

Department of Built Environment

Retooling Planning

Towards Trading Zone Capabilities

Jonna Kangasoja

Retooling Planning

Towards Trading Zone Capabilities

Jonna Kangasoja

A doctoral dissertation completed for the degree of Doctor of Science (Technology) to be defended, with the permission of the Aalto University School of Engineering, at a public examination held at the lecture hall M1, Otakaari 1 on 8th December 2017 at 12.00.

Aalto University
School of Engineering
Department of Built Environment
YTK

Supervising professor

Professor Raine Mäntysalo, Aalto University

Preliminary examiners

Professor Grazia Concilio, Politecnico di Milano, Italy

Professor John Forester, Cornell University, United States

Opponent

Professor Kai Hakkarainen, University of Helsinki, Finland

Aalto University publication series

DOCTORAL DISSERTATIONS 229/2017

© 2017 Jonna Kangasoja

ISBN 978-952-60-7731-4 (printed)

ISBN 978-952-60-7732-1 (pdf)

ISSN-L 1799-4934

ISSN 1799-4934 (printed)

ISSN 1799-4942 (pdf)

<http://urn.fi/URN:ISBN:978-952-60-7732-1>

Unigrafia Oy

Helsinki 2017

Finland



Author

Jonna Kangasoja

Name of the doctoral dissertation

Retooling Planning

Publisher School of Engineering**Unit** Department of Built Environment**Series** Aalto University publication series DOCTORAL DISSERTATIONS 229/2017**Field of research** Land-use planning and transportation engineering**Manuscript submitted** 5 August 2016**Date of the defence** 8 December 2017**Permission to publish granted (date)** 10 October 2017**Language** English **Monograph** **Article dissertation** **Essay dissertation****Abstract**

The dissertation research is a compilation of four individual articles and an introductory section developing and synthesizing the article themes. The overall research interest guiding the study is concerned with the question of what kinds of resources Finnish planners need to be able to fulfil their demanding professional roles. In order to better understand the demands planning professionals are faced with, the dissertation presents novel empirical findings regarding the competence requirements of Finnish architect-planners, in addition to the learning challenges of the planning field as a whole. The empirical data consists of surveys, interviews and an educational pilot.

The study presents a theoretical interpretation of the contradictory challenges identified in the work of Finnish architect-planners. The concepts of dilemma, paradox, conflict and pathology are offered as analytical tools to grasp various aspects of the developmental tensions. Learning is conceptualized as transcending these developmental tensions by retooling or re-mediating existing practices and moving towards new forms of practice. A typology of developmental tensions and corresponding capabilities on four levels (intrapersonal, interpersonal, organizational and system level) is presented. The study further develops the theoretical and methodological examination of the notion of trading zone for planning research.

Keywords Re-tooling (re-mediation), planning theory, planning education, architect-planners, capability, competence, practice, contradiction, planning pathology, agency, expansive learning, trading zone

ISBN (printed) 978-952-60-7731-4**ISBN (pdf)** 978-952-60-7732-1**ISSN-L** 1799-4934**ISSN (printed)** 1799-4934**ISSN (pdf)** 1799-4942**Location of publisher** Helsinki**Location of printing** Helsinki **Year** 2017**Pages** 123**urn** <http://urn.fi/URN:ISBN:978-952-60-7732-1>

Tekijä

Jonna Kangasoja

Väitöskirjan nimi

Retooling Planning Towards Trading Zone Capabilities

Julkaisija Insinööritieteiden korkeakoulu**Yksikkö** Maankäyttötieteiden laitos**Sarja** Aalto University publication series DOCTORAL DISSERTATIONS 229/2017**Tutkimusala** Maankäytön suunnittelu ja liikennetekniikka**Käsikirjoituksen pvm** 05.08.2016**Väitöspäivä** 08.12.2017**Julkaisuluvan myöntämispäivä** 10.10.2017**Kieli** Englanti **Monografia** **Artikkeliväitöskirja** **Esseeväitöskirja****Tiivistelmä**

Väitöskirja koostuu neljästä erillisjulkaisusta ja johdanto-osasta. Johdanto-osassa kehitellään artikkeleiden teemoista lähestymistapa yhdyskuntasuunnittelun ammattilaisten osaamishaasteiden ja heidän työssään tarvittavien kyvykkyysien tutkimukseen. Tutkimuksen empiirinen aineisto koostuu kolmesta valtakunnallisesta kyselystä, haastatteluista ja koulutuskokeilun analyysistä. Horisontaalinen vuorovaikutus-, neuvottelu- ja yhteensovittamisosaaminen näyttäytyy tutkimuksen empiirisen aineiston valossa yhdyskuntasuunnittelun ammattilaisten yhtenä ydinosamaisalueena. Tutkimuksessa on tunnistettu yhdyskuntasuunnittelutehtävissä toimivien arkkitehtien työssä esiintyviä systeemisiä ristiriitoja ja kehitysjännitteitä ja tarkasteltu niitä dilemman, konfliktin, patologian ja paradoksin käsittein. Tutkimus kehittää monitasoista ristiriitojen ja kyvykkyysien typologiaa. Jännitteitä ja kyvykkyksiä tarkastellaan neljällä eri tasolla: henkilökohtaisina, yksilöiden välisinä, organisaation ja koko systeemin tasoisina. Oppiminen käsitteellistetään tutkimuksessa ristiriitojen tunnistamiseksi ja ylittämiseksi toiminnan muuttamisen kautta. Työn teoreettinen ja metodologinen kontribuutio liittyy ammattilaisten osaamisen ja toimijuuden kontekstuaaliseen tulkintaan suunnittelun tutkimuksen kentällä, sekä suunnitteluteorian oppimis- ja käytäntökäsityksen laajentamiseen klassisten käytäntöteorioiden ja ekspansiivisen oppimisen teorian avulla. Suunnittelukommunikaatio ja vuorovaikutus käsitetään työssä käytännöllisiksi haasteiksi, joihin vastaamiseen tarvitaan uudenlaista osaamista.

Avainsanat Yhdyskuntasuunnittelu, suunnitteluteoria, kaavoitusarkkitehti, käytäntö, ristiriita, suunnittelupatologia, toimijuus, ekspansiivinen oppiminen, vaihdon vyöhyke, uudelleen välitys

ISBN (painettu) 978-952-60-7731-4**ISBN (pdf)** 978-952-60-7732-1**ISSN-L** 1799-4934**ISSN (painettu)** 1799-4934**ISSN (pdf)** 1799-4942**Julkaisupaikka** Helsinki**Painopaikka** Helsinki**Vuosi** 2017**Sivumäärä** 123**urn** <http://urn.fi/URN:ISBN:978-952-60-7732-1>

Preface

Before embarking on this dissertation research, together with Lasse Peltonen and Sari Puustinen, we initiated and carried out a participatory action research project called *Possibilities for dispute resolution in land-use planning – new practices and methods [Maankäytön suunnittelun ristiriitojen ratkaisumahdollisuudet, uudet työtavat ja menetelmät]*, funded by Finland’s Ministry of Environment. The supervisory group consisted of Katri Tulkki and Matti Laitio from the ministry, and Ritva Laine from the Association of Finnish Local and Regional Authorities. The pilot project emerged from our understanding that there is a critical demand for new approaches and practical methods to better manage and proactively prepare for the coming together of multiple perspectives in land-use planning, especially in contested cases involving infill development, cultural heritage and green space.

The challenge of dealing with differences and managing conflicts in planning had been a prior topic in our own research and that of our colleagues (e.g. Laine & Peltonen 2003, Peltonen & Villanen 2004, Leino 2006, Häikiö 2005, Staffans, 2004, Puustinen 2003; 2006, Kangasoja 2003, 2004). Environmental conflicts had become a growing research area in Finland already a decade earlier. The disciplinary angles included environmental sociology (Konttinen 1996, 1997; Litmanen 1998; Rannikko 1996), environmental justice (Määttä 2003; Peltonen, Tuomisaari & Kanninen 2008), urban studies (Edelman 2007; Hankonen 1994; Kopomaa 2005; Lehtovuori 2005), environmental policy, and local governance studies (Kettunen 1998; Sairinen 1994; Laine & Peltonen 2005).

This background meant we had a fairly robust understanding of the challenges involved with dealing with conflicting interests in environmental and land use planning, and yet we wanted to move beyond this. Our team was eager to study actual practices and identify concrete challenges like gaps and disruptions, but we were also motivated to model innovative ideas and promising collaborative practices. We were excited to develop these together with experienced professionals in the cities of Helsinki and Lahti, as the planners whose work we studied were already somewhat successfully managing these multiple perspectives, conflicting interests, and various differences in their day-to-day work.

Our team’s first research focus followed the process of drafting an infill plan for the Helsinki district of Etelä-Haaga. This planning process was of note because it coincided with a restructuring of Helsinki’s school network and many other parallel and partly-related processes. We documented the unfolding events in two different project development interfaces. The first was a planning and supervision group that consisted of many different professionals. Here the dif-

ferent internal stakeholders of the City of Helsinki interacted with both each other and the planner all the way from early drafts to the final proposal. The second was the interface of the citizens and other stakeholder groups in public meetings, featuring a longstanding collaborative group consisting of representatives from the neighbouring housing companies. Our extensive participant observation included dozens of meetings and 25 interviews.

The next planning process we observed concerned the drafting of building guidelines for the Anttilanmäki area in the City of Lahti. This was also a case of interest, as it was a collaborative process that sought to balance cultural heritage concerns with a need for renovation and new development (see Kangasoja et al. 2008; Puustinen 2008).

The aim was to use our analysis as a trigger to generate collaborative reflection and learning, and encourage participants to question existing practices that were not serving them any longer. ‘Intervention workshops’ were organized in both cities to offer a space for identifying gaps, sources of confusion and potential causes of wasted time, effort and opportunity. The workshops were equally intended to foster ideas for new tools and practices that could be beneficial for such things like transferring local innovations, framing issues, sharing responsibility and organizing planning work.

Some of the innovations observed in the Helsinki pilot, such as the introduction of an interaction officer (*‘vuorovaikutussuunnittelija’*), and stakeholder group (*‘yhteistyöryhmä’*), were adopted in other locations in Finland, and have since become recognized as best practices. These novel practices sought to collectively master the inherent challenges of dealing with the conflicting interests, values, or ‘systems of meaning’ that are always present in planning work. They also resulted in better outcomes, measured both in terms of sustainability and the quality of the process as experienced by all of the participants.

By way of having a research design that focused on two different municipal planning organizations, we were able to observe the importance of leadership, individual contributions and flexibility within the planning organizations, as well as gauge the influence of varied contingencies, resources, social support levels and turf battles. It also offered an inside look at the capital city’s remarkable bureaucracy. Gender issues came up, and we observed some remarkable (female) leadership. The significance of local cultures and modes of operation, and their path dependencies, also became evident.

This project laid the foundation for my felt sense of what *planning practice* means as a situated, historically stratified, living context in which actual human beings try to do the best work they can with others, despite particular constraints. It is easy now to see how that research project created the motivational background for the dissertation at hand. This dissertation is in the field of land use planning. However, my background in the fields of pedagogy, learning research, Cultural Historical Activity Theory and Developmental Work Research have profoundly influenced the way I have approached this research task. For that,

I am indebted to Professor Yrjö Engeström and many former colleagues at Helsinki University's Centre for Research on Activity, Development and Learning. Throughout this study, I have remained fascinated by questions of agency, identity, emotions, learning, collaboration and transformation.

Acknowledgements

Research for this dissertation began in May 2009 at the Centre for Urban and Regional Studies (YTK) of the Helsinki University of Technology, later renamed Aalto University. YTK functioned as a vibrant hub of planning research and education in Finland for almost 50 years, until it ceased to exist as a result of budget cuts and organizational restructuring in 2016. I am grateful that I had the chance to work with the talented and committed people there.

The lion's share of my dissertation work was completed as part of a Finnish Academy-funded project called *Architects, New Public Management and Public Interest in Finnish Urban and Regional Planning*. The project was directed by Professor Raine Mäntysalo, and the research team consisted of Terttu Nupponen, Sari Puustinen, Hanna Mattila and Karoliina Jarenko and myself. I am indebted to the research team members for their insight and inspiration. I wish to thank Professor Mäntysalo for all of his support and encouragement along the way. It turns out that we share many deeply held motivations and intellectual interests, which we have pursued in several of the articles. When such collaboration is fostered with mutual respect, it has the power to change not only the resulting ideas and fields of inquiry, but also the developmental paths of individuals involved.

Professor Mäntysalo, Vesa Kanninen and I worked to develop instruments for strategic spatial planning, and I would like to acknowledge the valuable contribution of the five experienced planners who shared their expertise in this effort: Raimo Airamo, Leena Strandén, Leena Rossi, Heikki Saarento and Markku Lahtinen. I wrote the fourth article with Hanna Mattila, who I deeply admire for her intellectual contribution to the research field.

A warm thank you must also be extended to my office roommate and travel companion Kaisa Schmidt-Thomé – for everything! (Anyone who has had the privilege to be inspired and supported by Kaisa knows what I mean.) Maarit Kahila-Tani, Anna Broberg, and Sirkku Wallin offered their encouragement and humour as part of our peer support group.

Professor Marketta Kytä provided me with the opportunity to test pedagogical ideas in the development of a new master's program on spatial planning and transportation engineering and in co-teaching participatory planning courses. I am grateful to Marina Johansson for taking care of all those things that made it possible to work on this dissertation (key cards, computers, phones, desks, printers, insurance, wellbeing and fun), and to Maria Söderholm for proactive support with information resources. I thank Arja Viitanen-Aarni for her help with project management and finances, and Eija Saari for support with international travel, which turned out to be very important for this research.

My heartfelt gratitude to Professor John Forester at Cornell for being the first person to introduce me to the social practice of public policy mediation, inspiring Lasse Peltonen and myself to embark on an on-going journey to learn more. Professor Forester invited us to the US for the 2012–2013 academic year, and during this research visit, we had the honour to work with Professor Lawrence Susskind at MIT and the Consensus Building Institute (CBI). I want to thank Professor Susskind, the staff of CBI and the CBI Global Network for their generosity in sharing their knowledge of collaborative problem solving in the challenging contexts of land, food, energy and water conflicts.

The Harvard Program on Negotiation and MIT DUSP in Cambridge proved to be exceptionally inspiring learning environments. We spent part of the year in San Diego and Portland visiting the National Policy Consensus Center at Portland State University. We benefited greatly from the wisdom of the practitioners we interviewed. Special thanks to Susan Podziba, Ona Ferguson, Stacey Smith, Merrick Hoben, Rachel Millner Giller, David Fairman, Eric Roberts, Carrie Hulet, Sarah Kariko, Ellie Tonkin, Justin Wright, David Batson, Laurel Singer, Turner Odell, and Steve Greenwood. Thanks also to Steven Hickman and Michelle Becker at UCSD's Center for Mindfulness for opening the door to mindful self-compassion. Many of these first encounters have since turned into continuing creative collaborations, for which I am grateful beyond words.

In the final phases of writing the introductory part of this dissertation, three very important persons, Barbara Oliveira, Aude Brisset and Miriam Attias, opened up new avenues that made it easier for me to reach closure with this work. Most importantly, it would not have been possible to finish this thesis without the support of Lasse Peltonen. Thank you for sharing in this quest with me from the beginning. I dedicate this work to our daughters Hilma and Matilda.

IN HELSINKI, ON 10 OCTOBER 2017

Jonna Kangasoja

Contents

Preface **1**

Acknowledgements **4**

Original publications **8**

Author roles in the articles **9**

1. Introduction **11**

2. The research process **13**

3. Planning expertise as a contextual concept **16**

4. Learning as joint creation of new knowledge and practices **17**

5. Introducing the concept of trading zone into the planning field **20**

6. The theoretical foundations of retooling and remediation **24**

7. Why does Finnish planning education need retooling? **27**

8. Towards trading zone capabilities **30**

9. Conclusions and reflections on the research contribution **40**

References **44**

Appendix 1. List of data **49**

Publications I-IV

Original publications

Article I

Kangasoja, Jonna; Mälkki, Mikko; Puustinen, Sari;
Hirvonen, Jukka; Mäntysalo, Raine (2010):
Architectural Education as a Basis for Planning Work
– The Pros and Cons of Professional Enculturation
Journal for Education in the Built Environment,
Vol. 5, Issue 2, December 2010 pp. 25–38 (14)
ISSN: 1747-4205
JUFO (Publication forum) Level 1

Article II

Kangasoja, Jonna & Mattila, Hanna (2017)
Facing up to Finnish Planning Pathologies:
A Contextual Interpretation of Planner Capabilities
and a Call for Change
In Tasan-Kok & Orange (Eds.) From Planning Student
to Urban Planner: Young practitioner's reflections on
contemporary ethical challenges, Routledge (2017)
JUFO (Publication forum) Level 3 (chapter blind
reviewed by two external reviewers)

Article III

Mäntysalo, Raine; Kangasoja, Jonna; Kanninen,
Vesa (2015)
The paradox of strategic spatial planning:
A theoretical outline with a view on Finland
Planning Theory & Practice, Vol. 16:2, pp. 169–183
DOI:10.1080/14649357.2015.1016548
JUFO (Publication forum) Level 1

Article IV

Mäntysalo, Raine; Balducci, Alessandro; Kangas-
oja, Jonna (2011): Planning as agonistic communi-
cation in a trading zone: Re-examining Lindblom's
partisan mutual adjustment
Planning theory Vol. 10:3, pp. 257–272
DOI: 10.1177/147309521 ISSN: 1473-0952
JUFO (Publication forum) Level 2

Author roles in the articles

Article I: Jonna Kangasoja is the first and primary author of the first article, having contributed most of the writing. Mikko Mälkki made comments and wrote one section. Kangasoja, Mälkki and Raine Mäntysalo together developed the original idea for the study, and designed the survey used for data collection of the empirical material. Kangasoja and Mälkki carried out the qualitative data analysis, while Jukka Hirvonen ran statistical analysis of the survey data. Reference was made to Sari Puustinen's previous work on planners as a professional group, and she wrote this section of the article. Mäntysalo also commented on the manuscript.

Article II: Jonna Kangasoja is the first author of the second article. She developed the original idea jointly with the second author, Hanna Mattila. Kangasoja was responsible for data gathering and analysis of architects working in the public sector, while Mattila was responsible for data gathering and analysis for the educational pilot. Idea development and writing was shared evenly between both authors.

Article III: Jonna Kangasoja is the second author of the third article. Raine Mäntysalo developed the original theoretical idea of the paradox of strategic spatial planning. Kangasoja conducted and independently analysed the interviews. The division of labour made Mäntysalo responsible for developing the theoretical argument, Kangasoja responsible for data gathering, analysis and reporting of the interviews regarding the experienced planning professionals, and Vesa Kanninen responsible for explicating the status and use of structural schemes as an instrument of strategic spatial planning. All three authors had independent responsibilities in developing components of the argument and writing the article, but the primary responsibility for writing lay with Mäntysalo.

Article IV: Jonna Kangasoja is the third author of the last article. Her role was important in that she introduced the theoretical concept of *trading zone*, from the field of science and technology studies, to the other two authors, Raine Mäntysalo and Alessandro Balducci. The three authors jointly discussed the applicability of the concept for planning theory, and developed the key idea to examine urban planning as a trading zone. Mäntysalo assumed the main responsibility for writing the article. Kangasoja and Balducci had relatively small writing roles, but played an important part in the development of the manuscript at several phases via both discussion and comments. Kangasoja independently contributed the section on boundary objects.

1. Introduction

This study grows out of a Finnish line of planning research that views land-use planning as a tension-laden societal activity. Planning is often contested, and its relationships to other activities, both inside and outside local planning organizations are often characterized by friction and even conflicts. Planning as an activity is by nature contradictory, in that it often incorporates many opposing goals and values.

The purpose of planning is twofold in society: on the one hand, it is intended to produce economic value via land-use allocation and real estate development opportunities, while on the other, it is used as an instrument for social and environmental justice, securing vital needs for shelter, recreation and environmental health for all – including marginalized groups and future generations. Public planning is also increasingly utilized as a legitimate means for settling diverging views on how to preserve nature, biodiversity and cultural history in the built environment and urban context.

As described in the preface, this study was in part motivated by a participatory action research and development project I was involved with called *Possibilities for dispute resolution in land-use planning – new practices and methods [Maakäytön suunnittelun ristiriitojen ratkaisumahdollisuudet, uudet työtavat ja menetelmät]* (Kangasoja et al. 2008, Puustinen 2008).

This project gave me an appreciation of planners' first-hand experiences dealing with the contradictions and dilemmas of their work. These contradictions were also reflected in the experiences of persons taking part in the processes as stakeholders (*osallinen*): some protested to no avail as places they cared for were being transformed, while planners found themselves without the tools they needed to address disappointment and anger, despite their sincerest efforts and best intentions. These repeated observations directed my research interest towards the nature of these constraints and challenges, and the resources and capabilities required to address them.

Earlier studies which inform and frame the research at hand have focused on such things as land-use planning as inter-organizational learning (Mäntysalo 2000), pathological features of the Finnish land-use planning practice (Mäntysalo & Nyman 2001; 2014), defensive routines and the tension between the input legitimacy and output efficiency in Nordic land-use planning (Mäntysalo et al. 2011). This line of Finnish planning research has enriched international planning theoretical debates with novel philosophical, psychological

1. INTRODUCTION

and learning perspectives.¹ Much of this earlier work has had a theoretical focus, which has rendered these contributions relatively ineffective in terms of addressing pertinent practical problems planners face in their work. I approach the problem of communication not as a theoretical one that could be treated or resolved in the realm of theory, but as a practical issue requiring advances in how actual forms of communication are organized as part of planning practices in democratic societies, such as Finland. This research has aimed to create a better understanding of the kinds of skills and sensitivities these tension-laden professions require, and how such capabilities could be created and fostered by organizations and individuals.

The research questions guiding the study are as follows:

1. What kinds of competences do Finnish architect-planners need in their professional work? And how has the professional education these professionals have received equipped them to meet the challenges they face in their everyday work?
2. How can planning and planning communication be conceptualized in novel ways that would take into account the dynamic and developing nature of the multiple practices involved?
3. How can the contradictory challenges identified in Finnish architect-planners' work be conceptualized theoretically? What kind of a theoretical conception of learning would be meaningful in interpreting the learning challenges of individual professionals, planning organizations and the whole field of planning in Finland?
4. What kinds of *trading zone capabilities* can be suggested for retooling planners and planning based on the analysis of the contradictions identified in the study?

This introductory part of the dissertation is an attempt to synthesize the findings of the individual articles on a general level by constructing a framework in which the developmental tensions are integrated into a meaningful whole. The notion of retooling is offered as a theoretically founded, yet practice-relevant way to capture the contradictory demands, and to envision viable ways to transcend them.

1 There has been considerable debate in the international planning research field on the question of planning communication. Hanna Mattila (2017) has contributed an outstanding explication and analysis of these theoretical discussions, set within the framework of communicative planning theory and its complex relationship to its Habermasian roots. I am grateful for her contribution in this area to Article II of this dissertation.

2. The research process

The research process proceeded from a pre-understanding of the challenges faced by planners, gained from previous studies, to a ‘wide angle’ picture of the field as a whole obtained through three national surveys². In the first survey, the focus was on what kinds of competences Finnish architect-planners consider critical for their work, and how they see their professional education to have prepared them for the demands they face. These findings are reported in Article I (Kangasoja et al. 2010).

Two key findings were revealed: first, respondents indicated that a cluster of interactional competences – including negotiation, collaboration, conflict resolution, presentation and argumentation skills – were critically important for their work, and second, they articulated that there was a clear discrepancy between these demands and the education they had received. Many respondents felt that their architecture education had given them a strong professional identity that was highly valued. However, the very same respondents believed this to be counterproductive and not actually serve them well in their work as planners. It was as if they were caught between the image of what it means to be a skilled professional and personal experiences that were at odds with this image. This dilemma highlighted the internal tensions within the architect profession.

Article I discusses the work of Dana Cuff and Kristina Nilsson on social creativity, which seeks to expand the core concepts of ‘art’, ‘skill’ and what it means to be a professional. It calls for a research approach that simultaneously addresses questions of individual professional capabilities and the shifting context of practice, an ever-changing process that introduces demands and constraints, but also novel resources.

To gain a clearer understanding of the changes affecting the working conditions of planners, we conducted a second national survey (Kangasoja 2010) discussed in Article II (Kangasoja & Mattila 2017). This time the focus was on architects working in the public sector who are confronting increasing demands for efficiency and other features of the New Public Management paradigm. Most of the respondents worked in planning-related tasks, some were charged with development control and regulation. The questions we asked were about recent and upcoming transformations in their work, and how they viewed their ability to have an impact. We wanted to know to what extent they were able to take part in agenda setting for land-use planning or participate in discus-

² See Appendix 1 for a detailed description of the three surveys.

sions about important planning decisions with elected decision-makers. And whether they felt they had a voice in raising issues horizontally across sectorial boundaries within their organizations, and vertically to municipal leadership.

There was striking variation in how the respondents assessed their possibilities in this regard. The answers provided by 171 planners from 52 municipalities showed that municipalities differ substantially with regard to straightforward resources, such as the financial situation and degree of land ownership, and other resources like vision, skill and know-how. Leadership in the over 300 municipalities in Finland varies, and this affects numerous contextual resources such as overall understanding of land-use planning, how well policies are integrated, and how active and advanced the land-use policy is.

There was also great variation among the planning organizations in the division of labour and the quality of the peer support, and in the relationships the units have with other departments, government actors and stakeholder groups (Kangasoja 2010). It can be concluded that the evolving wider context of planning, extending to national policy and economic and legal factors, affects the local planning organization and is therefore crucial in terms of the capabilities and action potency of the individual planning professional.

The focus of Article II (Kangasoja & Mattila 2017) is on the nature of planning work contradictions as experienced by young planners. The article searches for an understanding of the conditions that must exist before these contradictions can be transcended on the relevant interconnected levels. This can take the form of necessary institutional reform on the societal level, wise leadership and/or a supportive working culture on the work community level, or personal search for ways to maintain an integrated professional agency in the face of a pathological working context.

From the point of view of educating future professionals, Article II makes it very clear that an assessment of future competences cannot be limited to a mere 'wish list' of current trends, but must also be rooted in and correspond to an understanding of the challenges embedded in the practice. A failure to do this will incapacitate young planners entering working life, as they confront the discrepancy between the ideals and ideas received in their education and the constraints of their actual work.

Once this analytical connection between individual agency and local organizational capacity was established, a search was begun for more contextual notions of planning. The effort to formulate a new, more dynamic concept was first a theoretical exercise exploring the idea of planning as *generating interlanguages in trading zones*, introduced in Article IV (Mäntysalo, Balducci, & Kangasoja 2011) and later developed in a partial critique and comment published as *Trading Zone as a Sensitizing Concept in Planning Research* (Kangasoja 2013). This dissertation is a further elaboration of the theoretical exercise conducted in Article IV.

This was followed by my yearlong research visit to the US, where collaborative forms of practice had already emerged several decades earlier, in response

to seemingly irreconcilable impasses and conflicts in public policy and planning. Extensive course work at the Program on Negotiation at the Harvard Law School and MIT's Department of Urban Studies and Planning, combined with interviews of leading practitioners³, gave me a profound appreciation of the potential of mediated collaborative processes such as mutual gains approach to negotiation (MGA), environmental conflict resolution (ECR), environmental and public policy mediation (EPPM), and collaborative governance (CG).

A key insight was the difference between two images; one of work of the Finnish planner, troubled by internal contradictions during the planning process, and the other of the US planner, who joins the other planning project stakeholders in a collaborative group facilitated by a skilful neutral party. This mediator has both process design experience and a mastery of the dynamics of trust and collaboration. The Finnish planner, like her Nordic counterparts, stands alone, 'torn between' the conflicting imperatives imposed on her. She is ill equipped to create or participate in a process where these requirements and the needs and interests of the other stakeholders could be jointly addressed.

Upon my return from the US, an interest arose to examine instances where partial re-tooling of the practice of planning had taken place in Finland, and what the conditions were allowing it to happen. Article III (Mäntysalo, Kangas-oja & Kanninen 2015) reports findings from our analysis of the use of a novel strategic spatial planning instrument, namely a structural scheme, in four Finnish urban regions.

In this third study, I conducted interviews with five senior planning professionals. My analysis focused on two aspects: first, how the new instrument had helped to transcend the developmental tensions the respondents had identified in the practice of regional land-use planning, and second, the individual or organizational capabilities the respondents identified as central to their strategic practice. The distinctive feature of the structural scheme was that it had enabled a community of inquiry to grow up around the questions of the studied regions' future. This confirmed our hypothesis that planning tools and means enable different kinds of communication and condition the emergence of joint agency. This collective agency can then integrate the diverse knowledge and perspectives of those most affected by the planning decisions.

³ See Appendix 1 for a list of interviews conducted in the US.

3. Planning expertise as a contextual concept

The study looks at planning expertise in relation to a particular historical context (Fig. 1, see Article II). It builds on the insights of researchers of professional learning and education, who have made a very interesting observation: human expertise does not develop in isolation and cannot be adequately characterized without referring to specific situations, contexts, and environments in which an agent’s competences are practiced and become tailored. Consequently, the history of the development of an individual’s expertise has significant similarities to the cognitive history of those organizations or communities in which she functions. (Hakkarainen et al. 2004:162.)

This provides an interesting perspective on the process of a planning professional’s formation, and specifically, the development of her expertise in a specific context. We should be able to say something about the cognitive history of the community in which she functions by looking at her expertise – and vice versa. This is one way to frame what this dissertation is all about. The empirical material presented in this dissertation is precisely about how planning professionals experience the adequacy and sufficiency of their skills, competences and expertise with regard to the challenges they face in their everyday work. The empirical findings are also about the planning organization in which these people work, and how the possibilities for action and professional agency are shaped there.

Kai Hakkarainen and his colleagues state that human skills and competences are relational in nature and co-evolve with social practices (2004:162). This means at least two things: first, that individual learning takes place within relationships and social practices develop through participation, and second, that what needs to be learned in order to be considered competent is in constant flux, as practices are constantly changing to correspond to evolving conditions.



Figure 1. Professional agency within a subject-centred sociocultural framework (Eteläpelto et al. 2013:61)

4. Learning as joint creation of new knowledge and practices

Several examples of previous research make links between planning research and learning theory, for example, Donald Schön in his model of the reflective practitioner (Schön 1983; 1987), or Thomas Straatemeier and his colleagues' explicit reference to Kolb's model of experiential learning theory in their proposal for 'an experiential approach to research on planning' (Straatemeier et al. 2010). A contribution from Luca Bertolini concludes that the role of planners is increasingly morphing into the facilitation of the learning of others. While he notes that the learning is important, he wonders what exactly it entails. Who learns, what is being learned, why is it being learned and what is the role of planners in the process? (Bertolini 2011:177)

This study takes as a starting point the question of how we can understand and conceptualize learning in the historically shifting context of planning, now accomplished in complex forms of collaborative work across sectorial and professional boundaries. Given the research task described in the introduction, what is called for is a learning theory able to account for the simultaneous and interconnected transformation of the practice context and the individuals participating and shaping the practice.

Sami Paavola and his colleagues (2001) have proposed adopting the metaphor of collective knowledge creation when examining developmental phenomena on the community level. They discuss three theories addressing the question of how new knowledge is created. These include the theory of knowledge creation by Ikujiro Nonaka and Hirotaka Takeuchi (1995), the theory of expertise by Carl Bereiter and Marlene Scardamalia (1993) and the theory of expansive learning by Yrjö Engeström (1987) building on the tradition of Cultural Historical Activity Theory (Vygotsky 1978; Leont'ev 1978; see Engeström, Miettinen & Punamäki 1999 for a history of the tradition).

Expansive Learning by Yrjö Engeström (Engeström 1987; 1995; 1999; Engeström & Sannino 2010) and an original Finnish participatory action research methodology called *Developmental Work Research* outline a way to conceptualize learning as a collective endeavour for generating *transformative agency* and new forms of practice when existing practices are no longer adequate or meaningful.

One of the basic tenets of the Expansive Learning theory is that contradictions are the driving force of development. They are manifest in the daily practices as breakdowns, tensions, ruptures and innovations. They call for conceptual and concrete re-working of the objects and motives that sustain the activity, and re-mediating the activity system by way of improving and inventing new tools. Notions of disturbance, rupture, dis-coordination and unexpected event

have been linked with expansive transitions (Engeström et al. 1991; Wehner, Clases & Bachmann 2000; Clases & Wehner 2002).

The Expansive Learning approach serves as the orienting framework for this dissertation. This is especially true in three areas: the conceptualization of how practices can be transformed and developed through analysis of the developmental tensions, the deliberate experiments with novel elements, and the formulation of an expanded conception of the objects and motives that sustain those activities. The theory is activist in its orientation, as the research is often conducted in collaboration with communities encountering challenges managing their changing work activities.

Engeström uses Vygotsky’s concept of *zone of proximal development* to illustrate the dynamics of expansive learning as a collective journey towards new qualitative forms of practice.

Taking inspiration from the cycle of Expansive Learning (Fig. 2.), this study identifies a ‘need state’ in the present Finnish planning practice by making the personal work experiences of planners visible and heard. In this sense the dissertation engages in the epistemic work of questioning the existing practice. The study also analyses planning’s ‘double binds’, the situation of impossibility calling for change. As we note in Article II, Finnish planners encounter many

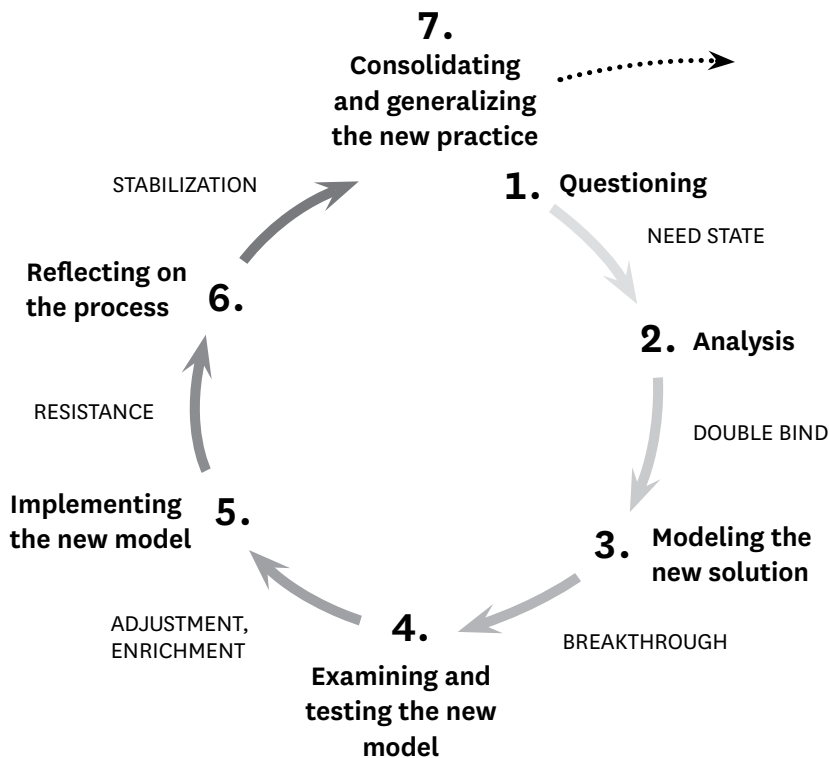


Figure 2. The sequence of Expansive Learning actions (Engeström 1987; 249)

kinds of contradictions in their daily work. Some of the contradictions can be traced to the internal inconsistencies in planning legislation or policies, whereas others are due to conflicts between these standards and the objectives pursued in the daily practice of planning organizations.

Planning pathologies and planners' experiences of pathological situations have been previously studied in Finland in light of Gregory Bateson's theory of double binds and learning and Chris Argyris's theory of organizational learning (Mäntysalo 2000; Mäntysalo & Nyman 2001; 2014; Mattila et al. 2012). By definition, pathologies are not mere contradictions, but social situations where a system or organization becomes accustomed to misrepresenting its own activity. For example, a public sector planning organization may be communicating in-house and out that it prioritizes sustainability goals, when it actually primarily serves the objective of economic competitiveness (Mattila et al. 2012: 246; Mäntysalo & Nyman 2001).

In this dissertation, the concepts of dilemma, paradox, conflict and pathology are interpreted as manifestations of the contradictory nature of planning as a social activity. In the learning-theoretical approach applied, these contradictions are seen as the driving force of development. Developmental tensions manifest in various ways and on multiple levels in the daily practices, thus calling for re-mediating the 'activity systems' by way of retooling. Retooling means inventing new ideas, theories and tools, along with adapting new roles and divisions of labour.

The research design of this study is informed by the methodological cycle of Developmental Work Research in that analysis starts with the everyday experiences of people engaged with a particular work activity. It then looks for tensions, ruptures, and discontinuities, along with innovative efforts to manage them. Disturbances are regarded as manifestations of systemic contradictions. The systemic contradictions then point to the zone of proximal development of the practice – identifying the need for, and the potential for change. The dissertation identifies learning challenges based on the developmental tensions of the professional practice of planning as a whole.

5. Introducing the concept of trading zone into the planning field

In his book titled “Planning Theory”, Philip Allmendinger portrays the field of planning theory as a landscape where one can map the co-existence of various schools of planning thought – what he prefers to call ‘indigenous planning theories’⁴ (Allmendinger 2009:30–48). He situates the indigenous planning theories in a larger theoretical space, together with exogenous theory, framing theory (e.g. modern and post-modern perspectives), social theory (e.g. structuralism, functionalism and Marxism) and social scientific philosophical understandings (e.g. positivism, realism and idealism) (ibid:43–44).

Allmendinger notes that planners have always drawn on various exogenous theories that are not about planning, but which can have relevance in terms of space, policy processes or governance, for example. Exogenous theories are theoretical constructs adopted from various fields. They differ from social theory in their level of abstraction: they tend to be neither general theoretical frameworks nor research methods, thus characterized as ‘meso-level’ or intermediary theoretical constructs (ibid:43).

I want to reflect on the intellectual undertaking of ‘translating’ the exogenous theoretical construct of *trading zone*, originally developed by Peter Galison (1997) for the field of social studies of science and technology, into planning theory. The trading zone has been developed for the specific purpose of interpreting generative encounters of distinct local language practices in science.

Galison’s work on trading zones in scientific practices was set in the larger context of a shift in the philosophy and sociology of science, which placed everyday practices at the centre of attention. This shift marked an epistemological break in the research tradition and generated new research objects, methods and questions (Fleck 1936/1981, Kuhn 1962/1970). Also the understanding of the nature of scientific knowledge underwent profound reassessment. So-called laboratory studies (e.g. Woolgar, Latour, Callon) started a program of ethnographic studies of scientific practices, with researchers following like anthropologists the scientists acting together with their specific material and conceptual artefacts.⁵ This intellectual project was connected to a broader shift, which has been de-

⁴ The schools of thought discussed by Allmendinger include systems and rational theories, critical theory and Marxism, neo-liberal planning, pragmatism, planners as advocates, ‘after modernity’ (including complexity and post-structuralistic theories) and collaborative planning.

⁵ See also Karin Knorr-Cetina’s work on ‘epistemic cultures’ (1999, 2001), and Rheinberger’s work on experimental systems and ‘epistemic things’ (1997).

5. INTRODUCING THE CONCEPT OF TRADING ZONE INTO THE PLANNING FIELD

scribed as the ‘practice turn in social sciences’ by Schatzki (in Miettinen 2008, 209).

Galison was not, however, working only from the perspective of history and philosophy of science, but also as a trained physicist. He therefore had a unique position and understanding of scientific practices. The original idea of a trading zone came from anthropological linguistics:

My original problem – the problem that drove me to the idea of trading zones and scientific exchange languages in the first place – was my frustration in trying to join a local picture of practices with this fixed, global idea of language. The two clashed. By contrast, interlanguages are exactly characterized by their change over time and by their locality – exactly what one needs in order to talk about scientific language in the context of a shifting set of laboratory and blackboard practices. (Galison 2010:42)

For a concept to have explanatory power, it cannot be applicable to everything, as Leigh Star noted in her essay on boundary objects (Star 2010). Galison sees the limits of applying the concept of trading zone in the analysis of local practices.

Should we characterize any set of embodied practices as a subculture? The question is an empirical one. Is there enough regularity, enough covariance within a given set of practices, to merit our picking out regularity for attention? We have to be prepared for the answer to be “no.” If there is enough regularity to justify speaking of quasi-stable subcultures in contact with one another, then, and only then, is the trading zone idea useful, because it is then that the thinness of the exchange proves valuable – in contrast with the thickness of the established cultures. For emphasis: the trading zone concept is not always applicable. (Galison 2010:46)

This caveat is necessary, but it is not to be read as saying that all trading zones would share the same set of characteristics or attributes, which could somehow be discovered. In this sense the concept is not a ‘definitive concept’, but rather a *sensitizing concept*, following this useful distinction by Herbert Blumer (1969/1998):

I think thoughtful study shows conclusively that the concepts in our discipline are fundamentally sensitizing instruments. Hence, I call them “sensitizing concepts”, in contrast with definitive concepts [...]. A definitive concept refers precisely to what is common to a class of objects, by the aid of a clear definition in terms of attributes or fixed benchmarks. This definition, or the benchmarks, serve as a means to clearly identifying the individual instance of the class and the make-up of that instance that is covered by the concept. A sensitizing concept lacks such specification of

5. INTRODUCING THE CONCEPT OF TRADING ZONE INTO THE PLANNING FIELD

attributes or benchmarks and consequently it does not enable the user to move directly to the instance and its relevant content. Instead, it gives the user a general sense of reference and guidance in approaching empirical instances. Whereas definitive concepts provide prescriptions of what to see, sensitizing concepts merely suggest directions along which to look. (Blumer 1969/1998:147–148)

Seeing the concept in this way is a cure for the temptation to use the concept as a *label*. The promise of the concept of trading zone lies in how it focuses the researcher's attention to the significance of particular forms of collaboration and emerging regularities: to the evolution and dynamics of new practical and discursive 'interlanguages' for boundary crossing. Galison writes:

In instances of unequal exchanges between scientific-technical subcultures, what precisely does make it to the interlanguage from each side? It is a question that cannot even arise if we stop our analysis with proclamations about "interdisciplinarity", "collaboration", or "symbiosis". Those terms point at the problem; all the interest, in my view, lies in unpacking what the nature of this coordination is, and how it evolves over time. (Galison, 2010:23)

What does the concept of trading zone sensitize us to? The concept highlights boundary crossing phenomena and local coordination where global difference prevails. With the notion of interlanguages (jargons, pidgins, creoles) we become attentive to the creation and development of local cultural tools, linguistic as well as other material and semiotic means, which play a decisive role in collaborative practices across various boundaries (Kangasoja 2013).

Blumer stresses the importance of understanding the role of concepts in social science and the value of a method that would not make them immune to real life being studied, but instead subject to revision:

Sensitizing concepts can be tested, improved and refined. Their validity can be assayed through careful study of empirical instances of which they are presumed to cover. Relevant features of such instances, which one finds not to be covered adequately by what the concept asserts and implies, become the means of revising the concept (Blumer, 1969/1998:150)

Blumer has much to say about methodology when studying humans acting together (Blumer 1969/1998:21–39). Building on the legacy of G.H. Mead, Blumer exhorts researchers in social science to treat their research targets as 'persons with a self', that is to say, as persons who have their unique interpretive horizons and agency.

The contention that people act on the basis of the meaning of their objects has profound methodological implications. It signifies immediately that if the scholar wishes to understand the action of people, it is necessary for him to see their objects as they see them. Failure to see their objects as they see them, or a substitution of his meanings of the objects for their meanings, is the gravest kind of error that the social scientist can commit. It leads to the setting up of a fictitious world. Simply put, people act toward things on the basis of the meanings these things have for them, not on the basis of the meaning that these things have for the outside scholar (ibid:51).

If this understanding is lacking in trading zones research, there is a risk of equating participants with their interests, or with the educational, disciplinary or organizational backgrounds, or any other researcher-assigned positions. People can get reduced to mere 'proxies' for 'social worlds' or 'meaning systems', the emergence or transformation of which is not accounted for. This would be an instrumental and functionalist understanding of humans. Although not uncommon to social scientific research, it is an untenable position (Blumer 1969/1998: 24-26, 49; see also Forester 1989: 68-70).

6. The theoretical foundations of retooling and remediation

The concept of trading zone can be brought together with other concepts that more directly address questions of change and agency. I propose looking at two classical practice theories, namely Deweyan pragmatism and Cultural Historical Activity Theory (see e.g. Engeström 1987). I chose these approaches for two reasons: first, to find a sound epistemological and ethical basis for intervention and experimentation (Miettinen 2006), and second, to discover a praxis conception and theoretical view of artefacts, which makes it possible to analytically distinguish their different functions: artefacts as *objects* of collaborative efforts, the targets and goals of joint efforts being pursued, and as material and discursive *tools* and *means* employed in joint action (Cole & Engeström 1993, Cole 1998).

This functional differentiation is clarified by Engeström and Escalante in their article on problems encountered in the launching of a technological innovation called 'Postal Buddy'.

In classical German philosophy, the object's embeddedness-in-activity was captured by the concept of Gegenstand, as distinct from the notion of mere Objekt. ... objects do not exist for us in themselves, directly and without mediation. We relate to objects by means of other objects. ... This means that objects appear in two fundamentally different roles: as objects (Gegenstand) and as mediating artefacts and tools. There is nothing in the material makeup of an object as such that would determine which one it is: object or tool. The constellation of the activity determines the place and meaning of the object. (Engeström & Escalante 1996:325–373)

The praxis concept of classical practice theories sees cultural transformation as connected to social or societal *objects* and *motives* that are internally contradictory and historically stratified. Objects understood in this particular way (e.g. a plan, a building, an area, a strategy, or the public good) are the reason for temporary and sustained collaborations across boundaries in planning: the objects draw actors together, as well as mobilize considerable resources. The objects embody meaning and moral commitments as to what is important and valuable, and what ought to happen. That is why these objects are under constant negotiation, as they are debated and reworked in the local settings of collaboration and coordination.

Retooling, or re-mediation, originates from classical practice theories, in which social practices are understood as dynamic, historically formed, and mediated by various means. In his chapter "Epistemology of transformative

material activity: John Dewey's Pragmatism and Cultural-Historical Activity Theory", Reijo Miettinen states that both Deweyan pragmatism and activity theory regard intervention, or practical experimentation, as an indispensable part of the research method for studying change in human practices (2006)⁶. Miettinen shows that the foundation for such a research strategy is both epistemological and moral:

[...] the testing and validation of working hypotheses takes place by putting them into practice, and cannot be achieved by thought experiments, rational inference or discourse only. [...] The best way of gaining an understanding of developmental possibilities is experimentation, through introducing new cultural tools into activity. [...] The solution of the problem requires what is called remediation or retooling, the adoption, development and use of new cultural means, which makes the transformation of activity possible (Miettinen 2006: 400–401).

Miettinen notes that the interventionist approach is not a typical one, even in the study of practices (2006:401). He writes that in pragmatism and in activity theory “the commitment to the problems and well-being of the people and activities studied is a constitutive feature of research”. Miettinen contrasts the ethics of experimental, transformative research projects to “discursive ethics”, elaborated by Richard Rorty (edifying philosophical discourse), Jürgen Habermas (the ideal speech situation) and Hans-Georg Gadamer (dialogue for hermeneutic understanding).

In these theories it remains open as to why people want to understand each other and pursue the dialogue in the first place. From the standpoint of theories of activity, people are likely to be involved in dialogues that are needed to make sense of shared concerns and to coordinate their actions in shared, object-oriented enterprises (Miettinen 2006:401).

Miettinen anticipated the potential criticism about the “modernist tradition of naïve progressivism in its commitment to the idea of development and of solving societal problems” that would dismiss activity theory and Chicago pragmatism. He writes:

Their methodological ideas of intervention in research can, however, be well utilized and developed without adherence to abstract, modernist

⁶ A robust body of interventionist research has been conducted in a wide range of fields such as healthcare, schooling, production work, crime investigation, organic farming etc. (see Engeström & Sannino 2011 for a comprehensive review).

6. THE THEORETICAL FOUNDATIONS OF RETOOLING AND REMEDIATION

rationality or to any concept of progress. [...] Combined with locality, the commitment to experimentation to make things better implies no teleology of progress (Miettinen 2006:402).

Retooling is operationalized in this study on several analytical levels. The generation and testing of novel planning instruments, such as the structural scheme discussed in Article III, illustrates the idea of retooling in the framework of a larger changing practice. Similarly, the notion of retooling extends the idea put forward in Article IV to account for the dynamism of not only the individual activities and perspectives which meet and collide in a trading zone, but also the emergence and transformation of the trading zone itself.

7. Why does Finnish planning education need retooling?

A practical question that has been present during the research process is: How should planners be educated in Finland? What kinds of skills and competences are most important for this professional group, and what pedagogical solutions would best support their learning and professional identity building? These were key questions in the recent development of a new joint master's program combining land-use planning and transportation engineering for the Aalto University Department of the Built Environment⁷.

In December 2013 we convened a large group (60 participants) of leading experts in land-use planning and transportation to envision together what kinds of competences and skills professionals need in the future. We also convened the academic staff and faculty of the then two separate departments: the Department of Real Estate, Planning and Geoinformatics and the Department of Civil and Environmental Engineering, Research Group of Transportation Engineering, for a day-long workshop (see Kangasoja & Mattila 2014).

The practitioners, all leading experts from the field, put a premium on collaborative skills and competences, and the ability to deal with an uncertain future. The motivation to work over professional and sectorial boundaries and engage in integrative and synthesizing thinking with others was also deemed important, along with a long list of necessary 'people skills' like good presentation, argumentation and listening skills, as well as the ability to mediate, negotiate, joint problem solve, and resolve conflicts. Although it is multifaceted, this cluster of skills and competences is clearly distinguishable from the more traditional planning and transportation engineering competence areas emphasized by the academic faculty. The distinct emphasis of the practitioners and the academic faculty corresponds to the T-model of expertise introduced by Tim Brown (2007). (See Fig. 3.)

One of the arguments arising from this study is that if we wish to achieve a genuine shift towards the horizontal axes of the 'T' in planning education and practice, it is not enough to add a course on negotiation to the curriculum. A much more profound shift in the entire field of research is needed, extending to how humans and human interaction is understood. The argumentative turn (Fischer & Forester 1993), despite its merits, did not provide means for developing skills that address the social reality of encounters, as people are reduced

⁷The master's program design work was led by professor Marketta Kytä.

7. WHY DOES FINNISH PLANNING EDUCATION NEED RETOOLING?

in this theory to more or less rational argumentators.⁸ The implicit view is too narrow and rationalistic – unable to touch those aspects of human interaction that planners encounter in their daily work and for which they need better skills and preparation.

It is perhaps not surprising that it was the practitioners participating in our workshop, and not the academic faculty, who emphasized that planners have to be skilled at working across not only disciplinary boundaries, but many other kinds of boundaries, too. Since our workshop, a general awareness of the importance the horizontal line of the ‘T’ has become more acute on a broader societal level.

Amidst deepening divisions, the importance of empathy and collaborative skills are being recognized. Some of the workshops participants also forecast that Finnish planners would increasingly be required to come up with constructive ways to navigate climate change-induced challenges associated with inequality, resource scarcity, and social and environmental injustice. To the extent that these scenarios are already the reality in many parts of the world, they give rise to violent conflicts, the effects of which must be addressed also in Finland.

In the latter half of 2015, over 30,000 asylum seekers and migrants entered Finland (population 5.5 million) within a period of six months. The influx has since slowed, but the reality of such radical new challenges concerning also the field of urban planning should somehow be reflected in the education of planners. New capabilities must be fostered in order to cope constructively with the challenges ahead.

⁸ A notable exception is found in John Forester’s work, especially on listening and deliberative practice, and his later works addressing directly the skills proven useful in contested contexts of planning and public policy (1987; 1999; 2011; 2012; 2014).

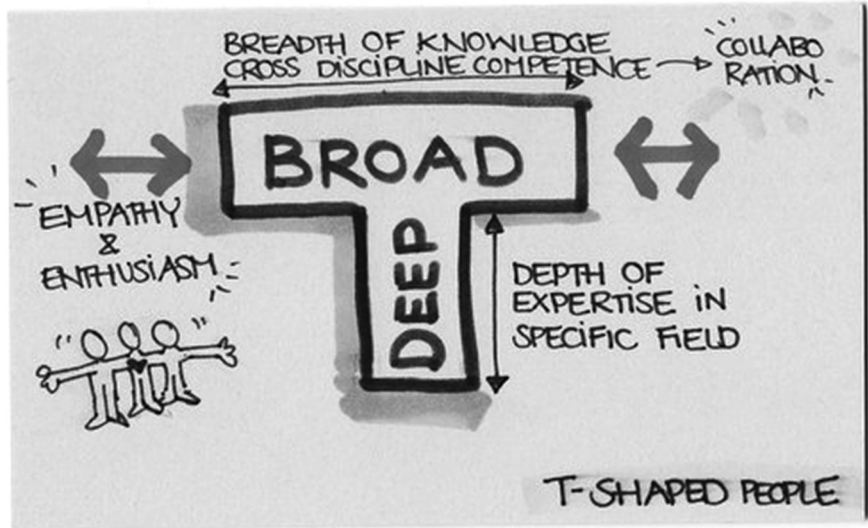


Figure 3. The T-shape model of expertise, image from <https://www.inovis.cc/chances/63-shape-up-for-innovation-become-more-t-shaped>

8. Towards trading zone capabilities

One of the key findings of this study is that the education of architect-planners does not provide (young) planners with sufficient means and tools to productively cope with the challenges they face as professionals. Architect-planners report that successful professional practice would necessitate many skills, which they have not acquired through their education. These include various negotiation-related skills, such as listening, joint re-framing, building trust, creative joint problem solving, engaging communities and leadership skills. In line with the theoretical conceptualization of urban planning as a trading zone, employed and further developed in this research, these capabilities are conceptualized as *trading zone capabilities*. In addition to individual skills or competences, these trading zone capabilities are continually developing *shared practices* mediated by various technologies, novel concepts, rules, and division of labour. Developing such trading zone capabilities requires expansive learning on the level of the planning system. Expansive learning addresses the contradictions and attempts to find ways to transcend them through experimentation and retooling.

Situations of conflict and pathology described in this study can be seen as valuable opportunities for learning and transformation. Again, not that conflicts would disappear, or that life without conflict were an ideal, but that the deep values of what we care for and want to protect become the topic of discussions where new shared understanding can emerge as a result of dialogue. The overcoming of systemic contradictions does not happen on an individual level, yet an individual can play an important role in the process by mobilizing resources at her disposal in the context where she works.

I propose trading zone capabilities as a set of multi-layered practical skills and capacities. I distinguish between four levels; the 1) individual, or intra-personal; 2) the inter-personal; 3) the organizational and 4) the systemic level. All four levels correspond to particular contradictions, or developmental tensions in the planning practice and, respectively, skills and tools. The levels of capabilities are described below in Table 1.

Table 1. Typology of developmental tensions and the corresponding capabilities required to respond and surpass them

LEVEL	CONTRADICTION	CAPABILITIES	EXAMPLES
INTRA-PERSONAL	Dilemma (Article I) Necessity to expand the perceived concept of art as internalized in architecture education (Article I), Coping with organizational culture (Article II)	Personal resilience	Self-awareness and self-reflection, a non-judgmental mode of experiencing, Self-compassion
INTER-PERSONAL	Conflict (Article IV) Dealing with multiple perspectives and the necessity to create interlanguages in planning	Dialogical competencies and negotiation skills	Listening, reframing, respect, and dialogical engagement Compassion
ORGANIZATIONAL	Paradox (Article III) Developing planning instruments and tools, e.g. structural scheme (Article III).	Organizational capability to sustain a community of inquiry	Joint questioning, analysis, problem-solving and the testing of new models Dialogue and Deliberation (D+D) the Mutual Gains Approach
SYSTEM LEVEL	Pathology (Article II)	Expansive learning and collective knowledge creation Novel concepts	Institutional change Process design and institutional design New roles

INTRA-PERSONAL CAPABILITIES

Intra-personal capabilities allow planners to work without subjecting themselves to the effects of cognitive dissonance and alienation. Planners need to be able to face the challenges associated with the boundaries and underlying assumptions of their training (e.g. the strong emphasis on design and art in Finland, see Article I) and the organizational realities of power and bureaucracy (see Article II). They must learn to tolerate, reflect and transcend the distance between the ideal of their professional identity and their actual planning work in real-life settings. Actively reflecting on these inherent contradictions helps planners to avoid them from turning into handicaps that undermine their work and profession.

Recent shifts in our general scientific understanding of humans and human interaction have emphasised the importance of intrapersonal capabilities. Views

are being updated with innovative technologies, research methods and study approaches that didn't exist a few decades ago. A fairly robust understanding of the primary role of emotions in regulating our perception and action has emerged among psychologists, neuroscientists and social researchers (Siegel 2010; Germer 2009; Haidt 2012)

We now know more about how human beings are driven by a deep craving for connection, autonomy and appreciation. We are also characterized by our vulnerability. When we are deprived of appreciation for who we are and what we value, our whole selves are threatened. We mirror each other on the neural level, and directly affect each other's states and abilities – even on a physiological level. Aggression and indignation beget more aggression, whereas pro-social behaviour that shows empathy and compassion allows our vulnerabilities to show, making human growth possible. We need one another to become our best selves. Only together can we solve the sometimes mundane or overwhelming challenges that planning our living environment presents.

**INTERPERSONAL CAPABILITIES:
DIALOGUE AND NEGOTIATION**

Interpersonal capabilities are drawn from the practices of dialogue and negotiation, both of which deal with unravelling and solving complex problems through an interactive process. Attention to the other parties' ideas, interests and experiences is key – thus emphasizing the importance of active listening.⁹

Kai Alhanen (2016) beautifully describes the important role of dialogue in democracy. Dialogue is a key practice for diverse persons to come to understand each other's perspectives and create conditions for meaningful action in the face of complex challenges. He notes that the skills that are required for dialogue are not self-evident, and are not being widely taught or fostered in our current society. These skills may be essentially personal, but the process of exercising and cultivating them turns them into shared capabilities. For this reason, fruitful dialogue can have dramatic results. It can dissolve stereotypes, edit stories, re-humanize participants, change attitudes and enhance empathy. Dialogue can help new patterns of communication take root, and move participants from fixed positions of certainty towards states of enhanced curiosity and, eventually, caring and empathy.

The quality of conversations defines relationships and determines what communities can accomplish. The ability to listen well is a key property in the resulting quality of conversations and fruitful dialogue in general. It is also a skill

⁹ A recent study (Chopic et al. 2016) ranked Finland 58 out of 63 countries when it comes to the ability to put oneself in another person's shoes. This indicates that Finns have comparatively poor interpersonal and listening skills.

that can be learned. Madelyn Burley-Allen (1982) points to several important components of good listening, such as attentiveness, staying non-judgmental and avoiding questioning the speaker excessively or discounting their feelings. The importance of listening in planning is highlighted by John Forester in his book *Planning in the face of power*.

Planners not only must be able to hear words; they also must be able to listen to others carefully and critically. Such careful listening requires sensitivity, self-possession and judgement. This is a critical part of paying attention – to other people and to substantive issues
(Forester 1987:107)

Forester further discusses the distinction between hearing (passive) and listening (active), calling attention to problems in some of the planning process' institutional practices, such as public hearings. In this formal setting, hearing does not necessarily enable active listening, and the two remain distinct and disconnected.

The need for dialogic modes of engagement and understanding is anchored in our shared humanity. The reality is that we are in this world together, despite our many differences. Encouraging diverse participants to engage with each other in dialogue opens up new possibilities for joint-problem solving when there is a need for practical decisions on how to proceed.

ORGANIZATIONAL CAPABILITIES: DELIBERATION AND JOINT PROBLEM-SOLVING

Organizational capacities influence the capabilities of an organization to sustain a community of inquiry enabling shared or distributed agency with regards to problem solving in a complex socio-political setting. Interpersonal capabilities also entail forms of deliberation and negotiation aimed at purposive outcomes, i.e. joint decisions, problem solving and conflict resolution. These can all benefit from dialogue.

According to Oliver Escobar (2009), dialogue before deliberation can help build a safe space for relationships that fosters trust and creativity. Deliberative practices often require high-quality dialogic communication, where the participants feel safe to question their own assumptions and stay open to change. To Escobar, the early stages of a deliberative process are crucial. For this reason, he argues for enriching the “communication fabric” supporting deliberative processes by including alternative ways of producing collective learning and public reason (ibid., 62). He further elaborates on the relationship between communication patterns and process, making key distinctions between the decision-orientation of the process and the advocacy vs. inquiry mode of communication (see Figure 4.)

		COMMUNICATION MODE	
		Advocacy	Inquiry
PROCESS	Orientated to decision making	Deliberation	Deliberative dialogue
	Not oriented to decision making	Debate	Dialogue

Figure 4. The relationship between communication and process (Escobar 2009:60)

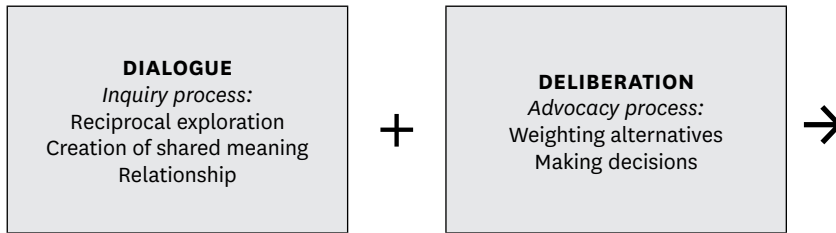


Figure 5. The D+D process (Escobar 2009:61)

Based on this distinction, Escobar has proposed the D+D model (dialogue + deliberation). The model includes an inquiry process of creating shared meaning, promoting reciprocal exploration and building relationships. The D+D model proceeds towards an advocacy process where alternatives are evaluated and decisions are made (see Figure 5).

In my efforts to bridge the interpersonal and organizational capability levels, I refer to Amy Cohen (2008) and her work on the similarities between negotiation literature and new governance research. She argues that the two fields “share similar assumptions about subjectivity that drive their sense of political hopefulness” (ibid., 528). Recent research in both fields draws upon a type of subjectivity that is flexible, reflective and capable of problem solving. My work encouraging planners to evolve integrative and pragmatic attitudes and capacities is directly in line with parallel research that says these attributes are key elements of democratic governance.¹⁰

The distinction between negotiation and governance corresponds to the distinction I propose between the interpersonal and organizational capabilities within the trading zones of planning practice. Negotiation literature largely

10 At the same time, I recognize the weight and relevance of the not-so-hopeful critiques raised with respect to, first, the distributional effects of negotiation or collaborative governance arrangements, and, second the Foucauldian critique of forging docile and flexible citizen-subjectivities (Cohen 2008).

focuses on interpersonal dynamics, in addition to the theory and prescriptions behind the skills, techniques, and interpersonal interactions involved in voluntary instances of problem solving, dispute resolution, and deal making. New governance research is more concerned with institutional design and institutional change.

The Finnish planner typically seeks to be a designer, regulator, process manager and public engagement officer, all at once. Differentiating between the roles and, for instance, through the introduction of specialized public engagement staff in municipal planning organizations, is a fairly recent and emergent phenomenon and marks ‘re-tooling’ and learning on the organization-level. Beyond the organizational level, a system level change could arise from the introduction of new roles altogether, such as neutral third party mediators who assist all parties especially in conflictual cases to become a community of inquiry. Such shared transformative agency is needed for joint questioning of existing practices, analysis and creation of new modes of practice.

Developed by the Consensus Building Institute, the Mutual Gains Approach (MGA) builds on negotiation theory by seeking to structure public processes into phases of inquiry, decision-making and implementation. MGA does not explicitly articulate the intrapersonal or interpersonal dimensions, but these are implicit in the practice of skilled mediators assisting with the associated processes (see Appendix 1 for a list of this study’s interviews of senior US practitioners).

In the language of consensus building, the concept of *consensus* does not mean like-mindedness or unanimity; rather it means reaching overwhelming agreement by informed participants who understand what they have promised to each other and who can live with the proposed settlement (Susskind & Cruikshank 2006, 19). Consensus is accomplished under conditions of inclusiveness, self-organization and open dialogue with the help of a neutral mediator, who strives to make sure that the full range of stakeholders have been heard, their concerns have been taken into account and everything reasonably possible has been done to respond to the varied demands and requirements (Innes 2004). As a practical means to enable dialogue, deliberation and joint decision-making, the MGA experiences from the U.S. have served as a ‘spring board’ – to use the terminology from the Expansive Learning theory, to envision alternative ways to organize joint public endeavours for changing and preserving urban environments in a way that has the potential to also renew and supplement forms of democracy.

The scope of this study is limited to an analysis of the nature of the Finnish planning context, with special consideration for its particular contradictions. For this reason, it does not provide a detailed description of the practices of collaboration and mediation developed in the US. Consensus Building, or, the Mutual Gains Approach (see Figure 6) is an example of a collaborative approach that integrates multiple perspectives. It is especially useful in contentious con-

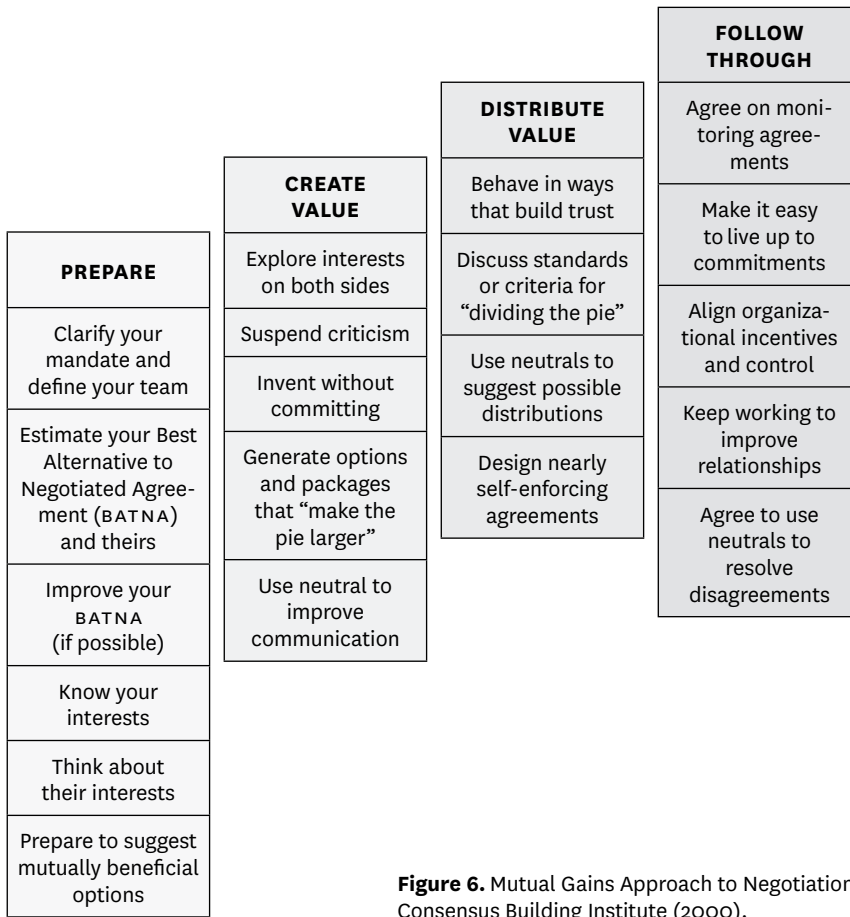


Figure 6. Mutual Gains Approach to Negotiation. Consensus Building Institute (2000).

texts where public decisions are being made, as it offers a structured process based on mediation, negotiation theory and a social psychological understanding of conflict dynamics (see e.g. Kunreuther, H., Susskind, L., and Aarts, T.D. 1991).

NEW PROCESSES: SYSTEM-LEVEL CHANGE

System-level change means establishing new processes across individual organizations, thus re-tooling the field of planning practice. As an example, I wish to draw attention on the The spectrum of processes for collaboration and consensus-building in public decisions (see Table 2), and the tools, methods, roles and skills related to these serve as an example of how, albeit in a different context, the social practice of planning has been ‘retooled’. Adjustments have been gradually made to suit the new requirements of the job, including managing multiple perspectives, mediating conflicting interests and working out contested facts – all in a transparent and democratic manner.

SPECTRUM OF PROCESSES FOR COLLABORATION AND CONSENSUS-BUILDING IN PUBLIC DECISIONS

	EXPLORE / INFORM	CONSULT	ADVISE	DECIDE	IMPLEMENT
Outcomes	<ul style="list-style-type: none"> Improved understanding of issues, process, etc. Lists of concerns Information needs identified Explore differing perspectives Build relationships 	<ul style="list-style-type: none"> Comments on draft policies Suggestions for approaches Priority concerns/issues Discussion of options Call for action 	<ul style="list-style-type: none"> Consensus or majority recommendations, on options, proposals or actions, often directed to public entities 	<ul style="list-style-type: none"> Consensus-based agreements among agencies and constituent groups on policies, lawsuits or rules 	<ul style="list-style-type: none"> Multi-party agreements to implement collaborative action and strategic plans
Sample Processes	<ul style="list-style-type: none"> Focus Groups Conferences Open houses Dialogues Roundtable Discussions Forums Summits 	<ul style="list-style-type: none"> Public meetings Workshops Charettes Town Hall Meetings (w & w/o deliberative polls) Community Visioning Scoping meetings Public Hearings Dialogues 	<ul style="list-style-type: none"> Advisory Committees Task Forces Citizen Advisory Boards Work Groups Policy Dialogues Visioning Processes 	<ul style="list-style-type: none"> Regulatory Negotiation Negotiated settlement of lawsuits, permits, cleanup plans, etc. Consensus meetings Mediated negotiations 	<ul style="list-style-type: none"> Collaborative Planning processes Partnerships for Action Strategic Planning Committees Implementation Committees
Use When	<ul style="list-style-type: none"> Early in projects when issues are under development When broad public education and support are needed When stakeholders see need to connect, but are wary 	<ul style="list-style-type: none"> Want to test proposals and solicit public and stakeholder ideas Want to explore possibility of joint action before committing to it 	<ul style="list-style-type: none"> Want to develop agreement among various constituencies on recommendations, e.g. to public officials 	<ul style="list-style-type: none"> Want certainty of implementation for a specific public decision Conditions are there for successful negotiation 	<ul style="list-style-type: none"> Want to develop meaningful on-going partnership to solve a problem of mutual concern To implement joint strategic action
Conditions for Success	<ul style="list-style-type: none"> Participants will attend 	<ul style="list-style-type: none"> There are questions or proposals for comment Affected groups and/or the public are willing to participate 	<ul style="list-style-type: none"> Can represent broad spectrum of affected groups Players agree to devote time 	<ul style="list-style-type: none"> Can represent all affected interests and potential "blockers" All agree upfront to implement results, incl. "sponsor" Time, information, incentives and resources are available for negotiation 	<ul style="list-style-type: none"> Participants agree to support the goal for the effort Participants agree to invest time and resources Conditions exist for successful negotiations

Table 2. Spectrum of processes for collaboration and consensus building in public decisions

Developed by the US Institute for Environmental Conflict Resolution, the spectrum echoes earlier typologies used by the International Association for Public Participation (IAPP)¹¹. It also points to basic distinctions in participatory processes, namely the differences between informing, consulting and participation.

The spectrum and the IAPP typologies are both important system-level tools for developing and fostering a shared understanding. They help unite the demand-function of public processes within public bodies and planning organizations with the supply function of agencies and neutral third parties developing appropriate processes and services.

More importantly, the spectrum allows a whole field of US practitioners to share a terminology and common frame of reference with respect to collaborative public processes. In a sense, this frame of reference helps constitute and maintain a cohesive 'community of practice' around collaboration and conflict resolution.

Finland has few spectrum-like distinctions or typological maps for planning practitioners to coordinate their public engagement activities. People associated with the field commonly speak about public participation as if it were one thing (*osallistuminen*), and this is typically understood to be solely in conjunction with the legal requirements of review and comment that are stipulated in Finnish planning law. This one-dimensional view does not help planners or planning organizations in dealing more effectively with the inherent complexities and conflicts of their line of work.

Thus, the development of systemic capabilities and shared reference points for a community of practice is lacking – or still in the making in the Finnish case. Similar to the distinction between process and communication patterns suggested by Escobar (2009) above, it can be argued that the capability of planners to make meaningful distinctions that inform the practice in the field is an important systemic capability that links with the other levels discussed previously.

System level change and learning could mean, for instance, that the Spectrum (Table 2.) – and, more importantly, the skills and capabilities needed to conduct multiple, tailored communication, consultation and collaboration processes – be adopted and distributed across all Finnish planning organizations. The relevant skills include the self-reflective and diagnostic capabilities to identify varying stakeholder engagement / collaboration challenges such as conflicts or complex implementation tasks, and the adequate process-level responses to these situations.

11 IAP2 public participation spectrum (<https://www.iap2.org/>). In some ways this echoes Sherry Arnstein's (1969) ladder model of public participation, with a ladder depicting the stages from the non-participative bottom rung of manipulation to the top rung of fully delegated citizen power.

Furthermore, an expansive system level change could arise from the introduction of new modes of engagement, ones that go beyond the current “participation” (consultation) framework, moving to the right on the spectrum, towards joint decision-making, conflict mediation and multi-party collaboration with the intent of strategic, multi-party implementation.

System level change may require institutional or regulatory reforms. Rights and obligations are crucial in defining the parameters of planners’ and planning organizations’ work. However, the evolution of novel practices is not only driven by regulatory change. Indeed, it may be an intellectual trap to assume that changing the law would directly affect planning practices. To this effect, the recent expert evaluation of the Finnish Land use and building act (Ministry of Environment 2014) noted that there had been little effective development in public engagement practices regardless of the intention of the law-maker to strengthen participation through legal provisions. Changing public engagement practices is not restricted by law, but, rather, by the lack of training opportunities and respective resources. The evaluation report (*ibid.*) recognizes the importance of supporting new practices (*toimintakäytännöt*) to complement strictly regulatory change and, among others, proposes that planning communication, negotiation and conflict mediation skills be developed and integrated in planner’s training programs and events.

9. Conclusions and reflections on the research contribution

This study set out to identify the current competence demands of Finnish planning professionals, and root them in an analysis of the internal contradictions of their working context. The notion of ‘retooling’ has been offered as a theoretically grounded means for determining the nature of the contradictions, as well as the ways to work around, and at times surpass, these.

The research has been driven by a quest to understand the conditions for professional agency, efficacy and action potency in the contradictory and sometimes pathological settings of planning practice. The research has also identified ‘a missing ingredient’ in the previous research on urban planning’s trading zones, namely the perspective of living, human experience. The trading zone approach to planning (Mäntysalo, Balducci & Kangasoja 2011) requires further development, so it can evolve towards a developmental and interventionist paradigm in planning research. It could also contribute towards pedagogical development that builds on our most recent understandings of human behaviour and learning, emphasizing the role of emotions and empathetic resonance in human interaction.

A prominent planning scholar, the late John Friedmann, identified three tasks for planning theory. He said, “first of all, planning theory should evolve a deeply considered humanist philosophy for planning and trace its implications to practice; secondly, planning theory should help in adapting planning practices to the continually changing course of human affairs; and thirdly, planning theory should translate knowledge/s and ideas from other fields into the domain of planning” (2008: 247–257).

This dissertation has sought to address all three of these tasks. The first task of ‘creating a deeply considered humanist philosophy with practical implications’ has been formulated as a call to explicitly examine, and perhaps even update, the ontological and epistemological understanding of human interaction implicit in planning theory and practical planning activity.

My research intention has a close kinship to John Forester’s longstanding desire to highlight the importance of the subtle qualities of skilled planning practice in the face of political complexity and local constraints. His call has sometimes been misinterpreted in planning debates as a theoretical one, instead of a practical, methodological and – at its core, ethical – proposal for a new paradigm, which is how I interpret it.

This study has sought to seek out methodological tools from neighbouring research fields, where human interaction and various forms of collaboration have been studied for decades.

Table 3. Research questions and how the study has responded to the questions

NO.	RESEARCH QUESTION	STUDY RESPONSE
1.	What kinds of competences do Finnish architect-planners need in their professional work? And how has the education these professionals have received equipped them to meet the challenges they face in their everyday work?	Article I's key findings are two-fold: On the one hand, a cluster of interactional competences, including negotiation, collaboration, conflict resolution, presentation and argumentation skills, emerged as critically important for the respondents' work. On the other, a clear discrepancy between these demands and the education they had received was reported. The study has shed light on the nature of urban planning in Finland as a contentious social and political practice, necessitating novel capabilities on multiple levels.
2.	How can planning and planning communication be conceptualized in new ways that would take into account the dynamic and developing nature of the multiple practices involved?	In Article IV, the concept of trading zone is used to understand planning and planning communication as <i>generating inter-languages</i> between various participants and multiple practices. The introductory section further develops this 'trading zone approach', proposed in Article IV.
3.	How can the contradictory challenges identified in Finnish architect-planners' work be conceptualized theoretically? What kind of a theoretical conception of learning would be meaningful in interpreting the learning challenges on the different levels of individual professionals, planning organizations and the whole field of planning in Finland?	Various contradictory elements have been presented for the analysis of the challenges that the planning professionals face, differentiating between dilemma (Article I), conflict (IV), paradox (Article III), and pathology (Article II). The introductory section presents a theoretical interpretation of these challenges as developmental tensions of the planning activity, and offers a learning-theoretical framework, within which the interpretation of the tensions and contradictions is taken as a starting point for expansive learning.
4.	What kinds of <i>trading zone capabilities</i> can be suggested for retooling planning, as based on the analysis of the contradictions identified in the study?	The introductory section synthesizes the <i>trading zone capabilities</i> . These include intrapersonal capabilities such as self-awareness; interpersonal capabilities such as listening and dialogue skills (Article II); and organizational-level capabilities such as novel planning instruments and process design (Article III). On the systems level, this encompasses capabilities for such things as expansive learning, joint inquiry and questioning and analysis.

Classic practice theories, namely Deweyan pragmatism and Cultural Historical Activity Theory can offer a theoretical foundation for the study of changing practices. These traditions also offer a rich body of theoretically sound work, as well as proven intervention and experimental practices for diverse forms of collaboration, learning and transformation.

Luca Bertolini and Alessandro Balducci have proposed that planning research should be *reflecting with practice* (2007). This research has sought to be an instance of such reflection. It features many levels of dialogue between the researchers and the professionals examined. In my dual role of researcher and educator, I have learned over a sustained period about the practical needs and demands experienced by planning professionals and students. Understanding this 'need state' – to use the terminology of expansive learning – has been a central motivation for this study.

Another important aim of the study has also been to effect change and re-tool planning by offering novel theoretical interpretations and methodological insights. The key takeaway is that it would be wise to devote more attention in planning education to the development of communication and collaboration skills. This would better equip planners for practical work in the increasingly diverse trading zones of land-use planning.

*Change occurs not just through arguments,
not just through the reframing of ideas, not
just through critique of expert knowledge,
but through transformations of relationships
and responsibilities, of networks and compe-
tence, of collective memory and memberships.
(Forester 1996:295).*

References

- Alhanen, K.** (2016). *Dialogi demokratiassa*. Tallinna: Gaudeamus
- Allmendinger, P.** (2009). *Planning theory*. Basingstoke: Palgrave.
- Alterman, R.** (1992). A transatlantic view of planning education and professional practice. *Journal of Planning Education and Research*, 12(1), 39–54.
- Balducci, A.,** & Bertolini, L. (2007). Interface. Reflecting on practice or reflecting with practice? *Planning Theory & Practice*, 8(4), 532–555.
- Beauregard, R. A.** (2012). Planning with Things. *Journal of Planning Education and Research*, 32(2), 182–90.
- Bereiter, C.** & Scardamalia, M (1993). *Surpassing Ourselves: An Inquiry into the Nature and Implications of Expertise*. Chicago: Open Court.
- Blumer, H.** (1969/1998). *Symbolic interactionism. Perspective and Method*. Berkeley: University of California Press.
- Brown, Tim** (interview)
<http://chiefexecutive.net/ideo-ceo-tim-brown-t-shaped-stars-the-backbone-of-ideaes-collaborative-culture-trashed/>
- Burley-Allen, M.** (1982) *Listening: the Forgotten Skill: A self-teaching guide*. New York: John Wiley & sons.
- Chopik, W. J.,** O'Brien, E., Konrath, S. H. (2016) Differences in empathic concern and perspective taking across 63 countries, *Journal of Cross-Cultural Psychology*, 48:1, 23–38.
- Cole, M.** (1998). Can cultural psychology help us think about diversity? *Mind, Culture and Activity*, 5(4), 291–304.
- Cole, M.,** & Engeström, Y. (1993). A cultural-historical approach to distributed cognition. In Salomon, G., (ed.), *Distributed cognitions: Psychological and educational considerations*, (pp. 1–46). New York: Cambridge University Press.
- Edelman, H.** (2007). *Urban Design Management. Using integrative negotiation to create value at the intersection of urban planning, city design, and real estate development*. Helsinki University of Technology Publications in Architecture 2007/27. Helsinki: Helsinki University of Technology.
- Engeström, Y.** (1987). *Learning by Expanding. An activity – theoretical approach to developmental research*. Helsinki: Orienta konsultit.
- Engestöm, Y.** (1990). When is a tool? In Learning, Working and Imaging. Orienta Konsultit, Helsinki.
- Engeström, Y.,** Brown, K., Christopher, L.K., Gregory, J. (1991). Coordination, Cooperation and Communication in the Courts: Expansive Transitions in Legal Work. The Quarterly Newsletter of the Laboratory of Comparative Human Cognition, October 1991, Vol. 12, Number 4, pp. 88–97 [Published again in 1997 in Cole, M., Engeström, Y., Vasquez, O. (eds.) *Mind, Culture and Activity: Seminal Papers from the Laboratory of Comparative Human Cognition*. Cambridge: Cambridge University Press.]
- Engeström, Y.,** Engeström, R., Vähäaho, T. (1999). When the Centre Does Not Hold: The Importance of Knotworking In Chaiklin, S., Hedegaard, M., Jensen, U. J. (eds.) *Activity Theory and Social Practices*. Aarhus: Aarhus University Press.
- Engeström, Y.** (1999). Expansive Learning at Work: An Activity-Theoretical Perspective. *Computer Supported Cooperative Work* 8: 63–93, 1999.
- Engeström, Y.** (2000). From individual action to collective activity and back: developmental work research as an interventionist methodology. In Luff, P., Hindmarsh, J., Heath, C. (eds.) *Workplace Studies. Recovering Work Practice and Information System Design*. Cambridge: Cambridge University Press.
- Engeström, Y.** (1987). *Learning by expanding: An activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit.
- Engeström, Y.,** & Escalante, V. (1996). Mundane tool or object of affection? The rise and fall of the postal buddy. In Nardi, B. A., (ed.), *Context and consciousness: activity theory and human-computer interaction* (pp. 325–374). Cambridge, MA: MIT Press.
- Engeström, Y.,** & Sannino, A. (2010). Studies of expansive learning: Founda-

- tions, findings and future challenges. *Educational Research Review*, 5(1), 1–24.
- Engeström, Y.** (2007). Enriching the theory of expansive learning: Lessons from journeys toward co-configuration. *Mind, Culture and Activity*, 14(1–2), 23–39
- Escobar, O.** (2011). Public Dialogue and Deliberation. A communication perspective for public engagement practitioners. Edinburgh: Beltane.
- Escobar, O.** (2009). *The Dialogic Turn: Dialogue for Deliberation*. In Spire Journal of Law, Politics and Societies (Vol. 4, No. 2), pp. 42–70.
- Eteläpelto, A.,** Vähäsantanen, K., Hökkä, P., Paloniemi, S. (2013). What is agency? Conceptualising professional agency at work. *Educational Research Review* 10 (2013) 45–65.
- Fleck, L.** (1979). *Genesis and development of a scientific fact*. Chicago: University of Chicago Press.
- Forester, J.** (1985). Critical theory and planning practice. In Forester, J. (ed.) *Critical Theory and Public Life*. Cambridge MA and London, England: MIT Press.
- Forester, J.** (1989). *Planning in the face of power*. Berkeley, CA: University of California Press.
- Forester, J.** (1993). *Critical Theory, Public Policy, and Planning Practice. Toward a Critical Pragmatism*. Albany NY: State University of Albany Press.
- Forester, J.** (1996). Beyond Dialogue to Transformative Learning: How deliberative rituals encourage political judgment in community planning processes. *Poznan Studies in the Philosophy of the Sciences and the Humanities*, 46, 295–333.
- Forester, J.** (1999). *The Deliberative Practitioner*. Cambridge (Massachusetts): MIT Press.
- Forester, J.** (2011). Interface: Learning from Practice in the Face of Conflict: Integrating Technical Expertise with Participatory Planning. *Planning Theory and Practice* 12(2): 287–310.
- Forester, J.** (2009). *Dealing With Differences, Dramas of Mediating Public disputes*. New York: Oxford University Press.
- Forester, J.** (2012). Learning to Improve Practice: Lessons from Practice Stories and Practitioners’ Own Discourse Analysis (or Why Only the Loons Show Up). *Planning Theory & Practice*, 13(1), 11–26.
- Forester, J.** (2013) *Planning in the Face of Conflict: The Surprising Possibilities of Facilitative Leadership*, American Planning Association, Chicago and Washington D.C.
- Friedmann, J.** (2008). The uses of planning theory. *Journal of Planning Education and Research*, 28(2), 247–257.
- Friedmann, J.** (1987). *Planning in the public domain: From knowledge to action*. Princeton (NJ): Princeton University Press.
- Fuller, B.** (2008). *Cooperating and still disagreeing on what really matters*. LKY School of Public Policy, Working Paper SPP 01–08.
- Galison, P.** (1997) *Image and Logic: A Material Culture of Microphysics*. Chicago: University of Chicago Press.
- Galison, P.** (2010). Trading with the enemy. In Gorman, M.E. (ed.), *Trading zone and interactional expertise: Creating new kinds of collaboration*. Cambridge, MA: MIT Press.
- Germer, Christopher** (2009). *The Mindful Path to Self-Compassion – Freeing Yourself from Destructive Thoughts and Emotions*. New York: The Guilford Press.
- Germer, C. K. & Neff, K. D.** (2013). The mindful self-compassion training program. In Singer, T. & Bolz, M. (eds.) *Compassion: Bridging theory and practice: A multimedia book*. Leipzig, Germany: Max-Planck Institute, pp. 365–396
- Goldstein, B. E.** (2010). Epistemic Mediation: Aligning Expertise across Boundaries within an Endangered Species Habitat Conservation Plan. *Planning Theory & Practice*, 11(4), 523–547.
- Gorman, M. E.** (2010). *Trading zone and interactional expertise: Creating new kinds of collaboration*. Cambridge, MA: MIT Press.
- Hackett et al.** (2008). *Handbook of Science and Technology Studies*. Cambridge, MA: MIT Press 3rd edition.
- Haidt, Jonathan** (2012). *The Righteous Mind. Why good people are divided by politics and religion*. New York: Vintage Books.
- Hankonen, J.** (1994). *Lähiöt ja tehokkuuden yhteiskunta*. Helsinki: Gaudeamus & Otatieto.
- Hasu, M.** (2005). In search of sensitive ethnography of change: Tracing the invisible handoffs from technology developers to users. *Mind, Culture, and Activity*, 12(2), 90–112.
- Hasu, M. & Miettinen, R.** (2006). *Dialogue and intervention in science and technology studies: Whose point of view?*

- Working Papers 35/2006, Centre for Activity Theory and Developmental Work Research, University of Helsinki.
- Healey, P.** (2012). The universal and the contingent: Some reflections on the transnational flow of planning ideas and practices. *Planning Theory*, 11(2), 188–207.
- Hutchins, E.** (1995). *Cognition in the wild*. Cambridge: The MIT Press.
- Kangasoja, J.** (2002). Complex Design Problems – An Impetus for Learning and Knotworking, in Bell, P., Stevens R., Satwicz, T. (eds), *Keeping Learning Complex: The Proceedings of the Fifth International Conference on the Learning Sciences (ICLS)*; Mahwah, NJ: Erlbaum, (2002), pp.199–205
- Kangasoja, J.** (2010). Kylmää kyytiä kunnissa [Tough ride in the municipalities]. *Arkkitehtiutiset* 62(5): 8–9.
- Kangasoja, J.** (2013). Trading Zone as a Sensitizing Concept in Planning Research, In Mäntysalo, R. & Balducci, A. (eds). *Urban Planning as a Trading Zone*, Springer, pp. 179–187.
- Kangasoja, J.,** Mälkki M., Puustinen S., Hirvonen J., Mäntysalo R., 2010. Architectural Education as a Basis for Planning Work – The Pros and Cons of Professional Enculturation. *Journal for Education in the Built Environment*, Vol. 5, Issue 2, December 2010 pp. 25–38.
- Kangasoja, J. & Mattila, H.** (2014). Is It Possible to Kill Two Birds With One Stone? Tensions, Challenges and Opportunities in Integrating the Master's Programmes in Land Use Planning and Transportation Engineering. AESOP Utrecht, Planning Education Track, July 2014.
- Kangasoja, J.** (2003). Arabianrannan tietopalvelumalli eri osapuolten oppimishaasteena. *Pääkaupunkiseudun kaupunginosien kehittämisverkoston KAKE Tiedote* (Joulukuu 2003), 6–10.
- Kangasoja, J.** (2004). "Taloudellisin ja järkevin ratkaisu". Tietoinfrastruktuurin politiikkaa Arabianrannan alueverkko-kokeilun valossa. *Yhdyskuntasuunnittelu*, 42(3–4), 51–69.
- Kettunen, A.** (1998). *Kunnat ja ympäristökonfliktit*. Helsinki: Åbo Akademi ja Suomen kuntaliitto.
- Knorr Cetina, K.** (2001). Objectual practice. In Schatzki, T., Knorr Cetina K., von Savigny, E. (eds.), *The practice turn in contemporary theory* (pp. 175–188). London: Routledge.
- Knorr Cetina, K.** (2000). *Epistemic cultures: How the sciences make knowledge*. Cambridge, MA: Harvard University Press.
- Knuuttila, T.** (2005). *Models as epistemic artefacts: Toward a non-representationalist account of scientific representation*. Helsinki: University of Helsinki
- Konttinen, E.** (1996). Ympäristön muodostuminen yhteiskunnalliseksi kysymykseksi 1980-luvun taitteen murroksessa. *Sosiologia*, 33(4), 270–284.
- Konttinen, E.** (1997). Paikallinen ympäristöliike mahdollisuutena ja muutosvoimana – Päijänne -kamppailu 1982–85. *Alue ja Ympäristö*, 26(1), 39–54.
- Konttinen, E.** (1999). Four Waves of Environmental Protest. In Konttinen, E., Litmanen T., Nieminen, M., Ylönen, M (eds.), *All Shades of Green. The Environmentalization of Finnish Society*. Jyväskylä: SoPhi / University of Jyväskylä, pp. 20–46.
- Kopomaa, T.** (2005). Kriisioloihin varautunut kaupunki. *Yhdyskuntasuunnittelu*, 43(2), 6–26.
- Kuhn, T.S.** (1962/1970). *The structure of scientific revolutions*. Chicago (IL): University of Chicago Press.
- Kunreuther, H.,** Susskind, L., Aarts, T.D. (1991). The Facility Siting Credo: Guidelines for an effective facility siting process. University of Pennsylvania Publication Services, <http://web.mit.edu/publicdisputes/practice/credo.pdf>.
- Laine, M., & Peltonen, L.** (2003). *Ympäristökysymys ja aseveliaksi. Ympäristön politisoituminen Tampereella vuosina 1959–1995*. Tampere: Tampere University Press.
- Laine, M., & Peltonen, L.** (2005). Regime Stability and Restructuration: From Industrial to Informational City. In A. Kasvio & A.-V. Anttiroiko (eds.), *e-City. Analyzing Efforts to Generate Local Dynamism in the City of Tampere* (pp. 345–388). Tampere: Tampere University Press.
- Lehtovuori, P.** (2005). *Experience and Conflict. The dialectics of the production of public urban space in light of new event venues in Helsinki 1993–2003*. Espoo: Teknillinen korkeakoulu / Helsinki University of Technology.
- Leino, H.** (2006). *Kansalaisosallistuminen ja kaupunkisuunnittelun dynamiikka. Acta Universitatis Tamperensis 1134*. Tampere: Tampereen yliopisto.
- Litmanen, T.** (1998). Kansainvälinen ydinvoiman vastainen liike. In K. Ilmonen &

- M. Siisiäinen (eds.), *Uudet ja vanhat liikkeet*. Tampere: Vastapaino, pp. 281–306.
- Mattila, H.**, Mynttinen E. and Mäntysalo, R. (2012). Managing planning pathologies: An educational challenge of the new Apprenticeship Programme in Finland. *Planning Theory & Practice* 13(3): 484–488.
- Mattila, H.** (2013). Akateemista maankäytön suunnittelun tutkintokoulutusta viimein Suomeen. Uuden pääaineen suunnittelu ja käynnistäminen Aalto-yliopistossa [Academic planning degrees finally arrive in Finland – Designing and launching a new major at Aalto University], in Lampinen M. (ed.) Opettajan muuttuvat roolit – yhdessä yhteisölliseen opetuksen kehittämiseen. Aalto-yliopiston julkaisusarja Crossover 17/2003.
- Mattila, H.** (2016). Can collaborative planning go beyond locally focused notions of the “public interest”? The potential of Habermas’ concept of “generalizable interest” in pluralist and trans-scalar planning discourses, *Planning Theory*, published online before 1 April 2016 print, DOI: 10.1177/1473095216640568
- Miettinen, R.** (2000). The concept of experiential learning and John Dewey’s theory of reflective thought and action. *International Journal of Lifelong Education* 19(1), pp. 37–41.
- Miettinen, R.** (2004). The role of the researcher in developmentally-oriented research. In: Kontinen T. (ed) Development Intervention. Actor and activity perspectives. Helsinki: University of Helsinki.
- Miettinen, R.** & Virkkunen, J. (2005). Epistemic objects, artifacts and organizational change. *Organization* 12(3), 437–456.
- Miettinen, R.** (2006). Epistemology of transformative material activity: John Dewey’s pragmatism and cultural-historical activity theory. *Journal for the Theory of Social Behaviour* 36(4), 389–408.
- Miettinen, R.**, Paavola, S., & Pohjola, P. (2012). From habituality to change: Contribution of activity theory and pragmatism to practice theories. *Journal for the Theory of Social Behaviour* 42(3), 345–360.
- Ministry of Environment** (2014). Arviointi maankäyttö ja rakennuslain toimivuudesta 2013 (evaluation of the functioning of the Land use and Building Act in 2013). Suomen ympäristö 1/2014. Helsinki: Ympäristöministeriö.
- Mäntysalo, R.** and Saglie I.-L. (2010). ‘Private Influence Preceding Public Involvement: Strategies for Legitimizing Preliminary Partnership Arrangements in Urban Housing Planning in Norway and Finland’, *Planning Theory & Practice* 11 (3): 317–338.
- Mäntysalo, R.**, Saglie I.-L. & Cars G. (2011). Between Input Legitimacy and Output Efficiency: Defensive Routines and Agonistic Reflectivity in Nordic Land-Use Planning. *European Planning Studies* 19(12), 2109–2126
- Mäntysalo, R.**, Kangasoja, J., Kanninen, V. (2014). *Rakennemallit kaupunkiseutujen suunnittelussa – Strategisen maankäytön suunnittelun paradoksi*. Helsinki: Ympäristöministeriön raportteja 18/2014.
- Mäntysalo, R.**; Kangasoja, J.; Kanninen, V. (2015). The paradox of strategic spatial planning: A theoretical outline with a view on Finland. *Planning Theory & Practice* DOI:10.1080/14649357.2015.1016548
- Mäntysalo, R.**; Balducci, A.; Kangasoja, J. (2011). Planning as agonistic communication in a trading zone: Re-examining Lindblom’s partisan mutual adjustment. *Planning Theory* ISSN: 1473-0952
- Mäntysalo, R.**, Peltonen L., Kanninen V., Niemi P., Hytönen J., Simanainen M. (2010). *Keskuskaupungin ja kehyskunnan jännitteiset kytkennät*. Helsinki: Suomen kuntaliitto.
- Määttä, T.** (2003). Oikeudellisen ympäristöstrategian mahdollisuudet ja rajat. In A. Lehtinen & P. Rannikko (eds.) *Oikeudenmukaisuus ja ympäristö*. Helsinki: Gaudeamus, pp. 107–129.
- Nonaka, I.** & Takeuchi, H. (1995). *The Knowledge-creating Company: How Japanese Companies Create the Dynamics of Innovation*. Oxford: Oxford University Press.
- Peltonen, L.**, Tuomisaari, J., & Kanninen, V. (2008). Kaavavalitukset ja koettu oikeudenmukaisuus. *Yhdyskuntasuunnittelu*, 46(3), 11–34.
- Peltonen, L.**, & Villanen, S. (2004). *Maankäytön konfliktit ja niiden ratkaisumahdollisuudet. Osa 1. Katsaus käsitteisiin ja kirjallisuuteen. Suomen ympäristö 723*. Helsinki: Ympäristöministeriö. <http://www.ymparisto.fi/default.asp?contentid=111442&lan=fi>.

- Puustinen, S.** (2003). Osallistumisen sietämätön keveys – kommunikaation merkityksestä kaavoittajien työssä. *Yhdyskuntasuunnittelu*, 41(2), 39–54.
- Puustinen, S.** (2006). *Suomalainen kaavoittajaprofessio ja suunnittelun kommunikatiivinen käänne: vuorovai-
kutukseen liittyvät ongelmat ja mahdollisuudet suurten kaupunkien kaavoittajien näkökulmasta. Yhdyskuntasuunnittelun tutkimus- ja koulutuskeskuksen julkaisuja*, A 34. Espoo: Teknillinen korkeakoulu, Yhdyskuntasuunnittelun tutkimus- ja koulutuskeskus УТК / Centre for Urban and Regional Studies.
- Rannikko, P.** (1996). Local Environmental Conflicts and the Change in Environmental Consciousness. *Acta Sociologica*, 39(1), 57–72.
- Schön, D. A.** (1983) *The Reflective Practitioner: How Professionals Think In Action*. New York: Basic Books.
- Schön, D. A.** (1987). *Jossey-Bass higher education series. Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. San Francisco: Jossey-Bass.
- Shapiro, D.** (2016). *Negotiating the Non-negotiable. How to resolve your most emotionally charged conflicts*. Viking Press, New York.
- Sairinen, R.** (1994). *Ympäristökonfliktit kuntien suunnittelussa ja päätöksenteossa*. Helsinki: Suomen Kuntaliitto, Acta 31.
- Siegel, Daniel J.** (2010). *Mindsight. The new science of personal transformation*. New York: Bantam Books.
- Simondo, S.** (2008). Science and Technology Studies and an Engaged Program. In Hackett et al. *Handbook of Science and Technology Studies*. Cambridge, MA: MIT Press 3rd edition.
- Staffans, A.** (2004). *Vaikuttavat asukkaat – vuorovaikutus ja paikallinen tieto kaupunkisuunnittelun haasteina. Yhdyskuntasuunnittelun tutkimus- ja koulutuskeskuksen julkaisuja A 29*. Espoo: Teknillinen korkeakoulu.
- Stains, R. R.** (2016). Beyond “Them” and “Us:” The Practice and Power of Reflective Structured Dialogue, Keynote in the Annual Seminar of the Institute for Deliberative Democracy, Vantaa 9.11.2016
- Star, S. L.** (2010). This is not a boundary object: Reflections on the origin of a concept. *Science Technology and Human Values*, 35(5), 601–617.
- Straatemeier, T.**, Bertolini, L., te Brömmelstroet, M., & Hoetjes, P. (2010). An experiential approach to research in planning. *Environment and Planning B: Planning and Design*, 37(4), 578–591.
- Susskind, L. E.** & J. L. Cruikshank (2006). *Breaking Robert’s Rules. The new way to run your meeting, build consensus and get results*. Oxford University Press, New York.
- Westley, F. R.**, Tjornbo, O. Schultz, L. Olsson, P. Folke, C., Crona, B. & Bodin, Ö. (2013). A theory of transformative agency in linked social-ecological systems. *Ecology and Society* 18(3): 27. <http://dx.doi.org/10.5751/ES-05072-180327>
- Woodhouse, E.**, Hess, D., Breyman, S., & Martin, B. (2002). Science studies and activism: Possibilities and problems for reconstructivist agendas. *Social Studies of Science*, 32(2), 297–319.

Appendix 1. List of data

The empirical research found in this dissertation includes three national surveys of Finnish architects, and two sets of interviews: one with experienced planning professionals in Finland, and the other with experienced public policy mediators in the US.

SURVEYS

Three national surveys were conducted: two in the year 2009, and the third in 2014.

The first survey was conducted in January 2009. It focused on the competence demands and education of Finnish architects (Hirvonen & al. 2009). A web-based questionnaire was sent to the approximately 2,900 members of the Finnish Association of Architects who had submitted an email address, and 726 replied, for a response rate of 27%.

For the purposes of this research project, a subgroup of planner-architects was delineated from the overall response cohort for closer examination. This included respondents who said they were substantially occupied with urban planning and design or regional planning in their work. About 25% of the respondents fit this definition, for a total of 192 persons. The survey was designed jointly by myself, Mikko Mälkki and Raine Mäntysalo from Aalto University, and Heini Korpelainen ja Pia Selroos from the Association of Finnish Architects SAFA. Jukka Hirvonen conducted statistical analysis of the responses, and Mikko Mälkki and I carried out the qualitative analysis. The results of the survey are reported in Article I.

The second survey was conducted in late 2009 and targeted architects in the public sector. I designed the survey together with SAFA's Heini Korpelainen and Pia Selroos. Jukka Hirvonen again conducted the statistical analysis, while I carried out qualitative analysis of the responses to the open questions.

The third survey was a follow-up to the first competence demands survey. It was conducted with SAFA in early 2014, five years after its predecessor. While the 2009 survey included architect students, the 2014 survey only approached full association members. The survey was sent via email to all 2,875 SAFA members who submitted an email address, and 461 responses were received, for a response rate of 16%.

The design was somewhat similar to the January 2009 survey, but included a new set of questions about negotiation and dispute resolution needs. I was in charge of the design of the new set of questions, and Heini Korpelainen and Pia Selroos provided valuable comments. Here again Jukka Hirvonen con-

ducted the statistical analysis and I conducted the qualitative analysis of the responses. This third survey was designed to foster a comparison of the results with the previous study gauging architect competences, five years later. It also contained a more thorough inquiry into respondent views on the needs for negotiation and conflict resolution skills, and the perceived need for an outside mediator.

All of the surveys are utilized in Article V.

INTERVIEWS

I collected the first set of interview data from Finland in late 2013 and early 2014. The interviews were used as data in Article III. The interviewees were:

1. Raimo Airamo, head of city planning, Lahti (retired), 15 October 2013
2. Leena Rossi, head of city planning, Jyväskylä, 24 October 2013
3. Leena Strandén, Built Environment unit director, Pirkanmaa ELY Centre, 29 October 2013
4. Heikki Saarento, planning director, Southwest Finland Association, Turku, 8 November 2013
5. Markku Lahtinen, land-use architect, Kangasala, 30 January 2014

The article grew from a research project I conducted with Raine Mäntysalo and Vesa Kanninen regarding structural scheme models in five Finnish regions. The interviews are presented in a Finnish research report published by the Ministry of Environment (Mäntysalo, Kangasoja, Kanninen 2014).

Together with Lasse Peltonen, I gathered a second body of interview data in the US during our research visit (September 2012 – June 2013). The US interviews were very important for gaining an understanding of the nature of the work that EPPM professionals do, as well as the competencies required and the professional trajectories of the facilitators and mediators. These interviews were not explicitly used as data in any of the individual articles, but they inform the overall approach of the dissertation.

The list of interviews conducted in the US:

1. Abby Arnold, principal and senior mediator, Kearns & West, Washington DC, 21 February 2013
2. David Batson, senior collaboration & ADR specialist, Conflict Prevention & Resolution Center, Environmental Protection Agency, Washington DC, 21 February 2013
3. Patrick Field, managing director, Consensus Building Institute (CBI), Cambridge MA, 21 December 2012
4. Robert Fisher, Office of Collaborative Action and Dispute Resolution, Department of the Interior, 21 February 2013

5. Merrick Hoben, director & senior mediator, CBI, Cambridge MA, 20 February 2013
6. Rachel Milnes Giller, associate CBI, Cambridge MA, 20 February 2013
7. David Konisky, assistant professor, Georgetown Public Policy Institute, 21 February 2013
8. Suzanne Orenstein, US Institute for Environmental Conflict Resolution, Udall Foundation 22 February 2013
9. Lawrence Susskind, professor DUSP, MIT, Cambridge MA, 29 January 2013
10. Ellie Tonkin, New England (EPA region 1), Boston MA, 14 December 2012
11. Stacie Smith, associate and senior mediator, CBI, Cambridge MA, 4 December 2012
12. David Fairman, managing director, CBI, Cambridge MA, 22 March, 2013
13. David Thomson, senior mediator CBI Cambridge MA, 23 March 2013
14. Ona Ferguson, associate CBI, Cambridge MA, 22 March, 2013
15. Justin Wright, director Habitus Inc., Cambridge MA, 6 June 2016
16. Tad Mayer, Boston MA, 12 March, 2013
17. Eric Roberts, associate CBI, Cambridge MA, 4 April, 2013
18. Laurel Singer, Turner Odell, Peter Harkema, National Policy Consensus, Portland State University, Portland June 2013



ISBN 978-952-60-7731-4 (printed)
ISBN 978-952-60-7732-1 (pdf)
ISSN-L 1799-4934
ISSN 1799-4934 (printed)
ISSN 1799-4942 (pdf)

Aalto University
School of Engineering
Department of Built Environment
www.aalto.fi

**BUSINESS +
ECONOMY**

**ART +
DESIGN +
ARCHITECTURE**

**SCIENCE +
TECHNOLOGY**

CROSSOVER

**DOCTORAL
DISSERTATIONS**