowledge about the organization was visualized based on the themes of exclusion and sense of lack of direction.

Second, in my reading of Barry and Meisiek (2010), workarts can either exclude (sense-making in the Weickian [2001] sense) or include (leave room for interpretation). In terms of portraying an organization, the constructs work
in both levels. On the one hand, they can exclude, as only certain interpretations are ‘available’ only for the artist and their colleagues, while on the other hand, outsiders; too, can form their own interpretation of the organization by looking at the constructs. Based on the empirical material, it can be speculated that by bringing pictures of all of the constructs together for an ‘art exhibition’, the participants could draw inspiration from each other’s work by discussing them and reflecting upon them. This, however, falls at this stage out of the scope of this paper, but in my reading of Nonaka (Nonaka et al. 2008) this seems to be a claim that is – to some extent – supported by existing literature on knowledge creation. Furthermore, seeing the physical constructs as works of knowledge takes me further away from seeing knowledge as justified, true belief, and enables me to combine reason with emotion and cognition – exactly what Nonaka has been pursuing in his more contemporary work (Nonaka et al. 2008; Nonaka and Takeuchi 2011).

Why, then, is this seemingly unorthodox experiment relevant in terms of knowledge creation research? Would it not be tempting to call this child’s play instead of serious play (Roos et al. 2004)? As mentioned above, by changing the medium from linguistic to visual and tactile I have helped the respondents to step back from their current state of mind to employ new communicative means to convey their meaning. In effect, this has resulted in constructions that made the respondents to step back (Barry and Meisiek 2010) while at the same time retaining the ‘here-now’ position (Nonaka et al. 2008). Moreover, as the medium itself prevents purely representational and lifelike constructions to be made, this has also further highlighted the importance of performativity and sociomateriality (Barad 2003; Orlikowski and Scott 2008) in knowledge creation studies: as neither knowledge or individuals are fixed, approaching visual knowledge as something static and representational seems like a lost cause. In the section below, I will further elaborate on the performative power of the constructs, and what it means for knowledge creation research.

**Empirical level**

Findings emerging from the data have experienced two rounds of interpretation. First, the ‘artists’ themselves have interpreted their organization based on their experiences and senses, and the second round deals with me making sense of the constructs (or pictures of them) based on my personal experiences from working in the same organization. The main point in my analysis is not to force the constructs to any predefined and static categories, but instead I have looked for common themes, patterns, and
elements emerging from the data. In short, there are three transformative elements (work -> art, common -> foreign, and being -> doing), and three themes (space, relations, and identity) that reflect the way the participants relate to and make sense of their organization. I will analyze the three themes below through illustrative examples.

First, space refers to constructs that have attempted to portray the physical space of the organization. Consider the following constructs, for example:

*Picture 2. “Mix & Match Sekos” (“Mix & Match got confused”)
The actual physical space of this part of the department is portrayed through framing people and physical space. Both of the constructions above show both the physical boundaries of the group, but also how people occupy this space. Here, the main emphasis is on the connection between the perceived reality (what exists and where?) and how people are situated in it. What is interesting here, however, is the notion that people are given precedence to the space by signifying individuals and their ranks (in Picture 1 different groups are signified by different blocks, and in Picture 2 professors, for example, are portrayed with blocks having a triangular block on top of them). Additionally, in Picture 1 the construct in the middle of the picture shows the coffee area where people have meetings, socialize, or relax when they feel the need for it. In a way, the outer parts in both pictures frame the setting, while action – the more important facet of the constructs – is taking place in the middle, thus suggesting that the individuals and what they do form the core of the organization. Without people and their activities and practices there would be no organization.

Thus, although these kinds of constructions are somewhat bound to the reality, they also highlight the importance of people: individuals are the elements giving meaning to the organization within a given physical space. Moreover, this notion also gives rise to the notion introduced in the first part of this paper: increased individual mobility has made it somewhat challenging
to claim that an organization is the sum of its physical limits. This has been shown already in previous studies (Lash and Urry 1994), but what is interesting here from knowledge creation’s perspective are the myriad ways the respondents utilized to visualize their knowledge about the organization.

Moving towards more abstract representations and narratives of the organization, the second theme deals with relations between individuals. In constructions like the ones below, the artists have moved away from realist depictions of physical space, instead highlighting relations between individuals in a certain space (be it physical or mental).

**Picture 4. “Teacher Leave Those Kids Alone”**
Knowledge about the organization and its individuals focuses on relations between people and how they are together in a certain space, but sometimes separated mentally (as the title of Picture 4 suggests). Whereas in Picture 1 and 2 relations were portrayed through formal power relations (e.g. professors, PhD students, administrative people and so forth), in the second theme here power relations are portrayed more as socially constructed through naming of the piece and the way constructs are set up. Although power relations are depicted partially along the formal lines, especially in Picture 3 we can see the arrows describing chaos and disorder insofar as they are compared with the tribal formation on the other side of the wall. Similarly in Picture 4 it can be argued that all physical aspects of the space have been stripped away, and the only things that remain are people, groups, and connections between people. From the knowledge perspective, it can be argued that in Pictures 3 and 4 knowledge about the organization reflects the importance of people, relations, and power.
Although formally and in ideal worlds it is assumed that information flows freely between different groups, in reality – as the constructs portray – there are obstacles between units and individuals, thus giving an informal layer to the organization underneath the formal, surface, level. In these constructs, the organization is portrayed as an arena for power struggles and political games, and where the units that are located within the same physical space are actually divided according to complex networks of power and information. However, it is somewhat perplexing why the respondents who made the two constructs above left out the physical environment? Given that Nonaka et al. (2008) have argued that knowledge is created in interplay between the individual and the environment, why does it not show in the pictures above? One possible interpretation would lead to suggest again the importance of individual mobility and the decreased need for a physical space for an academic unit or group to function, but on the other hand it can also be interpreted so that the environment that is of importance is not the one that the people inhabit. Indeed, as Nonaka and Konno (1998) have argued, ba can be either physical, mental or virtual, thus suggesting that the environment – or ba – portrayed in Pictures 3 and 4 is actually a mental one.

The last theme, identity, is perhaps the most abstract form of portraying the organization. Here, knowledge about the organization departs the physical realm by detaching the construction from any identifiable physical elements, and as such opening up room for interpretation and paying attention to the inner works of the artist.
In these pictures, the artist's self-expressive capabilities have been taken to the maximum by focusing on a creative dance between the title and the construction. For the artists behind these constructs, the organization is a (n organized) mess with no clear structure, albeit in Picture 6 the phallic item in
the middle seems to point towards a leader standing on top of the organization. Identity in these pictures refers to the organizational identity as perceived and experienced by the artist: the main agenda for the construct is not to make a realist portrayal of what is perceived, but instead they rely on other communicative means to capture the elusive essence of the organization. Or in other words, knowledge about the organization does not deal with what is, but with how do I co-exist with the organization and how I construct meaning about it.

Knowledge about the organization in the third theme deals in a rather direct sense with embodied experiences: how do I feel about my organization and what do I know about it from my standpoint. Moreover, pictures in this theme are perhaps strongest in illustrating the performative power of the visual, as they are the end result of a reflexive process between what the individuals know and what the wooden blocks enable them to do and create. They, like Pictures 3 and 4, convey metaphors of what the respondents know about the ba (mental ba, in these cases) and how they interact with it (Nonaka et al. 2008). Furthermore, they also illustrate how what the respondents experience is turned into a knowledgeable practice where power relations, identities, and group constellations are turned into an extension of the respondents’ knowledge.

The findings discussed and presented above are of preliminary nature, but already at this stage they possess interesting results from the knowledge creation’s perspective. First, the creative tension between work (what people do in an organization?) and art (how do people portray work in an organization?) seems to make it possible to generate new insights to the question “what is an organization?”. Second, the transformative media such as the Chigo blocks seem to stimulate individual’s ability to create new knowledge through seeing differently with the help of a transformative medium that differs from verbal communication in terms of what they enable and limit.

Building on this, what this study has also shown is glimpses to how the respondents utilized the Chigo blocks to craft images of bas or spaces where knowledge creation takes place. As a research setting, university is by default built on the premises of creating knowledge for various ends, and the constructs have shown how the respondents experience their space as an arena for knowledge creation. For some, portraying the physical environment as the servant for the individuals was seen crucial, while for others the mental space was important from knowledge creation’s perspective. This, then, contributes
to our refined understanding of spaces in relation to knowledge creation by illustrating diverse ways and levels to experience the same space.

**Contributions and future directions**

The purpose of this paper has been to illustrate how the Chigo blocks can operate as a tangible interface between the abstract and the concrete to communicate knowledge about organizations. I have argued that the purpose of using physical objects to portray an individual’s view on organization is not only to make sense of the organization, but also to give room for multiple interpretations, and thus illustrate through the use of images what Nonaka has been writing about knowledge creation (Nonaka et al. 2000, 2008; Nonaka and Takeuchi 2011).

Thus, contributions of this study focus on bringing emotions to the core of knowledge creation studies by problematizing the dominant position of reason in knowledge creation. From the organization’s perspective, focusing on reason is ‘the easy way out’ as the outcomes are usually quantifiable and relatively easy to disseminate to the whole organization, but emotions are equally important for creating new knowledge.

Future studies dealing with workarts, mindfulness, and knowledge creation could, for example, look at the processes through which individuals create similar constructs (either with Chigo blocks or other material) or focus on organizational life and what role these visual and tactile artifacts play in the organization. In my humble opinion, both the process and the outcomes and meanings are of equal importance here. In addition, in this study interpretation of the constructs has been made by the author, but in future studies it is recommended that pictures of the constructs are shown to the respondents: in this regard the constructs could be understood as boundary objects mediating further discussion between the respondent and the researcher about the organization. Similarly the assemblage of all constructs could also be utilized to initiate group discussions with the respondents to see how their understanding of the organization differs from and converges with each other.

Nonetheless, this initial inquiry into the intersection of Chigo blocks and knowledge creation has shown the potential ‘foreign’ artifacts have in triggering knowledge creation about such seemingly elusive concept as ‘organization’, for example.
Concluding remarks

In this paper I have sought to understand how knowledge creation and visual research methods could be brought together by using Chigo blocks in a quasi-experimental setting. The main rationale for this study was twofold: first, I was interested in investigating the transformative touch points between familiar (organization) and the unfamiliar (the Chigo blocks), and second, how the Chigo blocks could yield a connecting point between knowledge creation and lived experiences.

Participating in the discussion on knowledge creation (Brown and Duguid 2001; Konno 2009; Nonaka 1994; Nonaka et al. 2008) with the workarts perspective (Barry and Meisiek 2010) I hope to have shown that knowledge creation theories can be advanced by drawing on visual research methods. In reality, the organization’s future and competitive capabilities are superordinate to the individual, and thus the individual’s role is only to serve as a creator of new knowledge – the possible impact to the individual has not received as much attention as it should.

How should we move on from here? One way ahead is to follow the quasi-experimental approach I have adopted here, but perhaps even more interesting path would be to approach the organization from the visual perspective, by looking at various already existing visual artifacts within the organization. What kind of visual artifacts individuals have created? For what purpose? How do other people perceive these and what kind of power is exercised through these artifacts? Questions such as these beg to be answered if we are to better understand the interplay between the individual and knowledge.

Finally, inspired by Barry and Meisiek (2010), I believe workarts approach to organisations and knowledge creation to give agency to the individual by shifting attention from old organizational conceptions to new ones where knowledge work is no longer characterised by processes, but by self-expression and interpretation as Nonaka has proclaimed (Nonaka et al. 2008). Reality is a mixture of reason and emotion, and hence we should pay more attention to emotions and self-expression at workplace than what we currently have. This is what the Chigo blocks study has been about: to balance reason with emotion.
References


De Ciantis, C. (1995), *Using an art technique to facilitate leadership development*, Spring Lake: Centre for Creative Leadership


Ewenstein, B. and Whyte, J. (2007), ‘Beyond words: Aesthetic knowledge and
knowing in organizations', *Organization Studies*, 28 (5): 689-708

Gettier, E. (1966), 'Is justified true belief knowledge?', *Analysis*, 23 : 121-123


Tsoukas, H. (1996), ‘The firm as a distributed knowledge system: A
constructionist approach', *Strategic Management Journal*, 17 (Winter Special Issue): 11-25


A visual approach to studying cultural knowing at workplaces: Evidence from Japan

Miikka J. Lehtonen
Aalto University School of Business,
Department of Management Studies
P.O. Box 21210, FI-00076 AALTO, Finland
+35840 353 8451
miikka.j.lehtonen@aalto.fi

Abstract

Language and culture has been a curious couple in international business (IB) research for a while now, and it seems that written and oral communication have been given precedence over other forms of communication when it comes to culture. This line of thought, I argue, is a problematic one for two reasons: first, it neglects the role other means of communication have in constructing reality and second, it limits the array of methods we have for collecting research data. Thus, the purpose of this paper is to lay the foundations for a visual approach to cultures in workplaces.

Keywords: culture, visual research methods, Japan, cultural knowing

Acknowledgements

The author would like to thank Foundation for Economic Education, HSE Foundation, and Scandinavia-Japan Sasakawa Foundation for financial support.
Introduction

Language and culture has been a curious couple in international business (IB) research for a while now (Brannen and Salk 2000; Leung, Bhagat, Buchan, Erez and Gibson 2005, 2011; Yagi and Kleinberg 2011), and it seems that written and oral communication have been given precedence over other forms of communication when it comes to culture both in terms of ontology and epistemology. Perhaps one of the main reasons for focusing on written and oral communication as main sources for empirical data has been that our theories and findings are expressed by using those means of communication. This line of thought, however, is problematic for two reasons: first, it neglects the role the visual has in constructing and negotiating reality and second, it limits the array of methods we have for collecting research data. Moreover, it is exactly with these two points that I wish to contribute to the ongoing discussion on cultures in IB by approaching cultures and cultural knowledge from the visual perspective: on the one hand we need to acknowledge the visual and aesthetic dimension of organizations and knowledge (Nonaka, Toyama and Hirata 2008; Strati 1999; Taylor and Hansen 2005) and on the other hand we need to be better equipped for studying the visual in organizations (Steyaert, Marti and Michels 2012).

Building on this line of thought, if we only focus on written and oral accounts, are we not unnecessarily narrowing our scope when it comes to theorizing about culture and cultural knowledge? To question this assumption in our field (Alvesson and Sandberg 2011; Sandberg and Alvesson 2011) my main argument in this paper is as follows: culture is a multisensory phenomenon and as such we should approach it through multisensory means. The reason to study the visual side of things is, in fact, seemingly obvious: sight has always been one of our most important senses in terms of acquiring sensory experiences and, perhaps even more importantly, current technological advances have imploded the amount of visual information and also made it easier for everyone to create. Moreover, organizations create their identities through logos and other visual means, cultural icons such as sushi and the golden arches of McDonald's are everywhere, and nearly every one of us has created doodles during meetings at work. In short, cultures are visual by nature, and the list above could be extended with numerous examples, but it already shows that the visual side of cultures and cultural knowledge is a field
of study somewhat neglected, but definitely abundant in terms of contributing to our discussions on the nature and production of cultures.

By drawing on a study conducted in a Japanese subsidiary of a North European owned MNC, my purpose in this paper is to argue why we need a visual approach to culture in IB and how we should go about conducting visual research within this context. This paper, then, lays the foundations for a visual approach to cultures that aims to contribute to the burgeoning discussion on cultures in IB (Brannen 2004; Brannen and Salk 2000; Caprar 2011; Leung et al. 2005; Moore 2011) by asking the following question:

*What do visual research methods tell us about cultural knowing and formations?*

To further illustrate and argue for my case, I will turn to review contemporary research on cultures and literature already utilizing the visual in organizational settings, after which I present the case company and research methodology in detail. Building on these, I move on to discuss the findings, after which the paper is concluded by implications and avenues for further research.

**What do we know about cultures so far? A literature review**

Culture has been one of the main areas of interest in contemporary IB research (Kirkman, Lowe and Gibson 2006; Kogut and Singh 1988; Shenkar 2001), and not without a reason. Within IB, many theoretical and empirical advancements have been made in terms of culture especially within internationalization (Kogut and Singh 1988), expatriate management (Peltokorpi 2007; Peltokorpi and Clausen 2011; Rosenzweig and Nohria 1994), and M&As (Björkman, Stahl and Vaara 2007; Bresman, Birkinshaw and Nobel 1999; Vaara, Sarala, Stahl and Björkman 2012; Yagi and Kleinberg 2011; Zander and Zander 2010), and currently we are witnessing a paradigm shift in terms of national culture versus the multiplicity of cultures. Indeed, several scholars (Brannen and Salk 2000; Jameson 2007; Moore 2011; Witte 2012; Yagi and Kleinberg 2011) have questioned the dominant position of national culture within cross-cultural studies, and in order to keep the momentum we need to explore novel perspectives to cultures and cultural knowledge within
IB. This paper, then, is in line with contemporary critical work on culture (Brannen and Salk 2000; Witte 2012; Yagi and Kleinberg 2011) that has adopted a performative stance in deference to the currently dominating representationalist view. Thus, to study cultures from a performative standpoint calls for diversity in terms of the research methods we have at our disposal, which is why I turn to visual studies to look at cultures from the visual perspective. To approach the visual from the performative standpoint implies that the visual does not only represent reality, but constructs it, which makes it a legitimate field of study looking at cultures.

Hofstede’s (1980) work on culture and the Global Leadership and Organizational Behavior Effectiveness (GLOBE) (House, Hanges, Javidan, Dorfman and Gupta 2004) project have without a doubt had a tremendous impact on cross-cultural theorizing, although several authors have questioned the contributions these endeavors have had on the field (Baskerville 2003; Tung and Verbeke 2010; Witte 2012). Critique towards large-scale projects investigating culture in organizations should be seen as a debate between ontologies: while Hofstede’s and (1980) GLOBE scholars’ (House et al. 2004) take on culture has been an aggregate one (culture manifests itself in individuals), scholars on the other camp have criticized this approach to be an essentialist one (behavior can be explained by national culture), and as such they have advocated for a post-nationalist and anti-reductionist take on culture (Brannen and Salk 2000; Jameson 2007; Witte 2012; Yagi and Kleinberg 2011). Thus, research on cross-cultural matters has so far followed two streams where the first is more concerned with broad level generalizations and the second questions this by advocating for a more diverse approach to culture.

Proponents of the post-national approach to cultures (Fang 2003; Sackmann and Phillips 2004; Witte 2012) have traditionally been interested in contexts and environments below the nation state level, thus usually looking at organizations embedded in certain societal contexts. Here, unlike in the stream inspired by Hofstede and GLOBE, focus has not been on comparing cultures, but instead investigating how culture is done and how it could be approached. Occasionally, however, scholars have criticized the comparative and universalist way (Baskerville 2003; McSweeney 2002) as being too reductionist in their operationalization, thus resulting in findings and theories that are too detached from the reality. This clash of two clans has sparked
interesting replies (Gould and Grein 2009; Leung et al. 2005; Triandis 2004; Tung and Verbeke 2010), but apart from that it seems it has only resulted in both streams digging deeper trenches.

While this paper acknowledges and appreciates the theoretical and empirical advances made in both streams, the purpose here is to build on the post-national approach to cultures and especially at the individual level. In psychology, for example, a lot of attention has been granted to the interplay between the individual and the environment (Ellemers, Spears and Doosje 2002; Lehman, Chiu and Schaller 2004; Triandis and Suh 2002). In Triandis and Suh (2002: 134), for example, this connection is elaborated as follows: “behavior is likely to be a function of not only culture and personality but also the interaction between personality and the situation”. Approaching the formation of cultures from the communication perspective, Jameson (2007: 199) argues that a research agenda focusing on the individual is needed in intercultural communication research as “cultural identity changes over time and evokes emotions”. Jameson, however, does not emphasize the environment explicitly as much as psychologists looking at cultures, but her understanding of cultures tangentially echoes with that of the psychologists’ in the sense that both assume cultures to be created dynamically.

It seems that with the recent proliferation of individual mobility and traveling, and social media, for example, traditional notions of cultures as something given have been contested, thus highlighting the relevance of the post-national take on cultures. While it cannot – and should not – be convincingly argued that nation states are coming to an end, other cultural formations and groupings have been increasing in power, which is why they require more scholarly attention. Echoing with the hybridization of cultures, Witte (2012: 153) raises the following point: “culture is a fugitive concept, contingent on esoteric, hybrid, and partly invisible variables. It is more prism than lens, more mutt than pedigree, and more organic than structural”. Thus, what is suggested here is a take on cultures that embraces diversity and hybridity, and, I believe, drawing on visual methods to study cultures and cultural knowing could contribute to this discussion.

In a recent conceptual paper on the diversity of cultures, Witte (2012: 153) claims that the study of cultures is a balancing act between systematic and creative methods of data collection. Above, I have discussed two streams that
more or less swing between these two dimensions, and this is explicit also in a recent editorial to a special issue by Primecz, Romani and Sackmann (2009). They distinguished three streams of cross-cultural research that draw on positivism, interpretivism, and postmodernism, respectively. Indeed, much of the discussion between these streams – be it two or three – has stemmed from the notion that they employ different ontological lenses to cultures. Nonetheless, despite the diversity of ontological foundations in cross-cultural research, especially within IB and management, diversity does not seem to carry all the way to the epistemological, or methodological, level. Looking at contemporary cultural research in IB (Caprar 2011; Leung et al. 2005; Yagi and Kleinberg 2011), most studies are mainly dealing with interviews or survey data as sources for theorizing on cultures or testing theoretical frameworks. To move beyond the text (Atkinson and Silverman 1997), we should explore the visual dimension as a potential source for new theoretical insights and developments. To elaborate on this claim, in the next two sections I will discuss visually inclusive research and how the knowledge creation approach to cultures can increase our understanding of how cultures and cultural knowing emerge.

Two approaches to the visual: an object or a method

There are two main perspectives to approaching the visual in research: visual as an object of study and visual as a research method. Although they possess methodological similarities, more often than not studies have adopted only one of them.

Visual communication as a research method has been successfully utilized especially within the disciplines of communication (Barnhurst, Vari and Rodríguez 2004), organization studies (Davison, McLean and Warren 2012; Ewenstein and Whyte 2007, 2009), and anthropology (Pink 2007; Schwartz 1989), and it is these fields I will be drawing on to argue how and why visual communication can be of benefit in IB. But this is only one side of the coin, as visual communication can also be treated as an object of study (Steyaert, Marti and Michels 2012). Whether the researcher is looking at visual objects (Ewenstein and Whyte 2009) or using visual methods to collect data (Roos, Victor and Statler 2004; Schwartz 1989) these choices nonetheless are closely
connected to the ontological and epistemological foundations inherent in the research design.

In a recent review of visually oriented studies in organizational research Steyaert et al. (2012) identified three dimensions where visual has been situated. In addition to studying pre-existing visual data and inviting the informants to produce visual material, Steyaert et al. (2012) also identified visually oriented publishing as a dimension of interest, but as this seems less concerned with theoretical underpinnings, it will not be covered in this paper. Whereas the former is more concerned with studying visuals created by the informants (Warren, 2002) and the latter more concerned with extracting data through visual means (Pink, 2007), there are nonetheless certain similarities, and this overlap can cause confusion, which is why they are now discussed.

Approach towards the visual as an object of study has been especially vibrant in design and architecture (Moore 2003), communication (Malik, Aitken and Waalen 2009), and organization studies (Ewenstein and Whyte 2007, 2009), and this has been largely due to their theoretical foundations relying on reflexivity, postconstructivism, and feminism (Steyaert et al. 2012). In its crudest form, scholars looking into visuals as an object of study investigate, for example, visuals as boundary objects (Ewenstein and Whyte 2009), enablers of knowledge sharing (Sunaoshi, Kotabe and Murray 2005) or constructs of reality (Davison 2007).

While scholars contributing to this research stream do not necessarily employ visual research methods themselves, their theoretical approach to visual is nonetheless closely connected to theories in art and aesthetics (Steyaert et al. 2012). What binds them together is the notion that the visual is an integral part of the research context, and as such it should be approached with necessary theoretical rigor, not only as a mere supplement for the actual research (Steyaert et al. 2012).

In deference to the visual as an object of study stream of research, visual as a research method invites scholars to study phenomena that might be difficult to capture by only relying on written and oral accounts. Visual ethnography (Pink 2007) is one of the prime examples here: instead of drawing on various written and oral texts as empirical data, visual ethnography is also interested in
visually recording events as they unfold in order to include tacit aspects of the issue at hand (Pink 2007).

Building on the implicit assumptions behind the studies adhering to the visual as a research method approach, it can be argued that performativity is one of the key drivers in structuring the research design (Steyaert et al. 2012). Whether it is about the researcher or her informants producing visual material, it is nonetheless evident that the research questions guiding this type of studies deal with meanings (Ewenstein and Whyte 2009), performance (Warren 2002), and processes (Pink 2007). What is more, visual material that is produced during the course of the research is not taken as is, but instead it is implicitly acknowledged that each of the visual objects produced also deals with power, frames, constructions, and meanings. Thus, a way of seeing is only a way of not seeing (Berger 1972).

In conclusion, it can be argued that scholars have approached the domain of the visual in multitude of ways, but from two broad approaches. On the one hand, scholars have looked into and theorized on visual material that is already ‘out there’, while on the other hand scholars have also produced visual material themselves or invited their informants to engage in visualizing aspects from their lives either in a situation together with the researcher or during their ‘usual’ days. From these two approaches, this paper belongs to the latter loosely knit group of studies as my main argument here is to illustrate how visually produced research data can contribute to research on cultures in IB.

**Visual in IB? Towards a theoretical framework**

As I have briefly mentioned above, visual in IB can be approached from both epistemological or ontological perspective, but as their theoretical underpinnings are somewhat different the focus in this paper lies in arguing for the relevance of visual research methods in studying cultures and cultural knowing. In order to do this, we must first lay out the theoretical foundations on to which cultural studies utilizing visual methods can be built. The approach adopted here draws on knowledge creation research (Nonaka and Takeuchi 1995; Nonaka and Toyama 2005; Nonaka, Toyama and Hirata 2008) and sociomateriality (Barad 2003; Latour 1986, 1987, 2005; Latour and
Woolgar 1986; Orlikowski and Scott 2008), by assuming knowledge creation about cultures to be an interactive process between individuals and artifacts. That is to say, knowing and knowledge emerge through various configurations between individuals and artifacts.

At first sight, culture and knowledge seem like an odd couple, but this intersection serves as a solid foundation for a theoretical framework for two reasons. First, studying cultures at workplaces can be understood as a process of making tacit knowledge of cultures explicit through various data collection methods. Second, as knowledge is about metaphors or constructions of reality (Nonaka and von Krogh, 2009; Nonaka and Takeuchi 1995; Polanyi 1998), this line of thought is well aligned with that of cultural identity (Brannen and Salk 2000; Jameson 2007; Yagi and Kleinberg 2011) that assumes culture to be a construct that is both constantly moving and negotiated, as well as resistant to change. Thus, in this paper I will be studying cultures from the knowledge creation perspective. To do this, I turn to knowledge creation frameworks and apply them to the context of cultures.

Knowledge creation studies are mainly interested in investigating what type of knowledge is created by individuals within organizational settings (Nonaka and Takeuchi 1995; Tsoukas 2009), and how it contributes to firm’s competitive advantage through expanding personal boundaries, for example (Nonaka and Konno 1998). Main focus in knowledge creation studies has been on new product development (Nonaka 1994), and processes (Nonaka and Peltokorpi 2006), while culture has received less attention (Holden 2002). However, the essence of knowledge creation lies in transcending individual boundaries (Nonaka and Konno 1998); or in other words, new knowledge arises from tensions between realities or boundary objects (Carlile 2002). These tensions are also reflected in the tacit – explicit knowledge continuum (Polanyi 2009): all knowledge is inherently tacit – to a varying degree – and as such artifacts offer us perspectives for studying knowing and knowledge creation. This is highlighted especially in sociomateriality and material knowing (Barad 2003; Orlikowski 2002, 2006; Orlikowski and Scott 2008) that assumes knowing and knowledge creation to be situated in the interaction between the social and the material.

Most of the knowledge creation research rests on the assumption that tacit knowledge is difficult to articulate (Nonaka and Takeuchi 1995), but at the
same time tapping into it is crucial for firm’s success. But in this claim lies also one of the challenges of knowledge creation research, namely how do we study something that is difficult to articulate (Gourlay 2006)? The same problem is also evident in cross-cultural studies, especially in contexts where the researcher does not speak the language of the respondents (this issue has been addressed in Peltokorpi and Clausen 2011). Building on this, as interview as a research method and texts as research data have come to dominate our field (Atkinson and Silverman 1997), how do we enable the transition beyond oral and written texts to study cultures? Here, I claim, visual research methods can contribute to our understanding and theorizing on cultures since while language is governed by rules and norms, visual communication is not framed similarly, although certain aesthetic and stylistic norms do shape our visual expression (Arnheim 1997).

Thus, knowledge creation in this study is understood as a process of creating knowledge about cultures at workplace. Building on this, knowledge is seen to emerge from the interaction between the individual and the artifacts: that is to say, the visual data collected in this study is understood as metaphors or reflections of the knowing processes the respondents have engaged in in terms of cultures (Nonaka et al. 2008) This kind of approach to knowledge lends itself to duality in knowledge creation – between the respondents and between the researchers and the respondents – is in line with Nonaka and Toyama’s work (2005) where knowledge creation is assumed to take place in an ecosystem that covers actors also outside the firm’s boundaries (Rynes, Bartunek and Daft 2001; Van De Ven and Johnson 2006).

Thus, by bringing elements from sociomateriality to research on knowledge creation and cultural knowing we arrive at a framework that can be regarded as an extension to current theories. That is to say, interaction is still at the core of this new framework, but it is reinforced by additional focus to sociomateriality and visual research methods. Calls for this kind of framework have been voiced previously: Konno (2009), for example, argues for the importance of visualizing knowledge, and Nonaka and von Krogh (2009) invite diverse contributions to the theoretical discussion on organizational knowledge creation. To illustrate how and where the contribution of this paper comes from, in the next section I describe the research design and context.
Research methods and context

Research methods

This study adopted a sociomaterial approach to knowledge creation and cultural knowing that emphasizes the importance of the material in terms of social processes (Barad 2003; Orlikowski and Scott 2008). Building on this, the research question that guided my data collection processes was “What do the visual research methods tell us about cultural knowing and formations?”. This research question was informed by studies on cultural identity (Jameson 2007; Yagi and Kleinberg 2011) and negotiated culture (Brannen and Salk 2000) and more broadly by studies within cross-cultural studies adopting a post-national approach (Fang 2003; Witte 2012). Previously cross-cultural studies looking at multiple cultures have utilized mainly interviews (Brannen and Salk 2000) and – to some extent – ethnographic approach (Moore 2011; Yagi and Kleinberg 2011). But what if we are faced with a research context that does not allow us to rely only on written and oral accounts? In such instances we are faced with at least two options: first, pack our bags and search for another site to study, or second, draw on novel research methods. Here, I consciously opted for the second road, as part of my journey was that I started to question (Sandberg and Alvesson 2011) the dominant position of written and oral communication in cross-cultural studies. Thus, the purpose of this section is to illustrate how and why the chosen methodology can help me in answering the research question.

Building on the sociomaterial and knowledge creation research traditions, the data collection process uncovered the following competing and overlapping realities within the research setting: education, employees of the acquired company in Japan, expatriates from the MNC, nationality or native language, and professional background. These groups or identities (Sackmann and Phillips 2004), however, do not represent the reality as it is, but instead they are my interpretation of the world I entered. Thus, I am not arguing here that the list above is by no means comprehensive, but instead it is the social reality I constructed with the respondents during this study (Berger and Luckmann 1991).

One of the challenges present within this study was to gather enough background information about the setting in order to be able to craft the
research design so that it supports my answering the research question while at the same time being able to focus on the spaces where interaction within the team members takes place. To counter this, the study reported in this paper took place in four interrelated phases that are now briefly described (Jick 1979).

First, I conducted an initial survey on the teams both in India and Japan with the purpose of gaining a broad, surface-level account of the teams’ communicational practices. In addition to background information (e.g. education, years in the company, languages used at work) I wanted to find out how the team members regarded the teams’ collaborative capabilities, information flows, and what kind of communicative preferences (e.g. media, and means) they had. The survey was set up online, since during that time I was not physically located in the Japanese site, and the themes in it were selected based on my initial interview with the team’s manager.

Second, based on the initial survey and email correspondence with the teams’ manager, I conducted semi-structured interviews (Noaks and Winkup 2004) with the Japanese team and selected expatriates working at the Japanese site to further focus on their communicative and work practices. The interviews lasted between thirty and ninety minutes, and I had prepared a set of questions to guide them while at the same time leaving room to further explore issues that arose during the discussion. For example, the original questions dealt with communication, collaboration, and work-related questions (e.g. typical day at work, and how do you learn new things at work), but sometimes the interview moved towards talking about the merger process and with the expatriates I discussed matters related to collaborating with their Japanese colleagues.

Third, during my first visit to the Japanese site I was also collecting research data through observations. I kept a field diary where I wrote down observations on the team’s work practices (LeCompte and Schensul 1999; Schensul, Schensul and LeCompte 1999). Whereas the survey and the interviewees allowed me to focus on the way interviewees constructed their reality (Berger and Luckmann 1991), the observations helped me to construct a picture of collaboration in the workplace.
Fourth, the three pictures used to collect data in this study were grounded mostly in the research context, but also in previous studies looking at how different cultures exist in workplaces (Jameson 2007; Sackmann and Phillips 2004). During the interviews, I asked the interviewees to draw the following pictures in the order they are presented here:

**Table 1. The three picture tasks**

<table>
<thead>
<tr>
<th>Picture Description</th>
<th>Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Japanese person walking home</td>
<td>What kinds of symbols respondents utilize to describe Japaneseness?</td>
</tr>
<tr>
<td>An Indian project manager</td>
<td>What kinds of symbols respondents utilize to describe Indianness and managerial responsibilities?</td>
</tr>
<tr>
<td>Project’s budget has been exceeded</td>
<td>How respondents visualize an event critical for their work?</td>
</tr>
</tbody>
</table>

The visual tasks described above are grounded in both earlier works on cultures and how they are constructed (Brannen and Salk 2000; Jameson 2007; Yagi and Kleinberg 2011) as well as in the respondents’ organizational context. The purpose here is to shed light on how the respondents make sense and visualize elements integral to their work. In previous cultural studies these have been elaborated through texts – such as surveys and interviews – but here the aim was to go beyond language by exploring what kind of theoretical and empirical insights visual methods and data can yield.

Data analysis in this study focused on the visual, while data collected through interviews, surveys, and observation are used mainly as background information in order to understand the nature of the research setting. Moreover, visual data – the images drawn by the respondents – are approached as examples of what Orlikowski and Scott (2008: 456) refer to as relational ontology: an ontological entanglement between the social and the material that assumes meaning to emerge not within the entity (be it social or material) but from the relations between entities. This line of thought is well aligned with literature on knowledge creation and knowing where knowledge is assumed to exist as a process between actors (Nonaka et al. 2008). Thus, the images here should be seen as an analogue to anything visual in the organization: they serve as an illustrative case on the interaction between the
social and the material taking place every day in the organization. Building on this, the images reflect knowledge and cultural knowing that emerges in situ.

In conclusion, the research design adopted in this study inherently contains two methodological implications. First, by loosely following Pink’s work on sensory and visual ethnography (2007, 2009) the research design here has focused on the visual data and all the other forms of data are used to support claims made based on the visual data. Second, building on the first notion, the visual images produced during this study should be regarded as constructions of the reality as seen by the respondents. That is to say, there is no need to mystify the pictures and treat them as anecdotal evidence, but, as the next section will illustrate, visual data is equally fruitful as written and oral forms of data in terms of generating research insights.

Research context

The research setting for this study was a financial unit of a Japanese site that was recently acquired by a global MNC. With over 100,000 employees, production facilities in nearly twenty countries, and sales operations in almost two hundred countries, it is one of the leading companies in the industry. Its main markets have so far been in Europe and North America, but during the recent years it has gained foothold in Asia and South America at an increasing speed, which is why it needed to acquire a better position in those areas.

In mid-2000s, TransGroup increased its presence in Japan by acquiring a local competitor (referred to here as Nippon Motor), although it took around two to three years for TransGroup to start integrating Nippon Motor to its global organization. The process to integrate Nippon Motor to TransGroup and its global operations started in 2008 when a group of selected expatriates came to Nippon Motor to assess the organizational situation and to implement the integration process. Approximately one year later and after numerous flights between Europe and Japan, a group of expatriates was positioned in Japan on a more long-term basis and most of them took managerial positions, as their task was to integrate TransGroup processes to Nippon Motor’s activities.

As part of the global organization, Nippon Motor adopted the MNC’s global structure and the unit I investigated was part of the global financial services.
During the time of my data collection, the team consisted of nine Japanese employees and one French manager. In addition, the team worked closely with an Indian site as the team’s manager was also responsible for another financial team there (Table 2).

**Table 2. List of people interviewed**

<table>
<thead>
<tr>
<th>Respondent</th>
<th>Field of work</th>
<th>Educational background</th>
<th>Native language</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent A</td>
<td>Finance</td>
<td>Mechanical Engineering</td>
<td>Japanese</td>
</tr>
<tr>
<td>Respondent B</td>
<td>Finance</td>
<td>Mechanical Engineering</td>
<td>Japanese</td>
</tr>
<tr>
<td>Respondent C</td>
<td>Cost Management</td>
<td>Technology</td>
<td>Japanese</td>
</tr>
<tr>
<td>Respondent D</td>
<td>Accounting</td>
<td>Finance</td>
<td>Japanese</td>
</tr>
<tr>
<td>Respondent E</td>
<td>Finance</td>
<td>Management</td>
<td>French</td>
</tr>
<tr>
<td>Respondent F</td>
<td>Finance</td>
<td>N/A</td>
<td>Japanese</td>
</tr>
<tr>
<td>Respondent G</td>
<td>Finance</td>
<td>Finance</td>
<td>Japanese</td>
</tr>
<tr>
<td>Respondent H</td>
<td>Finance</td>
<td>Machine Engineering</td>
<td>Japanese</td>
</tr>
<tr>
<td>Respondent I</td>
<td>Purchasing</td>
<td>Logistics</td>
<td>French</td>
</tr>
<tr>
<td>Respondent J</td>
<td>Engineering</td>
<td>Engineering</td>
<td>French</td>
</tr>
<tr>
<td>Respondent K</td>
<td>Communications</td>
<td>Communication</td>
<td>French</td>
</tr>
</tbody>
</table>

In terms of daily work routines and collaboration in the team in Japan, most of the team members had daily or weekly work activities with their non-Japanese colleagues either inside or outside their site. Most of these meetings or discussions were about projects the people were involved in, or more general meetings where the participants discussed the performance of their business unit, for example. Furthermore, meetings with people from other sites (e.g. India or Europe) were usually video or teleconferences during which they also utilized software that enabled them to work in the same space real time.

Although this is not a story about post-acquisition challenges and opportunities, it does provide me with a fruitful research context, as majority of the employees working in the Japanese site were not using English at work prior to the acquisition. Thus, on the one hand we have Japanese employees who were not using English at work and felt their English skills were low, and on the other hand there are expatriates of TransGroup who are skilled at
English, but at the same time have little or no knowledge about Japan or Japanese. Using English at work, in this context, was often described as problematic by the respondents, but nonetheless they were supposed to carry on integrating the Japanese site as part of the global network and at the same time create value through collaboration.

Findings

This paper investigates how cultures are shaped and reinforced in multicultural workplaces, and I have ordered my findings according to the visual tasks I presented to my informants: 1) a Japanese person walking home, 2) an Indian project manager, and 3) project’s budget has been exceeded. I will now go through these by showing how they can contribute to cultural studies not only IB, but also neighboring disciplines.

First picture – visualizing group formations

The first visual task, ‘a Japanese person walking home’, revealed patterns (Alexander 1977; Alexander, Ishikawa and Silverstein 1977) and groups pointing towards various notions of Japaneseess (Beamer 1995; Doi 2001; Sugimoto 2007). For the Japanese respondents, no connection was required to signify that the picture represented a Japanese person because for them that was part of their daily life. Consider the following images drawn by some of the Japanese informants.
In the pictures above, drawn by two Japanese employees, we can see nothing that would immediately point us to believe they depict Japanese persons walking home. On the contrary, they could fit almost any nationality, as there are no visible cultural values imbued in the pictures. But, in Latourian sense (2005), what is not shown is equally important as what is shown. Building on this, as viewers of these pictures – and mostly outsiders – we are supposed to ‘read between the lines’ that they portray Japanese persons walking home. Thus, the connection is already there and the viewer is expected to grasp the meaning from what is not explicitly communicated (Hara 2009).

Looking at the pictures drawn by non-Japanese employees, a different type of connection starts to emerge, namely, that of an outsider with knowledge about insiders (Harris 1976; Pike 1967). In the pictures below, cultures are not constructed through talk (Atkinson and Silverman 1997) but by relying on visual cues that go beyond the company jargon and textual limitations.
Above, the viewer is no longer exposed to hidden, but rather explicit cues of how being Japanese looks like. Train, keitai (Japanese for mobile phone), and a suitcase paint a perspective to being a Japanese that is characterized by work and masculinity. Going forward with the symbols, the following two pictures – also by non-Japanese – further illustrate how being a Japanese is constructed by outsiders who are embedded in the cultural context.
Like the pictures above, these two pictures also visualize the journey back home, but from a different angle. The one on the right draws attention to long working hours and drinking sessions with colleagues after work, while the one on the left is interesting in the sense that it is the only picture that portrays a feminine character. All the other pictures portray either a masculine character or a figure with no distinct gender, which can be argued to illustrate the masculine nature of work in Japan.

As the pictures above illustrate, alone they would provide us with anecdotal information at best, but when approached from the perspective of the informants sharing the same community (Wenger 1998), patterns start to emerge. Here, a border is visualized between Japanese and non-Japanese, but, as the two remaining pictures illustrate, this division is not to be taken as fixed, but instead as one perspective to cultures that shifts over time.

Second picture – abstract and explicit cultural symbols

While in the first picture a division between Japanese and non-Japanese emerged, the second picture – an Indian project manager – established connections between the Japanese and non-Japanese employees. Since the firm has a production site in India and the people I investigated all worked
with their Indian colleagues, all of them had at least some experiences in working with Indians. Especially two connecting patterns stood out from the data: physical symbols and power relations.

In terms of physical symbols, both Japanese and non-Japanese respondents highlighted Indianness through moustache and turbans, for example.

![Picture 7 and 8.](image)

Somewhat stereotypical artifacts, such as turban and moustache above, are some of the most explicit manifestations of cultures as seen by others (Schein 2004). From within, these artifacts are deeply rooted in aesthetic and religious values, for example, but seen from outside they are often used as cognitive anchors to make sense of a foreign culture (Weick 1995). In addition to explicit cultural symbols, the informants also visualized power relations:
Although the two pictures above do not contain any explicit cultural symbols or artifacts pointing towards the task – an Indian project manager - what is nonetheless interesting here is the notion of hierarchy and power relations. In both pictures the Indian project manager is located in the middle and surrounded by subordinates ready to do his bidding. Hierarchy, then, is visualized by drawing on two tactics: arrows pointing away from the manager, and the manager being the only one sitting down.

Thus, it seems – based on the pictures discussed here – that a new distinction has emerged between Indians and non-Indians. But this would be only one part of the story, as it was only non-Japanese respondents who visualized hierarchy or power relations. Japanese respondents, on the other hand, focused on visualizing the Indian project manager through explicit cultural symbols, such as moustache or turban. This, then, leads us again to the claim that what is not visualized is equally important as what is included in the picture. Continuing with this line of thought, what is visualized would lead us to partial connections between the Japanese employees and their non-Japanese colleagues, but when taking into account what is left out from the
pictures, we can see a new, complementing, connection emerging between the Japanese and Indian employees, as for them hierarchy is something deeply embedded in the society.

So far the two first pictures have portrayed temporally dynamic connections between different nationalities, but in the final set of pictures we shall see a different set of connections. These connections, I argue, pave way for a more hybrid take on culture.

*Third picture – emotions and data*

In the final task I asked the informants to visualize ‘project’s budget has been exceeded’, and the drawings can be grouped into two categories: pictures that are based either on data or emotions. Here, the distinction arises from education and profession: that is to say, what the respondents have been involved with in terms of their daily work routines.

![Images of drawings](image)

*Pictures 11 and 12.*

What we can see in the pictures above, are two visual illustrations of an event where a project’s budget has been exceeded. While the one on the left conveys a more relaxed and reassuring feeling despite an exceeded budget, the one on the right shows a person who is clearly disturbed by the fact that the budget has been exceeded. What connects these two pictures, then, is their reliance on emotions: namely, how it would feel for the respondents when their project’s budget has been exceeded. Moreover, the respondents who drew these pictures have no educational background in finance or accounting, nor does their work revolve around budgeting and calculations.

When the same task was presented to people with financial background and/or whose work revolved around financial data, the picture is completely different. Whereas the pictures above focused on visualizing how it would feel
to exceed a project’s budget, the pictures below illustrate how it looks like from the financial perspective.

\[ \text{Pictures 13 and 14.} \]

In the pictures above main communicational focus is on effectively showing the current situation so that required actions can be taken. Thus, the two picture pairs above visualize how people with different educational backgrounds and job tasks understand an event that is critical for all of them. Moreover, this comparison gives rise to two insights: familiarity of the situation and new group formations.

First, by familiarity of the situation I refer to how easy it was for the respondents to visualize this task. All of the respondents did complete it, but the ones who relied on financial data to visualize it took remarkably less time and in most cases immediately started drawing the picture, whereas those employing the emotional strategy took more time to draw and to begin. Second, this drawing task seems to have made new connections and group formations that cut across nationalities: both Japanese and their expatriate colleagues belonged to both groups, thus challenging the notion that culture is something that is based on nationality.

What these three pictures have thus illustrated is that culture is always on the move, and shifting group formations can be unearthed with the help of visual research methods. Furthermore, they also reveal the importance of what is not being visualized. Until now, culture has been investigated mainly from the talk perspective, but with the visual data presented here I have illustrated the importance of what is communicated by not communicating.
Discussion

In this paper I have looked into emerging and reinforced cultures in a multicultural workplace by mainly drawing on visual research methods. Here, I would like to focus attention to discussing three insights that emerged from the findings: hybrid cultures, visual research methods as being able to reveal connections, and evaluating the usefulness of visual methods.

First, by hybrid cultures I mean that cultural differences and similarities are constantly on the move as people learn more about each other and thus accumulate cultural knowledge. Traditionally, cultures have been seen as closely connected to nationality, but recent works on culture have challenged this notion (Brannen 2004; Brannen and Salk 2000; Jameson 2007; Witte 2012) by claiming that culture is a diverse and socially constructed concept. This paper further supports this argument for post-national take on culture, as I have illustrated cultural connections to emerge not only along national lines, but also in terms of profession and education.

Furthermore, cultures are both fixed and mobile in the sense that they are made explicit in various ways through time and space, and hence connections leading to group formations can either make or brake communities over time. In this sense, visual research methods allows for an evocative bird’s-eye view that approaches respondents as connected to each other. While surveys look at aggregates, and interviews at single individuals, hybrid approach to cultures can yield insights that are located somewhere between these two extremes.

Second, inspired by the emerging research stream on sociomateriality (Barad 2003; Latour 1987, 2005; Latour and Woolgar 1986; Orlikowski and Scott 2008) this paper has illustrated how visual methods can make connections visible in a way that has not been available through talk. Although I have not approached cultures strictly from the sociomaterial perspective, meaning that I have not followed the flat ontology approach integral to ANT (Bogost 2012; Latour 2005), the approach adopted here has enabled me to focus on emerging patterns between individuals. Building on this, sociomateriality makes it possible to re-establish connections and together with visual methods data from the workplace has been analyzed from the individual perspective.
Finally, when evaluating the potential visual methods have for studying cultures, there are at least two reasons why we should take them into account in IB research. From a methodological perspective, I am questioning (Alvesson and Sandberg 2011; Sandberg and Alvesson 2011) the dominant position of texts in IB research by exploring methods that go beyond talk. The problem with mainly relying on interview transcriptions and surveys as empirical material is that they reduce respondents to mere representations of a setting where they were produced (Boje 1995). This line of thought points towards the assumptions Latour (1986) was criticizing: namely that when we focus solely on people we leave out spaces, technologies, and artifacts that equally contribute to the way our respondents see the world. By using visual research methods such as photographing (Warren 2002), photo elicitation (Steyaert et al. 2012), and actual artifacts (Ewenstein and Whyte 2009) this challenge can be overcome and thus the findings we produce are able to portray a richer context.

Additionally, by taking a step back and seeing cultures from a different perspective we acknowledge its multisensory nature. Thus, what I am arguing for here is a multisensory perspective on theorizing and investigating cultures that previously have been seen mainly through a textual lens. When dealing with texts, we are working with a medium that is natural to us as researchers: we write articles and conference papers, conduct interviews with our respondents, and read each other’s works in order to build on it. But this is only one part of the picture: organizations are permeated with such visual objects as logos, paintings, sketches, prototypes, and images that are often ignored when we focus on written and oral data, and hence we are facing the danger of producing theories and findings that do not take the full richness of our research context into account.

Conclusion

This paper has looked at how cultural knowing emerges and is shaped in multicultural workplaces by adopting a visual approach. By making a case for visual communication, and thus questioning our discipline’s implicit assumptions (Alvesson and Sandberg 2011; Sandberg and Alvesson 2011) about the omnipotent nature of written and oral accounts (Atkinson and Silverman 1997), this paper has demonstrated the capabilities visual approach
to cultures has in terms of making connections visible and providing a bird’s-eye perspective.

Especially in IB we have recently started to see a more welcoming stance towards qualitatively oriented studies (Birkinshaw et al. 2011; Welch, Piekari, Plakoyiannaki and Paavilainen-Mäntymäki 2011), and here I wish to take IB a bit further by drawing on studies already dealing with the visual dimension of communication. Reasons why I believe this to be a valid course of action are located not only on the theoretical level, but also on the organizational level. First, empirical studies on culture and knowledge have more often than not utilized mainly interviews and surveys as main data collection sources, although theories about culture and knowledge acknowledge the multisensory nature of these two phenomena. In similar vein, organizations have been understood to comprise not only people but also artifacts and symbols (Latour 1986; Clarke 2011), but in our field these have been explored mainly through texts.

Theoretical implications

In terms of theoretical implications, I have identified three key issues: cultures as diverse constructs, cultures’ temporal dimension, and text fetishism. First, as has been discussed before, cultures are diverse constructs that are negotiated bottom-up and that should not be equated with nationality (Brannen 2004; Brannen and Salk 2000; Jameson 2007; Witte 2012). As more and more studies with a post-national take on culture are being published, equating culture with nationality seems like a lost cause. The multisensory approach to cultures introduced in this paper has the potential of participating in this stream of research by broadening our understanding of what kind of communication and sensory experiences construct and negotiate cultures.

Second, in connection to sociomateriality (Latour 1986, 1987, 2005; Latour and Woolgar 1986; Orlikowski and Scott 2008), this research has stressed the importance of temporality when theorizing on cultures in organizations. Texts alone can only takes us so far, but by drawing on visual research methods we can tap into connections and group formations that shift and emerge over time. As has been pointed out before (Brannen and Salk 2000; Witte 2012) culture
is not a static object, but instead something that is negotiated in interaction. As I have shown during the course of this paper different group formations emerge over time based not only on nationality, but education and the nature of work itself also frame how we align ourselves in relation to others.

Finally, as has been noted previously by Atkinson and Silverman (1997), we seem to live in an era of textual fetishism where our theorizing and methodological aspirations revolve around written and oral accounts. While I do not wish to question the importance of these accounts, I am challenging their dominant status as sole sources for theorizing. The visual turn has emerged in such fields as anthropology (Pink 2007, 2011), organization studies (Steyaert et al. 2012), and sociology (Latour 1986, 1987), and now time seems to be ripe for such a turn in IB. Broadening our theoretical scope from written and oral texts is crucial in both online and offline environments, as texts are becoming increasingly visual in both environments. This, I believe, is an opportunity in IB that can be capitalized on adopting a visual approach.

**Methodological implications**

This study has shown that we need to rethink and broaden our scope for studying cultures in multicultural settings. However, I do not wish to reject the advances we have made so far, but instead I believe we need to bring in new methods and theoretical lenses if we are to push IB forward. With this paper I hope to contribute to the growing interest towards qualitatively oriented studies in IB (Birkinshaw et al. 2011; Brannen and Doz 2010; Welch et al. 2011). Qualitative approach provides the researcher with a rich array of theoretical and methodological lenses (Silverman 2011, Van Maanen 1979), but in spite of this visual methods and data have received little attention in IB. To counter this, I have shown in this paper how visual research methods can be utilized to study cultures, and what this means for our discipline.

But one should not lull into the feeling that visual data and methods are solely owned by qualitatively oriented scholars. On the contrary, depending on one’s ontological and epistemological standpoint, visual data can be used in both quantitative and qualitative studies. Visual research methods, on the other hand, can pose restrictions to the research design, although visual data can be approached from various perspectives to positivism to postmodernism.
and poststructuralism (Steyaert et al. 2012). The bottom line is that we should bring visual data and research methods to the core of IB research, as by doing so we acknowledge the multisensory nature of organizational life and dynamics.

**Limitations and avenues for further research**

While this study has shed light on a familiar topic from a novel perspective, it, too, has its own limitations that should be taken into account. First, this study was carried out during a relatively short period of time, which is why further studies adopting a longitudinal approach should be conducted. Although passage of time *per se* is not the main focus here, it nonetheless would be interesting to study how perceptions and knowledge of cultures emerge over time as people work more and more together. Second, I employed mainly qualitative methods here, but as I have argued above, quantitative methods are equally capable of yielding interesting findings on the multisensory aspect of knowledge and culture that could greatly benefit our theorizing. Third, whenever communication with the respondents took place it was carried out in English although none of the respondents spoke English as their native language. In future studies, this linguistic limitation could be turned into a methodological strength by communicating in respondents’ native language.

As for avenues for further research, the limitations just presented can be turned into strengths by longitudinal studies and quantitative research methods. In addition to these, it would also be fruitful to study visual artifacts and objects already existing in the organization (Ewenstein and Whyte 2009). These have often been used in previous studies, but only as anecdotal evidence, but as this study has shown visuals possess much more theorizing power than meets the eye. In essence, the world we inhabit and construct is as much imbued with visual as it is with texts and speech, which is why we should adopt a multisensory approach to culture and knowledge.

In a similar fashion, looking at visuals from other philosophical standpoints could also sharpen our theorizing, as has been the case with so many other phenomena relevant to IB (Welch et al. 2011). I am not in pursuit of a single truth, but instead I wish to open up room for competing views on how we should integrate visual research methods and data in our investigations.
This paper has hopefully served as an eye opener in terms of how the visual aspect of communication can take language matters in IB to the next level. This is by no means an easy task, as it requires that we start to both question our underlying assumptions of cultures and knowledge (Alvesson and Sandberg 2011; Sandberg and Alvesson 2011) and look into new research methods such as the ones introduced in this paper. Nonetheless, I strongly believe that the multisensory approach to phenomena relevant in IB is part of the next generation of cutting edge research conducted within IB.
References


Baskerville, R. F. (2003), 'Hofstede never studied culture', *Accounting, Organizations and Society*, 28 (1): 1-14


Bogost, I. (2012), *Alien phenomenology, or what it's like to be a thing*, Minnesota: University of Minnesota Press


Brannen, M. Y. and Doz, Y. (2010), 'From a distance and detached to up close and personal: Bridging strategic and cross-cultural perspectives in


Ewenstein, B. and Whyte, J. (2009), 'Knowledge practices in design: The role of visual representations as 'epistemic objects'', *Organization Studies*, 30 (1): 7-30


Harris, M. (1976), 'History and significance of the emic/etic distinction’, *Annual Review of Anthropology*, 5: 329-350


Konno, N. (2009), 'The age of knowledge design: A view from Japan', *Design Management Review*, 20 (2): 6-14


Paper 5


Copyright © 2011 The University of Tokyo. Reprinted with permission.
Accompanying paper for the manga “Ultra Innovation Force 4: Aalto & i.school saving the future of shopping”

Miikka J. Lehtonen  
Aalto University School of Business,  
Department of Management Studies  
P.O. Box 21210, FI-00076 AALTO, Finland  
+35840 353 8451  
miikka.j.lehtonen@aalto.fi

Manga authors: see manga

Abstract

This paper discusses unorthodox ways of disseminating research findings by taking as an example a manga – a form of Japanese cartoon – that was published based on a workshop held by a team from Aalto University (Helsinki, Finland) in the University of Tokyo’s i.school program (Tokyo, Japan) in fall 2011. Several scholars within International Business (IB) and organization studies have already questioned the textual fetishism in academia, but to date experiments with other forms of communication are still few and far between. This paper argues that manga – and cartoons – in general can be utilized equally well with purely verbal communication, as they are not culturally less sophisticated or information rich. On the contrary, visual communication of research can complement more traditional forms of research dissemination by opening up new avenues for further theorizing and information exchange.

Keywords: manga, visual communication, workshop, academic publishing
Introduction

Recently organization scholars have started to question the possibilities we have for publishing visually inclusive research in various internationally peer-reviewed outlets: for most part our findings are presented in a written format in journals or in oral format in various international conferences. Given that we can also communicate research visually (currently communicating research through touch and taste seems like an idea from a science fiction novel), how come we have not further explored that avenue? It is, as Atkinson and Silverman (1997) put it, a manifestation of an interview society, where text rules. This same concern is voiced in Barad (2003: 801):

“[l]anguage has been granted too much power. The linguistic turn, the semiotic turn, the interpretative turn, the cultural turn: it seems that at every turn lately every “thing” – even materiality – is turned into a matter of language or some other form of cultural representation.”

Although Barad (2003) was more concerned with the world being turned into communicative actions, her main critique can be seen to be targeted at written and oral communication: namely, that everything and everyone is a text. How could we move beyond the dominant role of written and oral texts and hence contribute to publishing our research endeavors? The manga you are about to read, then, is one attempt to provide novel ways for communicating research findings. More specifically, in this accompanying paper my purpose is to discuss the manga from two perspectives: first, manga as a relevant contribution to scientific publications and second, the visual as an essential component of knowledge creation research. That is to say, the manga operates both as an experimental tool for publishing research while at the same time illustrating the role (visual) artifacts have in terms of knowledge creation.

Building on this, the main rationale behind this initiative stems from knowledge creation and knowing literature with some added flavor from sensory ethnography (Pink 2009) and the visual approach to organizing and knowing (Ewenstein and Whyte 2007; Meyer 1991; Strati 1996). Moreover, the following question guides this paper:
How does the visual contribute to discussions on knowledge creation research and academic publishing?

This artifact (i.e. the manga) should be regarded as an exploratory project to breaking the shackles of written and oral communication that have been restricting academic publishing for a long time: however, I do not wish to neglect the importance of written and oral communication; instead my hope is that this initiative inspires my colleagues far and near to experiment with novel – and, at times, unorthodox – means to communicate their precious work to their peers and broader audiences.

But before you get to see the manga, it is necessary to lay the groundworks by discussing the various ways scholars have been experimenting with novel communicative actions and how the manga connects back to knowledge creation research. This journey is worth your attention and time, as I take you through interesting and cutting edge research within organization and IB literature that draws on non-conventional means of communication, and a form of cartoon that has its roots in Japanese aesthetics, manga.

Literature on publishing research visually

Within IB and organization studies – as is the case with most research – main medium for communicating research has been through verbal communication. While this has been the case in contemporary academic publishing, recently several academics (Banks 2008; Meyer, Höllerer, Jancsary and van Leeuwen 2013; Steyaert, Marti and Michels 2012) have started to question the dominant role of written communication when publishing research findings. In Meyer et al. (2013), for example, visually more inclusive publishing is argued for based on the notion that visuals can enable researchers to see patterns in the data that might have been otherwise ignored. Similarly Steyaert et al. (2012: 38) call for more visual publishing by drawing on the performative approach: “[t]he (visual) researcher is understood as a participant in a specific form of ordering the world, which requires that researchers enable rather than reduce multiplicity. Thus, what is brought forth in the argument above is a move away from the more traditional – representative – take on the visual towards a performative (Bolt 2010) one that embraces multiplicity as the visual is about much more than presenting a single truth.
Above I have set forth calls from two directions (Meyer et al. 2013; Steyaert et al. 2012) to publish research in a more visual format in organization studies, but what has been done so far? In an unorthodox approach to Born Globals (BG), McGaughey (2006) explores the topic through the use of comics by exposing the reader to reflect on their assumptions and viewpoints on BGs. McGaughey's (2006: 469) work is equally about writing and reading of scientific texts: “using a comic strip involves breaking free of the manner in which IB research continues to privilege the written text – one which is typically controlled by a series of ‘scientific conventions’ and ignores other models of communication and understanding”. Here, the reader is invited to reflect on diverse ways of reading and writing within IB, while the presentation format is left somewhat in the background. Although McGaughey (2006) draws on comics as a form of visual art, her work is still mostly about reading research, but nonetheless utilizing comics in a scientific article is a just cause.

While comic as a communicative tool for research findings has been extremely rare in IB and organization studies, the use of photographs on the other hand has attracted more interest due to its representational and illustrative nature. Looking at how knowledge is visualized in project-based environments Whyte, Ewenstein, Hales and Tidd (2008) use photographs as rhetorical devices to illustrate their arguments: although the pictures they deploy seem convincing in arguing for their case, quite ironically the article is still dominated by verbal arguments. Nonetheless, pictures in Whyte et al. (2008) are not used as fashionable anecdotes to spice up the article, but instead as actual evidence of how interaction and objects, for example, looked like onsite. Similarly in Ewenstein and Whyte (2007) photographs are used to illustrate aspects of aesthetic knowledge and knowing in an architecture firm. In describing their research design, however, Ewenstein and Whyte (2007: 692) do not explicitly discuss the visual in terms of data collection¹ or research representation although their research setting was “particularly illustrative of aesthetic knowledge work in organizations, given the importance of visual expression, the emphasis on spatial experience and the historic connections between architecture and the practices of art”. Thus, it seems that in Whyte et al. (2008) and Ewenstein and Whyte (2007) visuals are used to represent

¹ See Meyer (1991) for an account on visual reporting in academia.
something emerging from the data that is considered important from the theorizing perspective.

Apart from comics and photographs, there is one aspect of visual communication scholars have adopted with haste: graphs and figures. As seen in Tufté (2001: 9) – one of the main authorities in the field of information visualization – “[m]odern data graphics can do much more than simply substitute for small statistical tables. At their best, graphics are instruments for reasoning about quantitative information”. Visualizing quantitative data for rhetorical purposes has been on the rise within and outside academia for quite some time now, but scholars have also been keen on portraying their theoretical frameworks, for example, visually. In describing their theory of knowledge creation, Nonaka and his associates (Nonaka and Takeuchi 1995; Nonaka and Konno 1998; Nonaka, Toyama and Konno 2000) have heavily drawn on various visual figures in order to illustrate their theorizing. But alas, in Nonaka’s work to date no methodological discussion on the nature of the visuals can be found, thus suggesting that visualizations are not meant to perform, but to represent.

Looking at contemporary research in IB and organization studies it can be argued that visuals and visual expression are drawn upon to represent something verbal: that is to say, visuals themselves do not advance the argument or make it starker, but instead they ‘merely’ parrot what has been already said. Thus, as such visuals in academic publishing – at least within IB and organization studies – are relatively static and deprived of mobility (Urry 2007 in Steyaert et al. 2012). To move beyond representative form of visual communication, in the next section I shall describe the research data and setting that serve as foundations for the manga.

**Research data and setting**

Originally the proposal to organize the workshop came from the University of Tokyo’s interdisciplinary educational program i.school as part of their academic year 2011-2012 they invited academics and practitioners to organize workshops on various themes. Theme for the Aalto University workshop was ‘the future of shopping’, and the workshop facilitators were given almost free
hands to organize and frame the workshop the way they saw fit. The initial framing from i.school’s side was as follows:

- Preferably six workshop facilitators with an equal representation of men and women
- The workshop would revolve around teamwork (in total there were five teams)
- The workshop involved working with kids (between 8 to 12 years)
- Each of the teams would have a Finnish friend to whom they would buy souvenirs during their fieldwork
- Afterwards the facilitators are expected to produce a final report on their workshop

Basically, then, the topic and the participants were predefined, but the methods were left for the team to devise. In addition to yours truly, the Aalto University team comprised one professor and four students and together we represented business, design, and technology sides of Aalto University.

All in all the workshop lasted for five days, and each day was videotaped and numerous photographs were taken throughout the workshop by the organizers. After each day our team had a debriefing during which we discussed what went well and what could be improved in terms of the methods we used and interaction with the participants. In addition, prior to arriving to Tokyo we had devised a rough plan for the workshop and during our debriefings we altered and customized it so that the following days would better fit the participants’ expectations and learning objectives.

Thus, in terms of the workshop structure we opted for a balance between structure and improvisation: on the one hand, we had a plan that took into account our Japanese colleagues’ expectations, and on the other hand we left room for maneuvering as we only had a vague understanding of what kind of participants we would have in the workshop.

Finally, from the learning perspective, our workshop was a tool for transferring research findings on workshops, shopping experience, and business modeling into practice through five illustrative cases. For the adult participants, the workshop taught them how to design shopping experiences and to craft a business model for a new innovative technology, whereas the
children who participated in the workshop indirectly came into contact with other children outside Japan, thus teaching them about other children in foreign countries.

From the research perspective, data collection in this study resembles ba and spiral-like knowledge creation found in Nonaka’s work (Nonaka et al. 2000) in a sense that the workshop’s content and focus was revised after each day based on what the team experienced. Moreover, and also in Nonaka’s terms (Nonaka et al. 2000; Nonaka, Toyama and Hirata 2008), knowledge creation here transcended at least institutional and linguistic spheres since the workshop was co-organized by people from two different universities located in Finland and Japan. In the two sections that follow, I will turn to discuss the findings from two perspectives: the first part explores the manga from visual publishing perspective, while the second part focuses on discussing the artifact from the knowledge creation perspective.

**Discussion part one: publishing research findings visually**

Above I have discussed how scholars currently have experimented with visual publishing and introduced the workshop we facilitated, and now it is time to discuss the rationale for publishing our workshop report in manga format, and what are the possible benefits and drawbacks for such communication mode.

As discussed previously (Meyer et al. 2013; Steyaert et al. 2012), academia is to a large extent a profession crafted around written communication, although other forms – such as video (Belk and Kozinets 2005; Hietanen 2012) and photographs (Warren 2002) – of communication have been explored. As I see it, there are at least two benefits for broadening our scope on what counts as legitimate form of academic publishing and dissemination of research findings: engagement and inspiration, and the inherently visual nature of the world.

First, without downplaying written and oral means of communication, visual communication can inspire and engage by opening up rather than narrowing down the meaning behind the message (Arnheim 1997; Moore 2003). Although all types of communication are imbued with intended and unintended meanings (Barthes 1972; Peirce 1986), it is in visual
communication that we witness more creative freedom as it is not bounded by any artificially crafted grammar the way languages are. Furthermore, when it comes to written and verbal communication we are already as a child exposed to socialized norms and grammatically acceptable forms of communication that consciously and subconsciously frame our thinking in a way that aims at unifying language use. Building on this thought, at school our linguistic capabilities are constantly graded in order to ensure that we separate ‘right’ communication from ‘wrong’. Thus, language is not only a matter of taste, but of norms and institutions that bombard us already in our childhood.

Things, however, change when we are dealing with visual means of communication. Learning in art classes is not based on norms and rules (Bergström 2009), but instead on taste: although visual grammar cannot be taught, it is nonetheless possible to teach everyone of us to communicate visually and read visual communication (Arnheim 1997) although visual communication – and especially visual arts – have been reserved for the visually able elites, the artists (Bergström 2009). Here, I wish to contest this logic by arguing through the manga that visual communication – both in terms of crafting and reading visuals – is within everyone’s reach.

Why can we say that visual communication is potentially more engaging than other forms of communication? This is both a relational and a cognitive issue: relational in the sense that the visual is something ‘exotic’ to us and we approach it with curiosity and fear as it deviates from the textual world to which we are so accustomed, and cognitive as a vast majority of information entering the brain is in visual format (Berg 2012; Ware 2008). Thus, with visual communication we are able to perceive even large and complex structures faster than if they were in written format (one good example of this would be information visualization that converts massive amounts of data into visual representations [Tufte 2001]), and in addition visual communication can also open up avenues for unintended interpretations and new perspectives.

In terms of the manga here, the question is not about comparing the advantages and disadvantages visual communication has over more traditional academic publication means: instead, it is about asking ‘what do we gain by including visual communication in our research dissemination toolkit?’. Building on this, Meyer et al. (2013: 536) raise concern on the issue of
converting visual to verbal: “[a]s we have not yet developed a common “language” to talk about visuals, it is not clear how much insight is “lost in translation””. That is to say, when we report findings from an ethnographic study, for example, quite often we are forced to describe what we experienced in the research site through words: not being able to show the organizational context in visual terms can lead to thin descriptions of the research context that, in turn, has consequences for theorizing (Pink 2007, 2009).

In the discussion above there has been a somewhat positive and idealistic undertone related to visual publishing, but we should not engage in visual publishing without pitfalls, as it is by no means a form of communication without any limitations or dangers. Roughly speaking there are both technical and cultural limitations to visual publishing in academic outlets, which I will now cover.

First, with technical limitations I am drawing attention to what academic journals permit us to publish in terms of the visual. How large (in terms of kilobytes and megabytes) can the manuscripts be? What kind of formats are acceptable for visuals? With questions like these in mind, let us turn to look at two internationally prestigious journals in international business and organization studies: Journal of International Business Studies (JIBS) and Organization Studies (OS). In JIBS (JIBS Style Guide 2014), the following description is given for the visuals:

Line drawings, maps, charts, graphs, diagrams, photos, etc. should all be labelled as figures.

Number tables and figures consecutively, using Arabic numerals, in order of appearance (one series for tables, one for figures). Long tables that have many panels should preferably be broken into separately numbered tables.

Each table or figure must have at least one sentence in your text that introduces it. In-text references to tables should be in sequential order throughout the paper.

A table should be understandable on its own. The text should highlight the main points in a table and summarize its message, but not duplicate the details. Tables should not have any lengthy introductory text; any necessary
notes should be included as footnotes to the table and should not repeat text from the body of the paper.

From this perspective, visuals are not excluded from the manuscripts, but from the description above it can be assumed that the visuals support the text, not the other way round. Interestingly no size limitations are given to figures, which, in theory, could be assumed as a sign towards the journal publishing manuscripts with many visuals. This, however, should be validated by consulting the managing editor or submitting a manuscript that is mainly of visual nature.

In OS, traditionally more conducive to publishing qualitative research, guidelines for visual material are as follows (SAGE Manuscript Submission Guidelines 2014):

*Illustrations, pictures and graphs, should be supplied with the highest quality and in an electronic format that helps us to publish your article in the best way possible. Please follow the guidelines below to enable us to prepare your artwork for the printed issue as well as the online version.*

**Format:** TIFF, JPEG, PDF: Common format for pictures (containing no text or graphs).
**EPS:** Preferred format for graphs and line art (retains quality when enlarging/zooming in).
**MS Office files (Word, PowerPoint, Excel) are also accepted**

**Placement:** Figures/charts and tables created in MS Word should be included in the main text rather than at the end of the document.
**Figures and other files created outside Word (i.e. Excel, PowerPoint, JPG, TIFF, EPS, and PDF) should be submitted separately. Please add a placeholder note in the running text (i.e. “[insert Figure 1.]”)

**Resolution:** Bitmap based files (i.e. with .tif or .jpeg extension) require a resolution of at least 300 dpi (dots per inch). Line art should be supplied with a resolution of 600 dpi.
Format: TIFF, EPS or PDF. MS Office files (Word, Powerpoint, Excel) are also accepted provided they meet certain conditions. For more information, see below.

Colour: Please note that images supplied in colour will be published in colour online and black and white in print (unless otherwise arranged). Therefore, it is important that you supply images that are comprehensible in black and white as well (i.e. by using colour with a distinctive pattern or dotted lines). The captions should reflect this by not using words indicating colour.

Dimension: Check that the artworks supplied match or exceed the dimensions of the journal. Images cannot be scaled up after origination.

Fonts: The lettering used in the artwork should not vary too much in size and type (usually sans serif font as a default).

In technical terms, manuscripts relying on visual communication could potentially have a higher likelihood on getting published in OS than in JIBS as the guidelines explicitly favor visuals that are of as high quality as possible. This, though, should also validated either by consulting the managing editor or submitting a manuscript to gain a better understanding of how the policies and guidelines are interpreted.

While in technical terms there do not seem to be many restrictions on publishing visually intensive manuscripts, but what can be said about the cultural limitations of publishing such research? One of the prevailing challenges related to visual in science has been brought forth in Meyer et al. (2013: 537) who call for a more critical debate that questions the dominant stance on the visual as representing ‘truth’ and ‘reality’ as is. This line of reasoning has grave consequences, as the visual is seldom - if ever - free of politics, power, and persuasion. Questioning the visual’s power only as a representational vehicle Steyaert et al. (2012) argue for a performative stance to the visual that understands the visual as creating the reality, not only representing it in a static manner. From the cultural limitations perspective, then, perhaps the greatest challenge for publishing visually oriented research is the dominant take on the visual as representing reality. As long as we see the visual as providing anecdotal evidence at best, it is debatable whether visually inclusive research will be taken seriously. Thus, while the technical limitations
are somewhat easy to cope with, we ought to lower the cultural barriers to visual manuscripts by developing theories, methodologies and publication strategies that take the visual better into account as an integral part of communicating research findings.

To sum up, the potential visual has in communicating research findings is closely connected to conveying messages in a way that empowers the reader to create their own understanding of the message. With words we are restricted by grammar and space, but with pictures there is more room to maneuver as visual communication cannot be said to be grammatically correct or incorrect. A lot of work needs to be done if the visual is to become a legitimate form of publishing research findings, but currently the situation seems promising as more and more visually inclusive manuscripts are published and debates on the nature and power of the visual are emerging all over the world.

Discussion part two: knowledge creation perspective

Above I have discussed the manga - and the visual in more broad terms - from the perspective of getting it published, and here the focus is more on the content: namely, what does the manga tell about the workshop from knowledge creation’s perspective? Following the performative stance to the visual (Steyaert et al. 2012), the manga does not represent knowledge creation but instead it should be understood as an essential element of the knowledge creation process. This leads us to ask, what does the manga tell about the participants transcending their personal boundaries to create knowledge about the workshop’s theme (Nonaka and Konno 1998; Nonaka et al. 2008)?

The manga visualizes the workshop process from its inception all the way to its end from the perspective of how it was experienced. It is not a ‘realistic’ portrayal of what happened, but instead it creates a story based on metaphors, values, and interpretations. Thus, what we are looking at is not ‘merely’ a cartoon, but instead an artifact that was created based on personal and embodied accounts. The starting point for knowledge creation is seen on the first pages of the manga where the Japanese part of the team is discussing the future of shopping: this vision (Nonaka et al. 2006) is based on the realization that shopping today might not fulfill the needs of tomorrow’s adults, hence a knowledge vision of a better shopping experience is born by transcending
generational boundaries (Nonaka and Toyama 2005). Another boundary is
crossed again when the Japanese contact their counterparts at the Aalto
University, Finland, thus crossing a physical boundary: the Japanese side of
the team further elevates the knowledge creation spiral (Nonaka et al. 2000)
by joining forces with a team from Aalto University.

Once the workshop begins, knowledge creation takes place in at least four
levels: institutional, geographical, generational, and temporal. From the
institutional perspective, new knowledge about the future of shopping is
created from the interaction between individuals from two universities, while
knowledge creation also emerges at the intersection of geographical and
linguistic borders. Thirdly, knowledge creation is also evident in the interplay
between the adults and the kids who collaborate in an effort to envision how
shopping might look like in the future. Finally, temporality also gives rise to
knowledge creation as the workshop participants and facilitators shift back
and forth between present and future.

Knowledge creation from the four aforementioned perspectives are
visualized and interpreted throughout the manga as its authors make sense of
what happened during the workshop. While the four levels above highlight
knowledge creation taking place through embodied practice, creation of the
manga should also be seen as a knowledge creation process: as was pointed
out earlier in this paper, the visual should not be seen as only representing
reality, but it participates in crafting it through performativity. From the
knowledge creation perspective, then, it is not relevant to define the manga as
an artifact reporting knowledge creation inasmuch as it actually extends
knowledge creation by visualizing experiences.

To conclude, what makes the visual compelling from the knowledge
creation’s perspective is its power to complement verbal forms of knowledge
creation. This might seem like a minor contribution to the theoretical
discussions on knowledge creation, but if we adopt a performative stance to
the visual we are opening our theorizing and analyzing to a whole new
dimension. Previously the importance of the visual and artifacts in knowledge
creation processes has already been identified (Nonaka et al. 2008; Tsoukas
2009), but the manga here is one of the very first explicit examples of
visualizing knowledge and visual knowing, and as such it should give rise to
further inquiries looking into knowledge creation from the visual perspective.
Moreover, it has already been claimed that knowledge creation is also visual, and here I hope to have shown how it looks like and how we can analytically approach it by going beyond anecdotal evidence.

**Conclusion**

In this accompanying paper to the manga I have discussed the potential visual has in terms of disseminating research findings and extending knowledge creation research. Currently in IB and organization studies we are witnessing a growing interest towards visually more inclusive publishing, but to date we are still lacking concrete examples of how this could be done. This challenge is both institutional and methodological: currently academic career is advanced through the amount and quality of publications and by the same token academic publishing favors written communication, and in terms of methodology most of our methods are connected to language and how reality is constructed through language. Thus, if the visual is to become an integral part of academic publishing, and not only a way to summarize what has already been said, we need to overcome both institutional and methodological barriers.

By presenting research in manga format I do not wish to advocate an easier way of reading about research: while reading images is arguably faster than reading words, we should not treat manga as a less sophisticated way of communication: especially in Japan numerous books are published in manga (such as Karl Marx's Das Kapital), and the content is the same as in more traditional books. While in Japan manga enjoys a culturally respected position, in the West comics and graphic novels are still seen as either culturally less significant than written language or a part of niche cultures. From this perspective, the decision to publish research in manga format is political: by participating in challenging the status quo in academic publishing I am questioning the implicit assumptions of our profession on what counts as credible form of communication.
References


Hietanen, J. (2012), *Videography in consumer culture theory: An account of essence(s) and production*, Helsinki: Aalto University


Ultra Innovation Force 4
Aalto & i.school saving the future of shopping
Prologue

What happens when you combine Japanese future talents with Aalto University people and skills during a 5-day workshop in Tokyo?

Between 8 and 12 August 2011, a multidisciplinary team of six people from Aalto University hosted a “Creating Future Store” workshop at the University of Tokyo’s i.school in Tokyo, Japan. The goal was to create multisensory prototypes for future shopping experiences. Ranging from Peter Pan Shoes – devices that make you walk faster – to a new haircut experience, the prototypes illustrate that the Aalto way of doing things can stimulate creative problem solving now and in the future.

The workshop was organized so that the participants would gain a brief, yet extensive, introduction to Aalto University’s approach to design thinking and prototyping. What made the workshop even more special was that the second day involved 24 children as visiting guest stars. Organized by Motivation Maker, a spinoff of one of the i.school workshops, the purpose of the second day was to understand children today and as future adults when they conduct shopping. Based on the final prototype presentations on Friday, it was evident that the children had inspired the teams to a large extent.

The story you are about to read describes the process and outcomes of the joint Aalto University x i.school workshop. By using manga, traditional Japanese cartoon, we hope to inspire wider audiences about the possibilities that research holds.

Aalto University team x i.school team
Ultra Innovation Force 4
Aalto & i.school saving the future of shopping
Contributors:

Aalto University, IDBM

KORIA, Mikko / ミッコ・コリア
LAM, Noel / ノエル・ラム
LEHTONEN, Miikka / ミッカ・レヘトネン
SALO, Anna / アンナ・サラ
SONNINEN, Antti / アンッティ・ソンニネン
UTRIAINEN, Tuuli / トゥーリ・ウトリアイネン

The University of Tokyo, i.school

HORII, Hideyuki / 堀井秀之
OGURA, Amy / 小倉愛未
OZAWA, Sayuri / 小沢早百合
TAMURA, Hiroshi / 田村大

Motivation Maker

ONOKI, Emiko / 大槻恵子
YOKOTA, Yukinobu / 横田幸信

Workshop Sponsor

Canon Inc. / キャノン株式会社

© Contributors, Aalto University, and The University of Tokyo
Graphic Design Noel Lam and Amy Ogura
Layout Noel Lam, Miikka Lehtonen and Tuuli Utriainen
Published by the i.school team
2012
Ultra Innovation Force 4
Aalto & i.school saving the future of shopping
It's 2011 in Japan!
Kikka, a Japanese university student, takes children to a shopping mall.

Oh, no! I've never imagined shopping is so hard for children!

What's wrong, Kikka?

You're so confused.

1st: Almost all shopping malls are for adults, not for children. They can't enjoy shopping that much.

2nd: I guess it's not only children's problem. I think everyone has experienced bad shopping!

Well, I took these children here for shopping but I think it's difficult for them.
Tamura? Why did you pick up the phone?

To solve the "bad shopping problem", of course.

Why don't we invite the Aalto team to have a workshop with us, the i.school team?

So awesome!!

Their power and ours together, we can make an innovation of new shopping!

No problem, Miikka.

Don't forget: we have magical power!

Hello, Aalto Uni.

This is Miikka of Aalto!

In Finland.

Everyone raise your hands...

I see.

No.

Oh, workshop? Sounds great!

But... how can we come there?

Yes, we have.
AALTO POWER!!!!!

OKAY, RIDE ON, GUYS!

LET'S FLY TO TOKYO!!!
1ST DAY
- INTRODUCTIONS -

NICE TO MEET YOU!
I’M KIKKA!

THE TEAM MAKING THE TALLEST PAPER TOWER WILL BE THE WINNER.

- ICE BREAKING -

Hmm ...
WE SHOULD USE THESE EXPRESSIONS SUCH AS "I LIKE" OR "I WISH".

YOU SHOULD ACCEPT AND RESPECT OTHERS’ OPINION.

- LECTURE -

2ND DAY
- FIELDWORK (SHOPPING WITH CHILDREN HELD BY THE NPO, MOTIVATION MAKER -

LET’S BUY PRESENTS FOR OUR FINNISH FRIENDS!

I’LL TAKE THIS!
3rd Day - Discussion about yesterday's shopping in each team.

In other words, they decide what they buy before shopping.

I want it now!

On the contrary, I think children tend to enjoy shopping in itself.

They enjoy spaces and atmosphere, they decide what they want at the moment.

I found the difference of how to shop between adults and children!

Hmm...

So I mean shops today don't suit children.

Hmm... How can we imagine new shopping method?

Just thinking in head is tiring so use this clay! Real products will help you!

Wow, like children!

4th Day - Using real products-
HMM...

Hey, I made clay food!

WOW

Yeah, and playing with clay is fun.

That's good!

How about ideating a new food shopping experience?!

Humming and Hawing

We should add food experience to just buying foods...

That'll be nice for not only children, but adults, too.
Kikka’s Team’s Idea
- Breakfast Outside -

This service provides breakfast with neighbors and fruits/vegetables raised by customers themselves in beautiful parks.

- Global Whisper -

The Global Whisper offers a cloud translation service conducted by people living in somewhere in the world, so that it reflects local context and feelings.

Find It With New Shoes!

"* Venture" gives children exciting adventures with new products, and makes your shopping experience new and exciting.
This shop reminds us of the joy and excitement in the physical and direct approach to the products with curiosity in our childhood.

I like it!

How cute!

Hair enables you to get feedback of your hairstyle from others before you actually style it, by using AR technology.

Every presentation was awesome!

We'll visit Aalto in 2012. Happy to strengthen our bonds between Aalto
Epilogue

Throughout the workshop, the five teams showcased and presented their prototypes and revised them based on the feedback to present them during the final day of the workshop. The five prototypes dealt with future breakfast, magic shoes, new haircut experience, an experimental/experiential space, and a language translator. Approaching the challenges from the user’s perspective, the participants were able to come up with concepts and prototypes that focused on meeting customer needs.

What made this Aalto led workshop special was that not only did the participants learn how to prototype and utilize different creative tools, but they also acquired important mental skills on how to reflect and think like a designer. We believe these skills to be of utmost importance when educating future problem solvers.

Further information:

International Design Business Management (IDBM): http://www.idbm.fi
ME310: http://me310.aaltodesignfactory.fi/
i.school: http://ischool.t.u-tokyo.ac.jp/english
JaBuPro: http://www.jabupro.fi
Want to join the force?

Contacts:
Aalto University, IDBM
Professor Mikko Koria
+35840 353 8343
mikko.koria@aalto.fi
Twitter: @IDBMProgram

The University of Tokyo, i.school
Director Hiroshi Tamura
+81 3 5841 8851
htamura@ischool.t.u-tokyo.ac.jp
Twitter: @tamdai99 & @ut_ischool
How does visualizing knowledge look like?

Why should we depart from representationalism to performativity?

This dissertation is a journey to visual knowing and visualizing knowledge that is told in seven parts. Moving between theoretical, empirical, and experimental perspectives, my aim here is to challenge our assumptions on knowledge creation by focusing on the visual.

The theoretical framework constructed for this dissertation draws on research in sociomateriality, knowing, and visual performativity in order to look at knowledge creation as a process enacted through action between the animate and the inanimate.

Data for this study was collected from three knowledge-intensive organizations in Finland and Japan over the course of two years. The theoretical insights and empirical findings in this dissertation broaden our current understanding of knowledge.