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Creativity under pressure

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ACADEMIC DISSERTATION
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ABSTRACT

The objective of the research presented in this dissertation is to create an understanding of specialised (non-literary) translation revision as a situated activity that is carried out as part of a collaborative translation process and is dependent on various project-specific circumstances as well as the artefacts (e.g., software tools as well as material and digital objects) available to the reviser. The main theoretical framework is that of socially distributed cognition (SDC). SDC is a branch of situated cognitive theory, also called embodied cognition or 4EA (embodied, embedded, enacted, extended and affective) cognition. Methods and research approaches consistent with the theory have been employed to investigate how cognitive collaboration is established and performed in a system encompassing the translator and reviser, adding to our knowledge of the processes and practices of translation service production.

The four articles included in this dissertation begin with a survey of language service providers' (LSPs') revision operations, charting some aspects of the reviser's task scope and questions of authority. The next step is an investigation of how various background factors contribute to the reviser's role in collaborative translation production. In the third article, the translator's and reviser's joint process of co-creation and the communication channels used by the two participants are described, identifying the revision file as a digital artefact that acts as a communicative device, and spotlighting how cognitive collaboration is built in that artefact. The final article develops methodology for utilising the revision file as cognitive ethnographic data, subjecting revision files to artefact analysis and using systemic functional discourse analysis to investigate linguistic evidence of the distribution of labour.

The research methods employed in the studies that together make up this work were mainly qualitative, using diverse data that provided a rich picture of the phenomena under investigation. Some quantitative results were presented to support the qualitative findings, but as the data was limited and not construed to produce quantitative results, these do not allow generalisations to be drawn. Aiming at triangulation, the data included a survey, interviews with translation

professionals, guided tour protocols of simulated revision situations, and authentic textual data. One or more of these datasets was used in each sub-study reported in the included articles.

The main findings presented here relate firstly, to the nature and characteristics of cognitive collaboration between translator and reviser, and secondly, to the processes and circumstances that influence this collaboration. The nature and characteristics of the collaboration can be summarised as flexibility, trust and complementarity. Variation in the production workflows necessitates flexibility of the team composition, the scope and goals of each participant's tasks, their competence profiles and how they complement each other, and the way in which they exercise agency and negotiate their decision-making spaces. Trust towards the translator plays a major role when the revisers exercise their agency in editing the translation, and broken trust will have consequences. Ultimately, the success or failure of the combined effort may be determined by the complementarity of the translator's and the reviser's competence profiles: if one of the participants lacks a required competence or experience, the other must have it. Furthermore, the reviser must be able to identify the translator's strength and weaknesses correctly in order to be able to correct what needs to be corrected, and to avoid making changes that deteriorate the quality of the translation.

The nature and characteristics of the cognitive collaboration have also been considered in the articles with regard to the creativity of the combined translation process. The distributed process of translation production, carried out by a translator and a reviser/editor, was described as a creative process that included repeated phases of divergent and convergent thinking that the participants engaged in individually and together as they propose translation solutions, evaluate them, and accept or reject them. Creativity was also discussed in connection with different text genres and what they require of the translator and the reviser: texts that can be roughly categorized as fluency-oriented translations often require the consideration and selection of a larger variety of linguistic structures, resulting in relatively frequent translational shifts in the lexicogrammatical structures. Other texts, categorised as precision-oriented translations, could often be translated more directly, resulting in fewer shifts in lexicogrammatical structures.

The processes and circumstances that influence the collaboration have been explored firstly, through an account of project-specific factors that have an impact on the reviser's task as part of the two-member system of socially distributed cognition, and secondly, through the identification and description of the revision file as a digital communication artefact that steers, limits and enables the revision

work and the communication between the participants. The reviser's task was found to take shape as a result of many interconnected and, at times, contradictory factors. Direct causal relationships between a background factor and a specific revision procedure were found to be rare. The most important project-specific influencing factors were the text genre, the translator's experience and competence profile, and the client's needs and requirements. The translator's experience and competence profile was an important factor when choosing whether a translation would be revised or not, while the text genre and the client often influence the scope of revision, primarily with regard to the revision's level of detail and the revision parameters being emphasised. The impact of text genre in particular can be summarised as the different treatment of fluency-oriented and precision-oriented translations.

The revision file has been identified in this dissertation as the primary communicative artefact that is used for building and shaping collaboration between the translator and reviser, conceptualised here as a system of socially distributed cognition, or a cognitive dyad. When this type of revision file is used in the production process, its characteristics as a digital artefact largely determine the revision procedure and how translators and revisers collaborate. The proposed translation solutions are communicated via tracked changes in the .docx file, and direct communication can be added to the files in the form of comments that are usually displayed in the margin of the file. It seems that the commenting function may not be used extensively, and other channels of communication are not often employed. This leads to a situation where communication between the participants is prevalently task-oriented.

In addition to these main themes, the dissertation also proposes and tests methods that may be useful for studying translation as a situated, distributed action in which the cognitive task is divided between two or more participants. Studying the revision file as a communicative device instead of purely as a tool is an important step forward in the research of collaboration in translation. In addition, the descriptions of the revisers' task suggest that revisers are not just proofreaders but active participants in the translation effort. They participate in problem-solving in the distributed creative process of translation production, using the revision file as the primary communicative artefact and the vehicle of collaboration. This perspective to the revisers' work marks a shift from how revisers have previously been seen in translation studies and prepares the ground for further research into their role in changing production systems in the age of large language models and translation tools based on them.

TIIVISTELMÄ

Tutkimuksen tavoitteena on lisätä ymmärrystä asiatekstikäännösten revisoinnista tilanteisena toimintana, joka on osa yhteistyönä toteutettua kääntämisen prosessia ja jota muovaavat sekä projektikohtaiset tekijät että revisoijan käytettävissä olevat artefaktit, esimerkiksi työkaluohjelmistot sekä muut materiaaliset ja digitaaliset artefaktit. Tärkeimpänä teoreettisena lähestymistapana on sosiaalisesti jaetun (hajautetun) kognition teoria (socially distributed cognition, SDC). SDC on tilanteisen kognitioteorian (situated cognition) haara, josta käytetään myös nimityksiä kehollinen (embodied) kognitio ja 4EA-kognitio; 4EA on lyhenne sanoista embodied, embedded, enacted, extended ja affective. Tilanteisen kognitioteorian kanssa yhteensopivilla menetelmillä on selvitetty, miten kognitiivinen yhteistyö muotoutuu ja toteutuu järjestelmässä, joka koostuu kääntäjästä ja revisoijasta. Näin on saatu uutta tietoa käännöspalvelujen tuotannon prosesseista ja käytännöistä.

Ensimmäinen väitöskirjaan sisältyvistä neljästä artikkelista kartoittaa kielipalveluyritysten revisointitoimintoja, mukaan lukien revisoijan tehtävänkuva ja päätösvallan jakautuminen. Toisessa artikkelissa tarkastellaan taustatekijöiden vaikutusta siihen, mikä on revisoijan rooli yhteistyönä tapahtuvassa käännösten tuotannossa. Kolmannessa artikkelissa kuvataan kääntäjän ja revisoijan yhteistä luovaa prosessia ja viestintäkanavia. Artikkeli nostaa esiin revisointitiedoston merkityksen viestinnän välineenä ja osoittaa, miten tämä digitaalinen artefakti toimii kognitiivisen yhteistyön rakentumisen paikkana. Neljännessä artikkelissa kehitetään tutkimusmenetelmiä revisointitiedoston hyödyntämiseen kognitiivisen etnografian aineistona. Tiedostoa analysoidaan kahdella menetelmällä: artefaktianalyysin avulla sekä systeemis-funktionaalisen diskurssianalyysin keinoin. Jälkimmäisessä selvitetään lingvistisen aineiston avulla, miten kääntäjän ja revisoijan välinen kognitiivinen työ jakautuu.

Väitöskirjan osatutkimuksissa on käytetty pääosin laadullisia tutkimusmenetelmiä. Monipuolisen aineistokokonaisuuden avulla kohdetta on voitu tarkastella useista eri näkökulmista. Laadullisten tulosten tueksi on esitetty joitakin määrällisiä tuloksia, mutta koska aineistot eivät ole laajuudeltaan ja

rakenteeltaan soveltuvia varsinaiseen kvantitatiiviseen analyysiin, näiden tulosten pohjalta ei voida tehdä yleistyksiä. Aineistonkeruumenetelminä on käytetty kyselytutkimusta, käännösalan ammattilaisten haastatteluja, simuloituja revisointitilanteita sekä autenttisen tekstiaineiston kokoamista. Tavoitteena on ollut triangulaatio monipuolisen aineiston avulla. Jokaisessa osatutkimuksessa on käytetty yhtä tai useampaa näistä aineistoista.

Väitöskirjan päätulokset liittyvät kahteen aihealueeseen: ensinnäkin kääntäjän ja revisoijan välisen kognitiivisen yhteistyön luonteeseen ja piirteisiin ja toiseksi tähän yhteistyöhön vaikuttaviin prosesseihin ja olosuhteisiin. Yhteistyö on peruslaadultaan joustavaa, luottamukseen perustuvaa ja eri osa-alueilla toisiaan täydentävää. Tiimien kokoonpano, eri työtehtävien laajuus ja tavoitteet sekä osapuolten osaamisprofiilit ja toisiaan täydentävät ominaisuudet joustavat tuotannon työnkuluissa esiintyvän vaihtelun mukaan. Joustavuutta on myös siinä, miten osallistujat käyttävät toimijuuttaan ja neuvottelevat päätösvallan jakautumisesta. Luottamus kääntäjään on merkittävässä osassa, kun revisoijat määrittävät käännösten muokkaamiseen liittyvän toimijuutensa rajoja. Luottamuksen rikkoutuminen vaikuttaa revisoijan toimintaan. Kääntäjän ja revisoijan osaamisprofiilien yhteensopivuus on usein keskeinen työn onnistumisen tekijä: jos toisen osapuolenosaamisprofiilissa tai kokemuksessa on jokin olennainen heikkous, toisella osapuolella tulisi olla vastaava vahvuus. Revisoijan tulee lisäksi kyetä tunnistamaan kääntäjän vahvuudet ja heikkoudet oikein, jotta hän osaa korjata tekstistä tarpeelliset seikat eikä tee muutoksia, jotka heikentävät käännöksen laatua.

Tutkimuksessa on pohdittu kognitiivisen yhteistyön luonnetta ja piirteitä myös kääntämisen kokonaisprosessiin liittyvän luovuuden kannalta. Käännösten tuotannon jaettu työprosessi, jossa kääntäjä ja revisoija/editoija yhdessä toimivat, on kuvattu luovana prosessina, joka sisältää toistuvia, osapuolten erikseen ja yhdessä suorittamia divergentin ja konvergentin ajattelun vaiheita. Kääntämiseen liittyvä divergentti ja konvergentti ajattelu tarkoittaa käännösratkaisujen ehdottamista ja arviointia sekä hyväksymistä tai hylkäämistä. Luovuutta on käsitelty myös siitä näkökulmasta, millaista luovuutta eri tekstilajit vaativat kääntäjältä ja revisoijalta. Analyysien perusteella on havaittu, että joissakin teksteissä painottuu sujuvuus, jonka saavuttaminen vaatii usein laajaa vaihtelevien kielellisten rakenteiden harkintaa ja valintaa. Tällöin lähtötekstin ja kohdetekstin välille syntyy lukuisia leksikkokieliopillisia eroja. Toisissa teksteissä taas painottuu käännöksen tarkkuus. Nämä tekstit voidaan usein kääntää suoremmin, jolloin leksikkokieliopillisia eroja muodostuu vähemmän.

Väitöskirjan tulosten toinen keskeinen aihealue liittyy yhteistyön taustalta tunnistettaviin ja siihen vaikuttaviin prosesseihin ja olosuhteisiin. Tähän aiheeseen sisältyvissä osatutkimuksissa on kuvattu tärkeimmät projektikohtaiset tekijät, jotka vaikuttavat revisoijan tehtäviin osana kaksijäsenistä sosiaalisesti jaetun kognition (SDC) järjestelmää, sekä tunnistettu ja kuvattu revisiointitiedosto digitaalisena viestinnällisenä artefaktina, joka ohjaa, rajoittaa ja mahdollistaa revisiointityötä ja osapuolten välistä viestintää. Analyysien perusteella revisoijan työkenttä muotoutuu useiden toisiinsa kytköksissä olevien ja ajoittain ristiriitaisten tekijöiden tuloksena. Taustatekijöiden ja revisiointimenettelyjen väliset suorat kausaaliset suhteet ovat sen sijaan harvinaisia. Tärkeimmät työhön vaikuttavat projektikohtaiset tekijät ovat tekstilaji, kääntäjän kokemus ja osaamisprofiili sekä asiakkaan tarpeet ja vaatimukset. Kääntäjän kokemus ja osaamisprofiili vaikuttavat merkittävästi siihen, revisoidaanko teksti vai ei. Tekstilajilla ja asiakkaan tarpeilla taas oli useammin vaikutusta revisiointityön sisältöön erityisesti revisoinnin yksityiskohtaisuuden ja painotettavien revisiointiparametrien osalta. Tekstilajin vaikutus näkyy selkeimmin siinä, että tarkkuutta vaativat tekstit ja sujuvuutta vaativat tekstit revisoidaan eri tavoin.

Revisiointitiedosto tunnistetaan tässä väitöskirjassa tärkeimmäksi viestinnälliseksi artefaktiksi, jonka kautta kääntäjän ja revisoijan välinen yhteistyö rakentuu ja muovautuu. Kun tuotantoprosessissa käytetään tämäntyyppistä erillistä revisiointitiedostoa, sen ominaisuudet digitaalisena artefaktina määrittävät merkittävällä tavalla revisiointimenettelyä sekä kääntäjän ja revisoijan yhteistyön tekemisen tapaa. Ehdotetut käännösratkaisut ilmaistaan .docx-tiedostossa Jäljitä muutokset -toiminnon avulla. Osapuolet voivat myös lisätä tiedostoon suoraa viestintää kommenttien muodossa. Kommentit näkyvät yleisimmin tekstin marginaalissa. Suppean tekstiaineiston perusteella näyttää siltä, että kommentointitoimintoa käytetään suhteellisen vähän. Viestintä muita kanavia käyttäen on samoin vähäistä. Osapuolten välinen viestintä painottuu siis vahvasti työtehtävän vaatiman tiedon ilmaisuun.

Yllä kuvattujen aihealueiden lisäksi väitöskirjassa ehdotetaan ja testataan menetelmiä, jotka soveltuvat kääntämisen tutkimiseen tilanteisena ja hajautettuna toimintana, jossa kognitiivinen työ jakautuu kahdelle tai useammalle osapuolelle. Revisiointitiedoston tarkastelu viestintävälineenä, ei pelkästään työvälineenä, on merkittävä askel kollaboratiivisen kääntämisen tutkimuksessa. Revisoijan tehtävien kuvausten perusteella voidaan lisäksi sanoa, että revisoija tulee nähdä käännöstyöhön aktiivisesti osallistuvana toimijana, ei oikolukijana, kuten usein tapahtuu. Revisoija osallistuu ongelmanratkaisuun kääntämisen jaetussa luovassa

prosessissa ja käyttää revisointitiedostoa ensisijaisena viestinnällisenä artefaktina sekä yhteistyön välineenä. Tämä näkökulma muuttaa sitä, miten revisoijan merkitys käännöstieteessä on yleensä ymmärretty, ja valmistaa tietä uudelle tutkimukselle revisoijan roolista muuttuvissa tuotantojärjestelmissä suurten kielimallien ja niihin perustuvien käännöstyökalujen aikakaudella.

CONTENTS

ABBREVIATIONS

4EA	embodied, embedded, enacted, extended and affective (cognition)
AI	artificial intelligence
CST	commercial specialised translation
CTS	cognitive translation studies
DC	distributed cognition
LLM	large language model
LSP	language service provider
MT	machine translation
SDC	socially distributed cognition
SFL	systemic functional linguistics
TAP	think-aloud protocol
TPR	translation process research
TM	translation memory

LIST OF ORIGINAL PUBLICATIONS

This dissertation is comprised of the summary and four original publications, reproduced here by the copyright holders' permission. Any further re-use and reprint rights remain with the copyright holders in the case of Articles I and III. Article II has been made available under the Creative Commons Attribution (CC-BY) 4.0 license. In the summary, the original publications are referred to as Articles I through IV.

Article I Korhonen, Annamari. 2021. "From Language Check to Creative Editing: Exploring Variation in the Revision Stage of the LSP Workflow." In *Translation Revision and Post-editing: Industry Practices and Cognitive Processes*, edited by Maarit Koponen, Brian Mossop, Isabelle S. Robert and Giovanna Scocchera, 131–147. Abingdon: Routledge.

Article II Korhonen, Annamari. 2022. "When and How to Revise? Building a Cognitive Dyad of Translator and Reviser through Workflow Adjustment." *Translation, Cognition & Behavior* 5(2): 165–186.

Article III Korhonen, Annamari and Hirvonen, Maija 2021. "Joint Creative Process in Translation: Socially Distributed Cognition in Two Production Contexts." *Cognitive Linguistic Studies* 8(2): 251–276.

Article IV Korhonen, Annamari (submitted). Revision Files as Cognitive Ethnographic Data: Artefact Analysis of File and Software Features Combined with Systemic Functional Discourse Analysis.

Article III has been co-authored with Dr Maija Hirvonen. The cognitive theoretical framework was introduced by Dr Hirvonen and specified further together. I developed the creativity theoretical perspective and was, as the first author, mainly in charge of designing the overall structure of the work. Both authors participated in the writing of the theoretical sections. Both also provided one set of data and carried the main responsibility for analysing that data in accordance with mutually agreed analysis procedures, as well as for writing the related article sections. Final conclusions were drawn together.

1 INTRODUCTION

1.1 Background and motivation

When returning to the world of academia after years of working as a translator at a language service provider (LSP), I wanted to contribute to both the industry and the academic research of translation, and improve their mutual understanding. At the time, critically important advances in translation studies research (see, e.g., Abdallah 2012, 39–40) as well as the results of the European Language Industry Surveys (ELIS) had raised ethical concerns about translators' position in contemporary production organisations and spotlighted some aspects of translation production systems that had resulted in a not wholly unproblematic view of LSP work gaining a foothold in Finnish and international discourses. It seemed to me that this (undoubtedly justified) critical view dominated discussions concerning not only audiovisual translation companies, which were the main focus of Abdallah's work, but also LSPs, obscuring all other aspects of specialised translation operations. I therefore wanted to look past this image and investigate the complicated machinery of translation service operations that are run by skilled and talented people in a tough competitive environment. It is a world of harsh financial realities, but it is also a world in which people who love languages find beauty in forging new, better texts out of other texts.

My topic, first inspired by my own work as a translation professional, grew into something slightly different as my understanding of the research objects' theoretical characteristics and complexity increased. I had begun with an interest in portraying a specific type of translation revision task, one that I had often engaged in as part of the production workflows used at the LSP I had worked for: in that environment, this task was called copy-editing, and was described as having a more extensive scope and allowing more creativity as regular translation revision. In my research, I wanted to treat this editing task as a phenomenon of its own right.

This was, however, not to be. I soon found that there was no theoretical justification for setting one type of translation revision task apart from the others. In practice, translation revision as a workflow step demonstrated great variation on

several axes, not only with regard to the allowed creativity of the changes. In addition, making a clear distinction between what constituted creative vs. "regular" editing or revising seemed impossible. A terminological difference used in a translation management system did not mean that a corresponding difference could be identified in how the task was carried out, at least not with any consistency, as the requirements for different texts and projects varied greatly. And what even was creativity when talking about translation in general, not literary translation, transcreation or some other type of work that has usually been conceptualized as "creative" translation?

It was thus clear that I needed to look more closely into translation revision and its role in production workflows. The growing awareness of the importance of the workflow led me towards extending my interest to the collaboration of translators and revisers instead of treating revision as an isolated task. It was clear that revision tasks varied as part of an entire production system: looking into some aspects of that production system seemed the way to go.

What I needed was a better understanding of how revisers worked together with translators. I also needed evidence of how the revision task varied under the influence of different factors – and what those factors might be. Furthermore, my original interest in creative editing channelled into the desire to account for the role of creativity in specialised translation, and more specifically, in translation revision. While the scope of the PhD project did not allow the fulfilment of this last objective – a full description of the role of creativity in translation revision – I have aimed to chart the reality of LSP translation revision as part of the overall creative process of producing a final translation; importantly, translation revision is understood as constituting a part of collaborative translation, or a distributed translation task. Descriptions of revision's scope and variation are, at the same time, also descriptions of collaboration.

I have organised these goals into two interrelated research themes and further into four research questions. The answers to these questions will be discussed in the second and third part of Chapter 6; the first part of the chapter summarises the individual research articles included in this work. First, however, I will briefly introduce the theoretical perspective that I take in this dissertation. Further chapters in this dissertation summary introduce the reader to socio-cognitive translation research (Chapter 2), summarize relevant findings of previous research on translation revision (Chapter 3), outline the meaning of creativity in the context of the current research (Chapter 4), and introduce and discuss the data and methods (Chapter 5). After the account of the results (Chapter 6), Chapter 7

summarises the contributions made in this work, and discusses its limitations and some directions for future work.

1.2 The perspective: Translation production as situated, distributed, and creative cognitive action

Translation is a demanding cognitive task; in today's working environments, it is often shared between team members taking on various roles in the workflow, and carried out using a multitude of digital tools. Other people and tools are not only the background to practically every translation professional's work, but essential components of it. A situated perspective on cognition that incorporates these components into the analysis may give us a better understanding of how the cognitive processes related to translation unfold. In this work I therefore examine cognitive translatorial collaboration using a socio-cognitive research approach that looks at cognition as an essentially social phenomenon. At the same time, I turn the focus from the translator to the reviser and study the revision task as part of the collaborative translation creation effort.

The objective of the research presented in this dissertation is thus to create an understanding of translation revision as a situated activity that is carried out as part of a collaborative translation process and is dependent on various project-specific background factors as well as the artefacts available to the reviser. The main theoretical framework, adopted in articles II, III and IV included in this dissertation, is that of (socially) distributed cognition (SDC; see Perry 1999), which is a sub-field of situated cognitive theory, also called embodied cognition, or 4EA cognition, the abbreviation denoting embodied, embedded, enacted, extended and affective cognition (e.g. Muñoz 2016b). This theory is the latest paradigm of cognitive science, and will be explored in more detail in chapter 2.1 of the present work. Within the situated paradigm, socially distributed cognition is the approach that places the most importance on the social aspects of cognitive efforts, looking at distributed cognitive systems that may include two or more people and various artefacts that all have a role in the performance of a task (for a classic description of such a system, see Hutchins 1995a; for terminological discussion, Perry 1999).

Cognitive approaches to translation in general are focused on the translator instead of the text, for example. This also applies to situated approaches, although some of them place great importance on elements that are located outside the translator, which could seem like shifting the focus away from the translator. This

would be a mistaken assumption, however; in fact, situated cognitive approaches only widen the perspective and examine translatorial action as a whole, directing the gaze of the researcher not only towards the actions of the translator, but towards the entire extended system, including the environment in which the translator works and the tools that are used. Socially distributed cognition, as applied in this dissertation, further expands the picture by spotlighting collaborative relationships and the distribution of work among two or more people at the centre of the extended cognitive system. This expanded perspective leads to a more thorough understanding of the translation professionals' work and translation as a phenomenon taking place in a modern collaborative working environment essentially characterized by the use of digital tools.

My research is multidisciplinary in that I use theories and analytic tools from cognitive science and linguistics to study translatorial action. Cognitive science is a new field for me, and I have striven to apply its theories in as appropriate and useful a manner as possible, hoping to make justice to what cognitive science has to offer. A multidisciplinary study must ensure that the new developments instigated in the target field – translation studies – are genuinely in line with what has been uncovered and theorized in the other field; this has been my goal. The cognitive perspective grounds my work and gives it a direction.

The contexts of translation being investigated here are business-to-business translation services as carried out by commercial language service providers (LSPs) in Finland. The texts that are being translated often belong to specialized genres and subject areas such as technology, medicine, or corporate communications. The translators and revisers engaging in these operations are translation professionals; for a description of some of the operating principles of the LSP industry in general, see, e.g., Englund Dimitrova and Ehrensberger-Dow (2016).

This dissertation focuses on a translation process in which a human translator and reviser work on a text. Processes in which the human translator would be replaced by a translation engine (machine translation, MT), and a post-editor would take the place of a reviser, are not discussed here. The language pairs that my informants work with practically always have Finnish as L1 or L2, and an Indo-European language, most frequently English, as the other language. As Finnish is not an Indo-European language, and because it is a language of low diffusion, machine translation systems have only recently become a viable tool for Finnish translators; as a result, MT systems rarely come up when production processes are discussed in my data, and thus also in this dissertation. If they come up at all in the data, they are mostly described as being used in the translation environment, as an

aid to the human translation task and not as a substitute for human translation (see do Carmo and Moorkens 2021).

Throughout the project, my aim has been to help close the gap between academia and the industry by building new academic knowledge of how translation professionals work. Translation technology and the preconditions of the language industry's operating environment are changing rapidly, and work processes must change with them. This results in a constant need to update the body of researched knowledge. I introduce here a snapshot of some aspects of professional specialised translation as it is performed in Finland in the early 2020s. When presenting my research, I have aimed at relevance for both academics and practitioners, and hope that the latter are not too far alienated by the theoretical perspectives that have been applied. Many of the results can be read as purely practical knowledge, without the theoretical dimension.

Translation studies research is often motivated by the need to raise awareness of the agency and contribution of various translation professionals, and the complexity of their work. This dissertation spotlights the role of translation revisers in the joint creative endeavour of producing a translation. Closely related to this, new understanding of translation revision as a flexible and creative task has been developed. The flexibility is necessary due to the complexity of the factors that influence workflow and process choices; the present work also emphasises the importance of noting these factors that form the everyday wallpaper – albeit an intricately patterned one – in the background of specialised translation services and are thus often ignored.

1.3 Research questions

The research questions for this work developed into their final form over the years while engaging in the research work. The original research questions were focused on the policies and views of language service companies, and on surveying their editing services. As I learned more about my topic, my viewpoint shifted towards the need to know more about the nature of the reviser's task as part of the collaborative workflow, and the research questions started to focus on two strongly interconnected themes: the nature of the cognitive collaboration between the translator and a reviser, and how that collaboration – and translation revision as part of it – is shaped under the influence of the production system and various related background factors. This approach portrays revision as a deeply situated

phenomenon, one that is intricately tied to the other parts of the production system.

Tables 1 and 2 present the research questions crafted to cover these two themes and explain how the four articles included in this dissertation contribute to answering these questions, sketching a picture of the collaboration of translator and reviser. Below the tables, the following paragraphs summarize each article and its contribution regarding these research questions.

Table 1. Research questions under Theme 1: The nature and characteristics of cognitive collaboration between translator and reviser

Research question	Contribution in the four articles
1a. How is the translatorial effort distributed between the translator and the reviser?	I Variation in the scope of a shared task requires flexibility
	II Nature of the distribution processes and circumstances: situatedness, complementarity, trust, and agency
	III ----
	IV Distribution of cognitive labour at the linguistic level; negotiation of decision-making space
1b. What creative characteristics does the combined task have?	I The allowed level of creativity in translation revision; creativity is understood as deviation from source text
	II Possibility of some text genres requiring more creativity
	III Description of the distributed creative process built through communication
	IV Indications of linguistic creativity in translations of fluency-oriented text genres

Table 2. Research questions under Theme 2: Processes and circumstances that shape the reviser's task scope and thus the cognitive collaboration between translator and reviser

Research question	Contribution in the four articles
2a. How do project-specific background factors shape the reviser's task as part of the cognitive collaboration?	I Circumstances that have an impact on the scope of revision
	II Impact of project-specific factors on the scope of the reviser's task in a cognitive dyad
	III ---
	IV Impact of the revision file's formatting
2b. How are channels of communication employed between the participants to establish cognitive collaboration?	I ---
	II ---
	III Description of communication channels used in the process of co-creation
	IV The revision file as a communicative artefact; description of the digital artefact's affordances that foster communication between the participants

Article I explores variation in the scope of revision and confirms that it does indeed exist; it is thus characteristic of the cognitive collaboration between translator and reviser that the task definitions vary between projects, requiring flexibility. This result contributes to answering research question 1a. The allowed level of creativity in the revision task is briefly discussed (research question 1b). The article also looks at some special situational and textual circumstances that may have an impact on how the scope, or task definitions of revision, may vary, contributing to research question 2a. Some preliminary inquiries are also made concerning the power relationships at play: who has the authority on revision scope, and whether predefined instructions are provided to revisers.

In Article II, I analysed translation professionals' views on the impact of project-specific factors on the scope of revision task, which was understood as the second part of the combined translation effort of a cognitive dyad (a team of a translator and a reviser). The article aimed to show how situated cognitive tasks are rooted in concrete, observable circumstances. Connections between background factors and the composition and task configuration of the cognitive dyad are spotlighted. The focus is on answering research question 2a, but the article also raises many points related to research question 1a that deals with how the translatorial effort is distributed: the situatedness of the task distribution is highlighted, together with complementarity of the participants' competencies, the importance of trust, and the role of the reviser's agency. When discussing the influence of text genre on the revision task, the article spotlights how some text

genres in specialised translation may be related to a higher level of creativity than others (research question 1b).

In Article III, my colleague, Dr Maija Hirvonen, and I examined translation as a joint creative process, describing the cognitive collaboration of translator and reviser as a process of co-creation that is established in the communication that takes place between the translator and the reviser/editor. The description contributes to answering research question 1b, and the account of communication channels answers research question 2b.

Article IV zooms in on one of the communication channels employed between translator and reviser: the revision file, a digital artefact that is sent from the translator to the reviser and back again. Regarding research question 1a, the article describes the distribution of cognitive labour at the linguistic level, examined through the three metafunctions of language as described in systemic functional linguistics. The negotiation of decision-making space, taking place in the comments added to the texts, also contributes to answering research question 1a. With regard to research question 1b, the analysis supports what was observed in Article II, that some text genres seem to be connected to a higher level of (linguistic) creativity than others. Furthermore, the article answers research question 2a by assessing the impact of the text format on the reviser's possibilities to perform their task, and research question 2b by describing the artefact's affordances that foster communication between the participants, allow them to collaborate, and steer, enable or limit the scope of revision.

2 SOCIO-COGNITIVE RESEARCH OF TRANSLATION

As a result of many recent developments in translation studies, we now understand the social nature of translatorial action vastly better than a decade or two ago. Pioneers such as Hanna Risku (Risku and Rogl 2021; Risku and Windhager 2013), Ricardo Muñoz Martín (2010b; 2016b), Kaisa Koskinen (2008) and Kristiina Abdallah (2012) have helped to place translation operations, looked at from an academic perspective, firmly into a real-life context, revealing the networks of operators who influence the work of translators or even participate in it. This has led to a more nuanced as well as a more accurate picture of how translations are created.

The research into the social aspects of translation has opened the pathway for looking into the ways in which translation as an intensive cognitive effort is shaped by its environment, which consists of people, tools, and artefacts. In translation studies, research into cognition and research into the sociological environment have long been kept apart (see, e.g., Englund Dimitrova and Ehrensberger-Dow 2016), even when dependencies have been recognized between them. Recently, some theoretical steps forward have brought these two research traditions together, and cognition is being looked at not only as an individual, but also as a social entity – a development also promoted by Kotze (2019) and described by Englund Dimitrova and Ehrensberger-Dow (2016). This convergence now taking place in translation studies is rooted in cognitive science and is mainly based on Andy Clark and David Chalmers's (1998) concept of extended mind, as well as Edwin Hutchins's (1991; 1995a; 1995b) seminal work on distributed cognition. The new perspective results in cognitive translation research that recognizes the critical role of brain-external entities in cognitive action.

In this chapter, I will first introduce the three paradigms of cognitive science with particular focus on the situated (or embodied) paradigm. Then I will discuss the socio-cognitive branch of translation studies, starting with the concepts of *translation act* and *translation event* and how they reflect the joining of the cognitive and the social in translation studies research.

2.1 Three theories of cognition

The models of cognitive systems presented in cognitive studies and applied in translation studies are conceptualizations of how cognitive actions could be understood. In other words, they are not meant to be realistic representations of brain physiology. Saying that cognition 'leaks' out of the brain and into the environment, and that various tools and artefacts, for example, could be seen as part of the cognitive system, is not intended to mean that there is no individual cognition. Rather, it means that any person's cognition is not isolated from the physical world, but functions together with it. The human cognition also has a strong tendency to make use of scaffolds (see, e.g., Clark 1997, 45–46), external supporting elements, that increase its efficiency and vastly improve its performance. What is even more to the point considering my own research, individuals collaborate with each other on cognitive tasks to the extent that it may be useful to examine those tasks as shared between two or more individuals. Investigations of collaborative pairs and groups as instances of socially distributed cognition could reveal characteristics and features that would stay hidden in studies that only focus on the task scope of individuals.

Seeing cognition as a system that extends to the environment has resulted in the development of a new cognitive paradigm, a third one after classical cognitive science and connectionism. The classical school of thought focuses on symbolic mental representations and how the brain processes them logically, as computations (Dawson 2013, 122). The connectionist paradigm, on the other hand, models the cognitive system as a dynamic neural network, claiming biological relevance: the neural network being modelled is, in fact, the actual structure of the brain (see, e.g., Bechtel and Abrahamsen 2002). According to Clark (1997, 58), this is where the biggest value of the connectionist approach, also reflected in the research of artificial neural networks, lies – in helping us understand how the brain might process information. For connectionists, mental representations are not symbolic, but rather sub-symbolic; the brain is a network of simple units that form "patterns of activity" linking sub-symbolic features (Muñoz and Martín de Leon 2021, 56). Both of these schools of thought assume that action takes place as a result of a thought process: sensing leads to thinking, which, in turn, leads to acting in what is called the sense-think-act cycle (Dawson 2013, 11; Pfeifer and Scheier

1999). The third paradigm, which has been called the situated or embodied branch of cognitive science, rejects this principle, postulates a direct link between sensing and acting, and casts doubt on whether internal mental representations exist at all (Dawson 2013, 11–12; Brooks 1991; 1999; Chemero 2009).

The terminology of the cognitive theories that belong to the situated (or embodied) branch of cognitive science is somewhat varied and unstandardized. Dawson (2013), for example, uses the term *embodied cognition* to describe the entire field of what can be called the third branch of cognitive science; in other works, the same term has been used of one of its sub-branches. Robbins and Aydede (2009, 3) list "*embodiment*, *enactivism*, *distributed cognition*, and *the extended mind*" as terms that have been associated with what they call "a new trend in cognitive science"; their handbook is entitled *The Cambridge Handbook of Situated Cognition*, which indicates that they consider *situated cognition* to be the best umbrella term for this trend. Indeed, they explicitly state (Robbins and Aydede 2009, 3) that situated cognition is the genus term, and terms such as embodied, distributed or extended cognition are species belonging to that genus. Another taxonomy is offered by the term 4E (or 4EA) cognition, including the notions of embodied, embedded, extended and enactive (and affective) cognition, which all have slightly different foci and emphases (see, e.g., Anderson, Wheeler, and Sprevak 2019, 3). In the following, I will briefly go through some of these different conceptualizations of how cognition can be considered to "leak" outside an individual's brain.

Although translation is not the primary subject of this sub-section, I will also include some notes of the relevance of the different theories or ideas to translation on a very general level. The work of contemporary translation professionals is a complex cognitive task that depends on the cognitive scaffolding offered by digital tools (Risku 2014, 341; Sannholm 2021) and the previous work of many different actors, conveyed through these tools; it is therefore a fruitful object for investigations applying the lens of situated cognitive theories.

The idea of the embodied mind rejects the Cartesian substance dualistic principle that body and mind are separate entities (Merleau-Ponty 1962; see Callagher 2009, 42; Anderson, Wheeler, and Sprevak 2019, 2). Instead, the body is seen as having integral importance for how the mind works. The Cartesian metaphysical notion of separate mind and body has, of course, been fundamentally dismissed long ago as the importance of the brain as the physical organ of thinking was discovered (see, e.g., Anderson, Wheeler, and Sprevak 2019, 2). The supporters of the embodied view, however, see the need to also account for the importance of the body and the environment, not merely the brain:

> To be clear, no advocate of distributed cognition believes that the brain is somehow unimportant. Rather, (part of) the proposal is that to understand properly what the brain does, we need to take proper account of the subtle, complex and often surprising ways in which that venerable organ is enmeshed with, and often depends on, non-neural bodily and environmental factors, in what is the co-generation of thought and experience (Anderson, Wheeler, and Sprevak 2019, 2).

The nature of mental representations is a central question for the different cognitive paradigms. In the embodied way of understanding mental representations, they require practical knowledge to be complete; fully symbolic representations that would be subjected to logical computing by the brain are not considered to be a valid model of the human mind (Anderson 2003). Cognitive activity is of course possible without immediate relevance with the environment, for example when reminiscing or speculating about things not immediately present (Robbins and Aydede 2009, 4). Some real-world knowledge is, however, required for valid processing of representations – a notion that translators are well familiar with: it is very difficult to translate texts that you are not able to connect to any previous or otherwise accessible knowledge or experience.

Since the use of translation tools is a situated activity carried out via a sensory and bodily connection to the environment, the embodied approach to cognition can be readily applied to translation. Understanding the embodied nature of cognition in general, and thus also of translatorial work, is particularly relevant for considerations of cognitive ergonomics (see Ehrensberger-Dow and Massey 2014). If the bodily action connected to a cognitive operation is logical and intuitive, it will tax the cognition less.

The concept of embedded mind further accentuates the integration of the mind and the environment. It foregrounds the principle that people do not create complex representations of situations in their minds when they can instead use the environment directly to carry some of the cognitive load; this is done using the body's sensorimotor systems, which links embedded mind with the concept of embodied mind (Robbins and Aydede 2009, 6–7). Due to the immediate connection of the mind to the world, the existence of mental representations can be brought to serious question; instead of creating such representations, people can be considered to simply "use the world as its own model" (Brooks 1991, 139). For a concise account of the debate about whether mental representations exist or not, see Dawson (2013, 344–45). The embedded nature of cognition also manifests in the practice of cognitive off-loading (see Robbins and Aydede 2009, 6); in a translation context, this happens when translators formulate and test translation

solutions gradually by writing and changing them onscreen in the translation environment, for example.

The theory of the extended mind is more radical than those of embodied and embedded mind, which accentuate the physical world's importance but do not claim to break the traditional boundaries of cognitive systems. First introduced by Andy Clark and David Chalmers (1998), the essential tenet of the extended mind is that cognitive systems extend to the environment and include components that are external to an individual's brain. According to Robbins and Aydede (2009, 8), this view can be justified via the dynamical systems theory:

> Using the tools of dynamical systems theory, one can describe in a mathematically precise way how various states of a cognitive system change in relation to one another over time. Because those state changes depend as much on changes in the external environment as on changes in the internal one, it becomes as important for cognitive modelling to track causal processes that cross the boundary of the individual organism as it is to track those that lie within that boundary. In short, insofar as the mind is a dynamical system, it is natural to think of it as extending not just into the body but also into the world.

This approach is based on the assumption that cognition is both embodied and embedded (Robbins and Aydede 2009, 8). It is also essentially a functional approach: if an external artefact is performing a function that could also be performed by the brain (like a notebook could replace some functions of a person's memory, as described by Clark and Chalmers), then that artefact should be treated as part of the cognitive system (Clark and Chalmers 1998, 12–13).

All the situated theories of mind introduced above are individualistic. They place one person at the centre of the cognitive system and explore how that one person's mind operates as an embodied, embedded or extended entity, even if they recognize that other people may also play an important part in the workings of that mind. The theory of distributed cognition (Hutchins 1995a; 1995b; Perry 1999; Cash 2013), however, looks at cognitive systems that do not necessarily revolve around one individual; rather, the system is described as a whole, with all the components that participate in the performance of a cognitive task. The theory and the descriptive method were developed by Edwin Hutchins (1995a; 1995b), who described the work of commercial airline pilots and a warship's navigation crew, both of which use several technical systems and a specific way of communicating with each other in order to carry out their tasks. The same descriptive method – which Hutchins (1995a, 371) calls *cognitive ethnography* – can be applied to situations in which only one person is working on various tools and artefacts, and situations

in which several people share the task, and none of them are considered the primary participant whose cognition is being discussed.

Interestingly, Hutchins himself considered his theory and the descriptions based on it to be fully compatible with the classical paradigm's idea of cognition as computation; he expressly states that his goal is to "show that the classical cognitive science approach can be applied with little modification to a unit of analysis that is larger than a person" (Hutchins 1995b, 266). In his paper on the principles of researching distributed cognition, Mark Perry (1999, 89) also draws attention to the fact that Hutchins essentially described the "creation, transformation and propagation of representational states" (see also Hutchins 1995a, 117). While some of those states are external and thus easier to observe than internal states, some are internal to the persons involved in the operations that are being described (Hutchins 1995b, 266, 271, 279–85); Hutchins doesn't seem to question whether such internal, mental representational states exist, as many supporters of the embodied/situated branch of cognitive science do. Despite presenting a radical theory of cognitive systems that are largely located outside the brain, Hutchins thus didn't see the need to depart from the classical paradigm. Later theorists have, however, considered Hutchins's ideas as belonging to the third, embodied or situated branch of cognitive science (see, e.g., Dawson 2013).

Perry (1999) develops the concepts of distributed cognition further by foregrounding the distinction between systems that comprise one individual and the tools and artefacts that they use, and systems that comprise several people who work together and use tools and artefacts. His contribution is mainly in the disambiguation of terminology, and in clarifying the research approaches that each of these working setups requires. He uses the terms individually distributed cognition (IDC) and socially distributed cognition (SDC) and points out that research into IDC focuses on the use of tools, while research into SDC foregrounds not only the use of tools, but even more importantly the communication between participants as they coordinate their work, and usually requires an ethnographic approach (Perry 1999, 87–88). In my view, the distinction between IDC and SDC is theoretically justified; while other people can also be considered a resource in an individually-centred cognitive system, the people who actively participate in the production of a translation, for example, differ from other resources in that they react to each other's input and exercise interactive agency in contributing to the shared work.

In this dissertation, I have applied an SDC approach that resembles most that presented by Hutchins (Hutchins 1995a; 1995b) and Perry (1999): I examine the

cognitive systems that come to existence in translation contexts, when a translator and reviser participate in the cognitive task of producing a translated text, using various information sources, translation tools and communication channels; these technical tools and artefacts play a similar role in the translation task as the aviation or marine navigation instruments that Hutchins described. Unlike Hutchins, I have not attempted a full description of the system as part of the current work. Instead, I have explored various aspects of the system, studying its nature, tracing the overall process and spotlighting some factors that influence it.

2.2 Adopting the situated paradigm: socio-cognitive translation research

Cognitive translation studies (CTS) has been a field strongly characterised by translation process research (TPR), which usually adopts experimental methods to investigate the cognitive (brain-internal) processes employed by a translator when producing a translation. In recent years, this field has seen considerable methodological advancement with the wide-spread adoption of key-logging and eye-tracking software and using them to answer an ever-expanding range of questions (see, e.g., Carl 2021b). However, the need to address translation as situated cognitive action instead of as something that can be isolated from the environment has led to the development of a rich new research tradition: socio-cognitive translation research. Interestingly, a somewhat similar inclination can be observed in linguistics, where the tradition of treating semantics (as the context-independent meaning) and pragmatics (as the context-dependent meaning) as separate sub-disciplines has perhaps begun to give way to the new field of cognitive linguistics, which looks at meaning-making as a situated process, in line with the situated or embodied cognitive science (see Evans and Green 2015).

When applying the socio-cognitive lens, as is being done in this dissertation, the question of translation as a cognitive activity is approached from a new direction: through investigations of the working environments, overall production processes and collaborative aspects of translatorial action. Translation is seen as an activity that is perhaps impossible to separate from its environment: the tools and people that form not only the setting for translation, nor even its preconditions, but actually a part of the translation professional's cognitive system being employed in the task of producing a translation. After some decades of translation process research predominantly carried out in laboratory-like conditions, aiming to remove

environmental impacts from the equation in order to observe translators' mental processes in as pure a form as possible, the socio-cognitive approach constitutes a brisk turn to the other direction. Instead of seeing the environment as a distraction and a limitation, socio-cognitive research addresses it as a resource and a component of the cognitive process. In a series of research projects employing the socio-cognitive approach, Hanna Risku and her research group were front-line operators in this turn, wishing to promote the investigation of translation practice with an ethnographic lens, not aiming for laboratory conditions (Risku, Rogl, and Milosevic 2017, 3). This stance resonates well with how the tradition of context-independent laboratory experiments has been criticized in the field of psychology: human behaviour is essentially situated, and cannot be studied in a laboratory environment pretending that the environment is neutral. It can be argued that there is, in fact, no such thing as a neutral environment that would not have an impact on the test subject's behaviour. For this reason, laboratory research that works well in natural sciences has serious limitations when adopted in the study of human behaviour. This problem is known in psychology as the 'real-world or the lab' dilemma (for a recent discussion, see e.g. Holleman et al. 2020).

Traditional translation process research has rather tended to avoid discussing its assumptions and underlying theories of cognition; according to Muñoz (2016b, 8), researchers wanted to steer away from "theoretical depth and clash" to allow focusing on shared ground and making progress collectively. Carl (2021a, 341) confirms that "TPR has mainly developed methodologies for empirical research and has not, in general, made any particular theoretical or representational commitment." It could also be speculated that cognitive theories have not been discussed because researchers have not seen the need to question the classical computational information processing paradigm, wanting to maintain the view of the translating mind as a computer that processes language. It is, after all, only natural that a theory based on the assumption that the mind is a machine designed for the manipulation of representations should be considered well suited for studying translation, which is essentially comprised of the manipulation of linguistic representations. Combined with the Cartesian idea of a mystical mind that is separate from the body, an idea "so ingrained in Western thought that we still don't know what the mind is" (Muñoz 2016b, 2), the classical cognitive paradigm has long defined cognitive translation research – and perhaps limited it.

As the new paradigms of cognitive science have started to develop, translation scholars have widened their views accordingly, recognizing the value of other conceptions of what cognition – the mind – is. The potential of the embodied or

situated paradigm in explaining the cognitive aspects of translatorial action has been examined by several theorists and empirical researchers, whose diverse viewpoints have contributed to the development of a new branch of cognitive translation studies. The most prominent of these scholars have been Hanna Risku and Ricardo Muñoz Martín; the latter has developed his ideas into a school of thought called cognitive translatology.

In this subchapter, I will discuss the socially and situationally based branch of cognitive translation studies, starting from the concepts of *translation act* and *translation event*. The theoretical difference that has been made using these two concepts has been questioned, which I believe reflects the fundamental changes in the way of thinking about translation that have been brought about by the new cognitive paradigm. In the final section of this chapter, I will trace some of the most important steps in building the new research tradition of situationally oriented (4EA) cognitive translation research, with primary focus on the developments offered by Hanna Risku and Ricardo Muñoz Martín.

2.2.1 Inseparable acts and events?

Adoption of the situated branch of cognitive theories entails some theoretical standpoints that differ from what has been previously presented in translation studies, sometimes even taken for granted. One of these is the separation of translation act, which refers to the cognitive effort of a translator – in other words, what goes on in the brain – and translation event, which is defined as a social entity, comprised of the translator and other agents as well as artefacts and organizations (Englund Dimitrova and Ehrensberger-Dow 2016, 10). These concepts were first presented by Gideon Toury (1995; 2012), who discusses two perspectives to translation, a mentalist and a situational approach, and proposes to separate them by asking the following question: "[Is the focus] on the internal structure of the process or on its embeddedness in a particular context?" (Toury 2012, 67). If the focus is on the internal process, we are looking at the translation act, and if the focus is on the situation, the environment and the social context, we are talking about the translation event; the research questions formulated for these will be different (ibid.). Toury sees the relationship of these two concepts as that of containment, in the sense that the event also includes the act, since acts can only be performed in particular situations (Toury 2012, 67–68). Chesterman (2013, 156) maintains the separation of the two concepts and emphasizes that the event is

observable, while the act is not. In translation process research, methods for investigating the unobservable mental processes have been developed, but the fundamental difficulties of studying "the black box" of translation professionals have not been solved.

Other theorists have subsequently questioned the validity of the basic assumption that translation acts and events should be studied separately. Both Toury and Chesterman already saw a strong relationship and even an overlap between the two (Chesterman 2013, 156); Birgitta Englund Dimitrova and Maureen Ehrensberger-Dow have further contributed to an understanding of how the two concepts come together. In 2013, they edited a special issue of *Translation and interpreting Studies* together with Séverine Hubscher-Davidson and Ulf Norberg, naming their introductory article "Describing cognitive processes in translation: Acts and events". The edited book published of the same collection of articles two years later (Ehrensberger-Dow et al. 2015) bore the same title. In the Introduction to that book (Englund Dimitrova et al. 2015), the editors discuss translation acts and events as two different fields of study. They recognize the potential usefulness of combining the two – "a potential of rapprochement and perhaps cooperation" (Englund Dimitrova et al. 2015, 2) and cite Risku and Windhager (2013) as an example of research placed at the interface of translation acts and events.

What is particularly interesting is that Englund Dimitrova et al. (2015) recognize changes in the translation profession as the reason why combining cognitive and social perspectives could be useful:

> The relevance of such potential convergence seems especially clear in view of the rapid changes in the working conditions of translators and interpreters. Increased use of technology, specialization of translation work processes in large enterprises as well as the outsourcing of translation tasks are just some factors which characterize the development of modern translation professions. How those changes in the sociological translation event impact the cognitive translation act is a fruitful avenue for future study. (Englund Dimitrova et al. 2015, 2)

Of the factors listed in that citation, the increased use of technology is perhaps the most important for my own research. It is reflected not only in individual work processes as the actual technological tools for the trade but also in the changing social aspects of translation work as channels enabling varied ways of collaboration, including the availability of legacy translations via the translation memory database or, as has been observed in the present study, using the digital revision file as a fast channel for communicating translation solutions between translator and reviser. Although the focus of my work is on the social aspects of

distributed cognition, these cannot be isolated from the technical tools in a thoroughly technologized working environment in which the socially distributed cognitive system operates via technical communication channels.

The changes in both the cognitive activity and the interaction are also recognized in later work by Ehrensberger-Dow and Englund Dimitrova (2016, 1, 10), who find that the situatedness of the translation act had by then gained increased focus in their work; due to the changes in how translation work is organized, they even consider combining the cognitive and social levels to be "a research imperative" (Englund Dimitrova and Ehrensberger-Dow 2016, 10). They do not, however, see the need to wholly discard the distinction between acts and events.

Another stance is taken by Muñoz (2016a), who claims that the concepts of translation act and translation event "may be adequate to map some of the main areas of translation studies, but that using them within the cognitive study of translating and interpreting would be misguided" (Muñoz 2016a, 146). Muñoz (2016a, 154) argues that making a division between acts and events "inherits several assumptions about the nature of cognition and the scope of analysis from outdated cognitivist approaches that many current researchers would not subscribe to". As was mentioned above, Chesterman (2013, 156) maintains that one of the most important ways in which translation acts and events can be separated is that acts cannot be observed, and events can. Muñoz (2016a, 154–55) points out that data on translators' behaviour, including use of the Internet and typing, can and have been used for studying both translation acts and translation events; the assumed difference in the time scale, with acts being only seconds long while events last hours or days, also does not seem to hold in translation studies literature. The distinction thus does not stand the test of theoretical and methodological consistency, particularly when looked at from the perspective of situated theories of cognition.

In light of all that has been said in this subchapter, and adopting the situational paradigm of cognitive science, I agree with Muñoz in that the boundary between translation act and translation event serves some theoretical purposes, but when studying translatorial action in the real world, the act mixes with the event to such extent that it would be useful to question the distinction, perhaps even to discard it. Translation acts are not only deeply embedded in a real-world situation, but in fact inseparable from it. When we accept this premise, we are more likely to accumulate a good understanding of the whole translation process instead of just parts of it, and to find out what works in practice, not just in theory.

2.2.2 Socio-cognitive translation research today: extended translation and cognitive translatology

The situated paradigm of cognitive science was introduced to translation studies relatively early, more than 20 years ago, by Hanna Risku (2000) in her conceptual paper in German entitled "Situated Translation und Situated Cognition: ungleiche Schwestern"; the same ideas have been presented in English a little later in Risku (2002). Risku (2000) asks where the boundaries of the translating system lie, and calls for a research approach that is based on an even deeper understanding of the context's role for translation; this approach would be inspired by situated cognition and would include the study of the social organisation of the work as well as the artefacts being used. Around the same time, and without reference to Risku's (nor, it appears, Hutchins's or Clark and Chalmer's) work, Barbara Dragsted worked on her PhD related to the implications of segmentation for translation; in an article produced as a result of that work, Dragsted (2006) described the combination of a translator and a translation memory as an instance of distributed cognition.

A few years later, Risku (2004; 2009) answered her own call and published a thorough description of the complex working processes of a translation agency that specializes on managing technical translation projects, complete with an account of the working environment and the tools being used. Based on the description, Risku (2009, 240) confirms that in this system, knowledge and information are externalized into digital systems with the purpose of easing the burden of cognitive work and supporting collaboration; without externalization, such complex tasks would not even be possible. As Risku (ibid.) states, these findings are extremely well in line with the basic tenets of situated cognitive theory.

Hanna Risku, together with her research group, has since continued the theoretical development and empirical research of socio-cognitive translation studies under concepts such as extended translation (Risku and Windhager 2013; Risku 2014; Risku, Rogl, and Milosevic 2017; Risku and Rogl 2022). Risku and Windhager (2013) juxtapose an extended cognitive approach with developments in sociology of translation, which have applied actor-network and activity theories. Risku and Windhager (ibid.) observe that all these approaches develop similar ideas of (cognitive) action embedded in the body and the environment, and share similar methodologies (see also Risku and Rogl 2022, 38); they also suggest extending the idea of a network from people to technological tools as they have become a major part of translation operations. Risku thus weaves the new cognitive scientific approach into existing translation theories.

The same principle of combining the new approach with established ones continues as Risku (2014) describes her research group's new study that investigates translation as cognitive action embedded in a specific environment, but does not seem to fully adopt the tenets of the situated or embodied cognitive paradigm: in the research design, cognition is defined as something restricted to an individual's thinking processes, past experiences etc. Risku et al. (2017, 3) refer to the same research project as contributing to "expanding the established tradition of experimental translation process research (TPR) with an ethnographic approach that permits insights into the diversity and complexity of translation practice, aspects that cannot really be reconstructed in a laboratory setting". These definitions reflect a desire to expand the existing research, not to discard or undermine it, even when introducing new principles and approaches. There is room and a need for both traditional and new theories, together building a more holistic picture of what translation as cognitive action is – although this harmonious picture has also been challenged, as recounted by Risku and Rogl (2022, 39ff.).

As was mentioned above, Ricardo Muñoz Martín has coined his approach to cognitive translation studies as cognitive translatology, which he has defined as "the subset of translation studies focusing on the description and explanation of translation and interpreting processes" (Muñoz 2010a, 145). The aim of translatology must be the improvement the quality and procedures of translation, among other things (ibid., 146). While Muñoz doesn't specifically exclude any cognitive theories from his approach, he sees distributed cognition as useful for researching the collaboration of translation professionals in creating a single product, and for describing processes that include clients and revisers (Muñoz 2010b, 172).

My approach for researching cognitive collaboration in translation is not directly derived from either Risku or Muñoz; that said, I am naturally indebted to both. By choosing socially distributed cognition (SDC) as my theoretical framework, I have chosen to research the social aspects of translation within a cognitive approach, without the help of any sociological or network theory. I have also aimed at describing cognition as a genuinely distributed entity that exists as systems larger than an individual, instead of using models in which an individual's cognition is merely embedded in its environment or connected to other people or technical systems. The same objects of research can certainly be investigated using several other theories and models, including practice research and any sociologically based approaches; the fact that I have in the present work opted for

socially distributed cognition should not be interpreted as any statement of the relative value of different frameworks.

3 TRANSLATION REVISION

When describing the system of socially distributed cognition in professional specialised translation, the present work spotlights the work of the translation reviser in particular. In doing so, it builds on previous research into revision practices and the revision policies applied in the translation industry. This chapter recounts the most relevant findings in that area.

Concepts related to translation revision are used in a notoriously fuzzy way, with plenty of ambiguity and inconsistency. I will therefore first discuss the concept of revision as it has been defined and used in translation studies literature. In the second sub-section of this chapter, I will present the foci and results of the translation revision research that I have found most relevant for my own work.

3.1 Terminology

Text modification tasks are conceptualized in a myriad of ways; at times, it seems that everyone has their own idea of how the various terms should be defined. People working in the translation industry use terminology that has developed in the fast-paced everyday working environment, and the terms may not follow any systematic definitions. Several different terms may be used interchangeably (Rasmussen and Schjoldager 2011, 100) or to refer to different kinds of revision and editing tasks that are relevant in a company's specific service range and production system.

In translation studies literature, the term *revision* is used for the production phase in which another translator, a general linguist or, in some cases, a subject matter specialist checks the translation before delivery. The text or translation features that are processed may vary. *Other-revision* is synonymous with revision (Mossop 2014), and used when disambiguation from *self-revision*, carried out by the translator themselves, is necessary. Self-revision is a natural part of all translation and writing tasks but will not be discussed in the present work.

The international translation services standard ISO 17100 (International Organization for Standardization 2015) defines several revision-related terms: 'check', 'revision', 'review' and 'proofread'. 'Check' is defined as "examination of *target language content* carried out by the *translator*" (italics original in this and the following citations); there is no mention of what aspects of the target language content would be examined, and to what end. 'Revision' is defined as "bilingual examination of *target language content* against *source language content* for its suitability for the agreed purpose". Again, the definition does not specify what the reviser should pay attention to. The definition also does not comment on who performs the revision. In contrast with revision, 'review' is defined as "monolingual examination of *target language content* for its suitability for the agreed purpose". The definition of 'proofread' is consistent with how the term is used in publishing industries, referring to the last check before printing (or digital publishing).

What is particularly noteworthy in the definitions provided in ISO 17100 is the distinction that is made between revision and review: the first of these is bilingual examination, and the second monolingual. While differences between these processes have been investigated in translation studies (Robert 2013; Robert and Van Waes 2014), they have both been discussed under the term revision. This seems, in fact, to be the uncontested term used in translation studies literature for the specific workflow step in which someone else than the translator themselves examines the translation, regardless of whether comparison with the source text takes place.

Editing is not a term often used in translation revision studies. Brian Mossop (2014, 224) defines it as "reading a text that is not a translation (or is not being treated as a translation) to spot *errors*, and making appropriate *amendments*" (italics original). It should be noted, however, that in Article III included in this dissertation, the term has been used to refer to what was clearly revision. This terminological choice was made by me and my co-author Dr Hirvonen because we were comparing two very different translation contexts, audio description and specialised translation, and it seemed to us that using the term revision for the work setup found in audio description would have distorted the reader's understanding of the work. We therefore made an effort to choose a more neutral term. While editing is a term with a multitude of different meanings and uses, our use of the term in Article III is thus limited to referring to a work stage in which a translation (which, in the case of data provided by Dr Hirvonen, constituted producing audio descriptions of films) is revised.

In the present work, I follow the established definition of *revision* that encompasses all varieties: bilingual, monolingual, spot checks, linguistic checks and even content editing, if that is carried out at this stage of the translation workflow. The term is thus defined primarily based on its position in the workflow and the fact that the person performing it is someone else than the translator of the text. I have not discussed my informants' use of different terms referring to revision, which has been found to be varied in other studies by, e.g., Rasmussen and Schjoldager (2011, 100) and Uotila (2017, 44–45).

3.2 Previous research on revision policies and practices

Translation revision has received some attention in translation studies in the last 20 years. Several surveys have been carried out in different European countries to map the revision practices of language industry operators (Hernández Morin 2009a; 2009b; Rasmussen and Schjoldager 2011; Schnierer 2019; Korhonen 2021). In other studies, researchers have aimed to identify optimal revision procedures (e.g. Robert and Van Waes 2014) or examined the success of revisers in their task (Künzli 2006; 2007).

Of these research approaches, the surveys charting the revision policies and practices of translation companies are the most relevant for the present study. The earliest of these was the doctoral thesis of Katell Hernandez-Morin (Hernández Morin 2009a; see also 2009b), which presented results from a survey with 115 respondents from France, charting their opinions on whether revision is beneficial and necessary, and what would be possible grounds for non-revision, among other things. The next on the timeline, and perhaps the most influential of the survey articles, is the research project of Kirsten Wølch Rasmussen and Anne Schjoldager (2011) carried out in Denmark. Their study included a survey with 24 respondents, and 13 interviews with representatives from large companies which had already participated in the survey. The questions dealt with whether all translations are revised and if not, how translations are selected for revision; whether comparative or monolingual revision is performed; whether there are guidelines, and what the parameters are; who the revisers are, and who has authority; and what conception of translation quality prevails in the industry. With these questions, they set an example that subsequent studies have tended to follow. The third similar research project was Madeleine Schnierer's (2019) doctoral dissertation on revision practices in Austria. She focused on definitions of quality in practice, compliance with

translation industry standards, and the revision policies prevailing in the Austrian translation industry. My own survey, included in this dissertation as Article I, could be mentioned as the fourth similar work. In this account of what is known of revision policies and practices, however, I will focus on the results obtained in the first three studies.

All these studies indicate that revision is a widespread practice, even if it does not take place in all cases. Rasmussen and Schjoldager as well as Schnierer present similar results: nearly two thirds of Rasmussen and Schjoldager's (2011, 104) respondents say that they revise 91–100% of their translations, and Schnierer (2019, 189) reports that approximately 71% of her respondents subject all translations to revision – and that more than one round of checks were also common. However, in the interviews Rasmussen and Schjoldager found that some respondents who had claimed to revise all or nearly all translations only imposed this policy on in-house translations, and did not revise translations outsourced to freelancers. Hernandez-Morin's questions in general concern the respondents' views rather than actual practices, but only 33% of her respondents believe that revision should be always performed (Hernández Morin 2009a, 126). It seems that the quantitative results are, after all, inconclusive as the questions in these studies have been posed in different ways and the respondents have also understood them very differently.

As to the grounds for non-revision, Hernandez-Morin (2009a, 127) found that the limited scope of the text (which can be assumed to mean more or less the same thing as the properties conceptualised as text genre in Articles II and IV included in this dissertation) and the translator's sufficient experience are the most common reasons justifying this decision. Schnierer (2019, 190) adds the client's wishes to the list of common reasons, and Rasmussen and Schjoldager (2011, 103) also list the difficulty of the text, which may refer to specialised content or simply the length of the text.

Rasmussen and Schjoldager (2011, 106–7) found that linguistic correctness was the most prominent area of focus for revision among their survey respondents, although the subsequent interviews revealed that communicative aspects of the texts were also considered important. Hernandez-Morin (2009b, 142), on the other hand, found a much more balanced distribution between quality of writing ("Qualité rédactionnelle"), accuracy, linguistic correction and functional adaptation, placed in this order of importance by the respondents. The difference between the two studies is that while Hernandez-Morin gave her respondents alternatives to choose from, Rasmussen and Schjoldager used an open-ended question. We can

only speculate how much this influenced the results, but it is certainly possible that the Danish respondents would also have selected a wider variety of focus areas if they had received a list to choose from.

These surveys describing the European translation revision landscape provide plenty of extremely valuable information about the practices and the reality of revision, but comparisons between them are nearly impossible. The research design, the respondent populations, the formulation of questions, and the foci of the studies are widely different. While the responses are in all three cases presented as quantitative diagrams, I believe that they should not be interpreted as genuine quantitative results. This is not due to any serious defect in the studies themselves, but rather to the difficulty of defining and disambiguating the phenomena under investigation, and the impossibility of ascertaining that the estimations given by the respondents are, in fact, an accurate reflection of the actual practices. Therefore, the value of these studies lies in the qualitative understanding of the diversity and flexibility found in revision practices in all these national translation industries.

4 UNDERSTANDING THE INHERENT CREATIVITY OF TRANSLATION

In translation studies, creativity has been mostly discussed in connection with certain text genres that are considered to be creative, such as literary translation, while others are not. The same tradition continues in the research of transcreation, which could be defined as translation resulting in a text that "will display elements of innovative intervention" (Katan 2021, 142). The term transcreation is most frequently used when referring to marketing translations (Pedersen 2014; 2017). Theoretically, transcreation does not differ from any other type of translation, since crafting the text for a new audience is always a part of the translation professionals' work. Translation theorists such as Werner Koller (1992) and Paul Kuβmaul (2000) have promoted the idea that there are different types or levels of creativity, but Kuβmaul (2000, 29) also states that when a direct translation for a source text item is available in the target language, no creativity whatsoever is required.

In the present work, I reject the division of translation tasks into creative and non-creative ones. Instead, I consider all translation as inherently creative work, even when that creativity may not be evident at first glance. It is true that a part of a text can sometimes be rendered in the target language using very similar wording and constructions. It can seem that at that point, translation requires little creativity: an obvious solution is readily available. However, there may be more to the case than meets the eye: the translator (or reviser) may have considered several alternatives, evaluating and rejecting them in a creative problem-solving process – perhaps a very rapid one – before choosing the construction that is the closest to the one used in the source text.

Assuming that some translation types or solutions are non-creative would therefore be a mistake; but it would be just as wrong to say that all translation tasks are creative in the same way. The dichotomy of creative and non-creative translation should therefore be replaced by a deeper understanding of different kinds of creative tasks, and different types of creativity that they entail and require. Each creative task, and each translation task, has its own creative characteristics.

Understanding these will help the translator to perform their task with greater success.

I will now explore what psychological research has to say about the nature and types of creativity. My aim is to show that creativity is a rich phenomenon that comes in many shapes and sizes, and to consider some characteristics of translational creativity in light of these categorisations. The result is by no means an exhaustive discussion of translatorial creativity; it is only the first step into a question that merits much more theoretical development and research.

Creativity researchers have long ago given up the idea of creativity as the property of creative geniuses who produce great works of art. The phenomenon is now understood to be much more diverse than that, and subject to many conditions and constraints such as working towards an expected outcome; even artists, who may be the most prototypical agents of creative work, do not always work without constraints, but often produce what buyers want. In this section, I first introduce a general definition of creativity, and then present some theories that aim to account for differences between creative tasks in ways that could be useful for tackling the specific type of creativity found in translation. With the help of these theories, I make an attempt to chart translation's – and revision's as part of the translation effort – place among other creative undertakings.

The beginning of creativity research has often been traced to J.P. Guilford (1950). He lists several characteristics that give an individual creative abilities; these characteristics include, among others, the tendency to have novel ideas, the flexibility of mind, the abilities of synthesising and analysing, and the ability to evaluate ideas (Guilford 1950, 452–53). Modern creativity research continues on this track and defines creativity as something that is at the same time novel and appropriate to the task (see, e.g., Kaufman and Glăveanu 2019, 27), and is produced in a process that includes divergent and convergent thinking; divergent thinking produces alternative solutions, and convergent thinking evaluates them and chooses the most viable ones (Kaufman and Glăveanu 2019, 32). Moreover, creativity is often said to require knowledge or even expertise in the subject matter – although too much knowledge has also been seen as restricting creative thinking (Cropley 2006).

Useful conceptualizations of different types of creativity include the four C model of creativity (Kaufman and Beghetto 2009; Kozbelt, Beghetto, and Runco 2010), functional creativity (Cropley and Cropley 2010) and the matrix of expected, proactive, responsive, and contributory creativity (Unsworth 2001; Unsworth and Luksyte 2015); all of these help us to place translation on the map of creative

activities. For a summary of other ways of classifying different kinds of creative contributions, see, e.g., Sternberg et al. (2001).

Kaufman and Beghetto (2009) build on the dichotomy of what have been called Big-C creativity (the work of a creative genius) and little-c creativity (everyday creativity that nearly everyone possesses). They introduce two new categories: mini-c and Pro-c. Mini-c relates specifically to learning, and is defined as the "*novel and personally meaningful interpretation of experiences, actions, and events*" (Beghetto and Kaufman 2007, 73; italics original). The category that is most relevant for translation is, however, Pro-c creativity. A person who engages in Pro-c creativity creates because it is part of their work; their skills in the specific area are superior to those of the average person exercising little-c creativity, but not high enough to be considered worthy of a Big-C status (Kaufman and Beghetto 2009, 4). The existence of professional creativity as such does not, of course, prove that translation would be one of the professions connected with such creativity. Other concepts and models are needed as well.

Arthur Cropley (2018, 47) dates the birth of a new, purposeful conception of creativity to the launch of Sputnik: the world suddenly woke up to a new kind of creativity, that of engineers, industries, or politicians. According to Cropley and Cropley (2010, 302), functionally creative products "derive from existing knowledge and […] are achieved by means of systematic hard work". The concept of functional creativity aims to make a difference between using creativity for achieving a purpose, and using it for aesthetic pleasure (Cropley and Cropley 2010, 301). The functional angle is particularly important in organisational creativity, extending all the way to what Cropley (2018, 50) calls demand-side creativity, propelled by the desire to make a profit. The idea that creative products should be useful has of course been ingrained in psychological creativity research from the start, already incorporated in J. P. Guilford's (1950) seminal article on what creativity is; in that respect, the idea of functional creativity should fit well into the overall picture of creativity.

Kerrie Unsworth (2001) found that the traditional definition of creativity as the production of ideas that are new, useful and appropriate to the situation was too homogenous, and didn't promote in-depth analysis of the processes and factors of creativity (Unsworth 2001, 289). When studying creativity in organizations, she argues, more detailed categorization is needed – and it must serve the understanding of processes, not just the end results (ibid.). For this purpose, she developed her matrix of four types of creativity (Table 3) that differ from each other in two respects: firstly, whether the motivation for engaging in the creative

process is external or internal, and secondly, whether the problem being solved is open (unspecified) or closed (specified). The matrix can be applied to different kinds of tasks (which type of creativity does a task typically require?) or to people (which type of creativity comes naturally to them?).

Table 3. Matrix of creativity types by Unsworth (2001, 291)

	External driver	**Internal driver**
Open problem	Expected creativity: You are required to produce a solution to an unspecified problem.	Proactive creativity: You volunteer to produce a solution to an unspecified problem.
Closed problem	Responsive creativity: You are required to produce a solution to a specified problem.	Contributory creativity: You volunteer to produce a solution to a specified problem.

I will begin with the categories that are the furthest away from the kind of creativity that manifests in the translatorial action in general or, more specifically, from the kind of translation carried out in the language industry. Proactive and contributory creativity assume that the individual takes initiative and either initiates creative action (proactive creativity) or participates in such action (contributory creativity) (Unsworth 2001, 292). Since translations are rarely done without an order or at least some external requirement, these types are not usually relevant for translation studies. Contributory creativity could perhaps be found in cases where a colleague volunteers to help with a particular translation problem.

Expected creativity refers to situations in which a person is expected to perform creative tasks as part of their work, but the problem to be worked on is not predefined (closed); instead, the person must discover and define it for themselves (Unsworth 2001, 292). Examples from professional contexts could include various development, design or engineering tasks (Unsworth and Luksyte 2015, 281). The division between open and closed problems is not a dichotomy, but rather a continuum (Unsworth 2001, 290; with reference to Getzel and Csikszentmihalyi 1967). In language industry contexts, translation tasks in which content editing is expected, such as transcreation tasks, could be seen as problems that are somewhat open, as the translator may be given a lot of freedom in planning and executing the textual changes that they deem necessary. In many professions, the actual work tasks range from closed to open; architects are a good example of this (Unsworth 2001, 291). Both architects and translators create their products from existing building blocks, so to speak, and under certain restrictive conditions. While translators may never engage in tasks that would be as open as some of the more

creative design work performed by architects, some variation may still be observed between different translation projects.

Most translation tasks, however, seem to be closed problems, and would thus fall into the category of responsive creativity. Translation professionals receive their tasks from clients (often via project managers), and the methods for how the tasks are to be performed are fairly clear. The translator is expected to convey the essential meaning of the source text in the target language. They are also expected to follow generally accepted genre-specific stylistic conventions and terminological practices. On the other hand, they have considerable freedom in how they formulate the text on a linguistic level, adjusting nuances of meaning and style as they see fit.

In the above, I have discussed creativity in specialised translation in general. But what about translation revision as a (potentially) creative task? If we accept that revision means reading a text and correcting errors, it certainly has very limited creative aspects. If we, however, consider revision to be a part of the overall translation production effort in a distributed cognitive system, as suggested in the present work, the creative potential of revision could be seen in an entirely different way. Revision is translatorial action, and revisers engage in creative problem-solving. The reviser's problem-solving process does not always lead to changes being made in the translation, which renders the process invisible – but not non-existent.

To sum up, I propose that translation and translation revision could be understood as instances of Pro-c creativity with a strong functional trait that is usually engaged in to meet a demand. Using Unsworth's matrix (Table 3), translation meets the definition of responsive creativity, but may in some translation project types also take on characteristics of expected creativity. It should also be noted that translation is functionally creative work in two ways: in a wider sense, translation as a type of task has a function – to produce a new piece of communication. In a narrower sense, translation is functional because each target text must fulfil its function, which has an impact on how the translation is carried out, as described in functional translation theories (e.g. Reiβ and Vermeer 1984; Holz-Mänttäri 1984).

5 DATA AND METHODS

5.1 Data

In an inherently interdisciplinary field of study such as translation studies, methodological innovation and epistemological considerations must be constant objects of discussion. The varied research traditions that have so far emerged in translation studies all have their favourite types of data and methods, but new ways of eliciting relevant information are being sought and old ways reconsidered everywhere you look. In the same spirit, I have used both established and more innovative data and engaged in frequent epistemological re-evaluation of my datasets and methods in the course of the research project being described here. The accumulation of data that allowed the examination of the research object from several different perspectives was an essential part my overall PhD project.

The datasets collected for this dissertation project included 1) a survey directed at language service provider companies in Finland, 2) semi-structured interviews with translation professionals, 3) guided tour protocols from a simulated translation revision situation, and 4) authentic translated and revised texts. The aim was to gather diverse datasets that would support triangulation in order to create a picture, as realistic as possible, of the object being studied: the part of the translation workflow in which professionals collaborate to create a final translated text.

Although the importance of a situated research approach is recognised in this dissertation, the data collection methods do not include direct observation of processes or practices in genuine working environments. While such data would have been of great value considering the research objectives, it was not possible to obtain at this time. At the point when the research project had reached a level of maturity where it became obvious that observational data would be valuable, COVID-19 restrictions were already firmly in place and were expected to continue indefinitely. I therefore turned attention to the other datasets and made an effort to plan them and their use so as to allow getting as close to my research objects as I could without actual on-site observation of operations.

5.1.1 Dataset 1: A survey of revision at LSPs

The purpose of the survey was to gather information about the revising and editing services of Finnish LSPs in order to build a basis for further research. In addition to basic background information about the companies, the questions dealt with their existing service range and its development, the revision procedures that they employed, and their creative translation and editing services. The scope of the survey was broad, as I was at the very beginning of my research project and the responses to any of the questions were expected to open up new avenues of research and raise many new questions.

The survey was carried out using an online tool. Respondents were sought from 26 Finnish LSPs; 11 of them responded (response rate 42.3%). Only one respondent from each company was sought in order to get an overview of the Finnish translation industry without the risk of overemphasising the operating practices of some individual LSPs. The LSPs were selected based on public turnover information and the availability of contact information. I did not impose a fixed turnover threshold, but looked at information from several years and included companies whose annual turnover was consistently at least several hundred thousand euros. The LSPs were contacted using various methods, primarily email. To get a satisfactory number of responses, I also asked some personal acquaintances at various LSPs to help find suitable respondents.

The survey contained 29 questions of various types; both open and closed questions were included. The language of the survey was Finnish. To ensure anonymity, the respondents were not required to provide the name of the company, nor were they asked to reveal their identity. Preservation of anonymity is also the reason why I will not include a detailed description of the size, service range or any other operations-related data of the companies here; within a field as small as the Finnish translation industry, this might make it possible to identify the responding companies.

Although the number of responses (11) was not high, they all represented different companies and thus produced if not an extensive, at least a satisfactory overview of different types of Finnish translation service providers. Statistical analysis is of course not possible based on such a small number of responses. Criteria such as the number of employees, service and language pair range, and countries of operation were used to divide the respondent companies into two groups: major operators (5) and minor operators (6). All the major operators had the resources and networks for potentially producing translations between any

languages; they had operations in several countries, and their service offering included creative translation services such as transcreation. Having five such companies among the respondents means that companies of this category were well represented in the survey data.

Dataset 1 was used in Article I, and comprised the entire data for that article.

5.1.2 Dataset 2: Semi-structured expert interviews

Dataset 2 consists of 20 semi-structured interviews carried out in two batches. The language of the interviews was Finnish. When discussing concepts, both English and Finnish words for them were often mentioned. The transcription was orthographic (verbatim), including pauses and expressions of emotion such as laughter. Some filler words were left out, particularly when repetitive; this practice also supports anonymity, as a frequently used filler word could in some cases make the speaker recognisable.

The first three interviews took place face-to-face in March 2020. The work was then interrupted by COVID-19, and the rest of the interviews were conducted online in autumn 2021. The list of potential interviewees was compiled by contacting various LSPs and their representatives mainly via the professional networking media LinkedIn. I had started out with the intention of interviewing two clear-cut professional groups, managers (or decision-makers) and revisers, but it soon became evident that while managers were a relatively easily identifiable group, people who worked solely as revisers were considerably more difficult to find. I then revised my objective and defined the latter group as people who spent a large proportion of their working hours revising translations. This resulted in more variation in the professional roles of interviewees than was originally planned.

Table 4. Interviewee profiles and the length of the interview recordings

ID	Employment status	Position	Experience	Recording length
RS1	Employed at LSP	Reviser	30+ years	0:41
RS2	Self-employed	Translator/reviser	20 years	0:46
RS3	Self-employed	Translator/reviser	6 years	1:03
RS4	Employed at LSP	Translator/reviser	25+ years	1:24
RS5	Employed at LSP	Manager/project manager	20 years	0:53
RS6	Employed at LSP	Reviser	8 years	1:27
RS7	Employed at LSP	Translator/reviser	20+ years	1:05
RS8	Employed at LSP	Manager/sales	20 years	1:01
RS9	Employed at LSP	Manager	20+ years	0:52
RS10	Employed at LSP	Translator/reviser/project manager	10 years	1:19
RS11	Employed at LSP	Translator/reviser/manager	25 years	1:02
RS12	Employed at LSP	Manager	20 years	0:52
RS13	Employed at LSP	Specialist/manager	30 years	1:01
RS14	Employed at LSP	Translator/reviser	25+ years	1:03
RS15	Employed at LSP	Manager	15+ years	1:03
RS16	Employed at LSP	Project manager/reviser	Under 5 years	0:53
RS17	Employed at LSP	Reviser/translator	20+ years	0:58
RS18	Employed at LSP	Translator/reviser	25 years	0:58
RS19	Employed at LSP	Translator/reviser/manager	30 years	1:10
RS20	Employed at LSP	Translator/reviser	15+ years	0:58

Table 4 lists the employment and professional experience information of the interviewees as well as the length of the interview recordings. Note that I choose not to list the gender of my research subjects as that information is not relevant for my research. The titles held by the interviewees were varied and are listed in the table in a simplified format. When planning and carrying out the interviews, I maintained the original idea of dividing the informants into two groups based on preliminary information: managers and translators/revisers. Dividing the interviewees into these two categories proved to be less simple than predicted. The interviews revealed that some of the informants participated in several different task areas from translation all the way to managing the company. Project managers are also difficult to classify in a binary system: project management is a task area that differs from both translation and actual managerial positions but may in some cases be combined with either one of these in one person's daily work.

In addition to standard thematic sections that were included in all interviews (sections A, D, and E in the list below), each of the two groups had interview

sections dedicated to them (sections B.1 and C.1). These sections constituted the most important part of the interviews. In section C.1, the interviewees who were primarily translators/revisers were asked to describe how they carry out a typical revision task and how they collaborate with translators when acting as revisers. The overall perspective of the questions was that of a practitioner. Managers, on the other hand, were asked to talk about business-level decisions, and to discuss their views on how revision should be carried out (section B.1).

The interview protocols contained the following sections, of which B.1 and C.1 were directed at different target groups (managers vs. the translators/revisers):

A. Background information: role and current responsibilities, educational background

B. Managers' views

    1. Revision practices

        i. Good revision practices

        ii. The distribution of work between translator and reviser

        iii. The distribution of authority on the final translation

    2. The concept of translation and the relationship of translation and creativity

        i. Definition of translation

        ii. The relationship between source and target texts

        iii. The primary stakeholders of the translation outcome

        iv. Creative elements of translation

C. Translator/reviser's views

    1. The work of a reviser

        i. Description of revision work in general

        ii. The distribution of work between translator and reviser

        iii. Description of a typical revision task procedure

        iv. Collaborative networks

        v. Collaborating with translators

        vi. Distribution of authority between translator and reviser

    2. The concept of translation and the relationship of translation and creativity

i. Definition of translation

ii. The relationship between source and target texts

iii. The primary stakeholders of the translation outcome

iv. Creative elements of translation

D. Creative translation services and quality assurance: How can good quality be determined for translations in which extensive creativity is used (e.g. content editing)?

E. Changes in the translation industry and the future of human translators

1. Description of changes that have taken place in the translation industry during the interviewee's career

2. The role of human translators in the future

Each theme began with open-ended questions, and more detailed questions followed them. Support materials were shown during the interviews conducted in autumn 2021; these have been listed in Table 5 (on the next page). Slight changes were made to the interview protocols between interviews based on accumulating experience of successful questions. There were also differences in how the various themes and questions were emphasized in different interviews, as the informants responded differently to the questions and the discussions were allowed to evolve in a natural manner.

Table 5. The supporting materials shown during 17 interviews (translated from Finnish by the author)

Supporting material	Content of the supporting material
A list of revision parameters	• Correspondence between source and target • Everything has been translated • Logic of the text • Factual errors • Smoothness and cohesion • Stylistic suitability for users • Stylistic suitability for the genre • Terminology • Idiom • Linguistic correctness • Compliance with the client's style guide • Text layout • Fonts • Organization of the text as a whole (headers, footnotes, table of contents, etc.) (Mossop 2014; Korhonen 2021)
Three concepts of quality	1) Customer satisfaction 2) Suitability for the purpose/user 3) Protecting the "purity" and status of the target language (Mossop 2014, 23–24)
How creativity is understood in psychological research	• Creativity is action that results in the generation of something that is new and appropriate to a purpose. • All people are creative at least to some extent. • Creativity is a part of everyday life and workplaces. • The motivation for creativity may be internal or external. • The creative task may have a clear goal, or it may be open. • Creative action includes searching for solutions AND evaluating and choosing an appropriate solution.

The interviews were used as data in Articles II (all interviews) and III (the first three interviews). All the interviews were also used to provide background information for Article IV. In Article II in particular, the focus was on specific sections of the interviews.

5.1.3 Dataset 3: Guided tour

Table 6. The guided tour dataset

ID	Revision language	Professional status of the reviser	Guided tour language	Recording
1	FI	Employed at LSP	Finnish	0:27
2	EN	Self-employed	Finnish	0:51
3	EN	Self-employed	English/Finnish	0:39

Several considerations led to choosing a guided tour (see Olohan 2021, 125) in a simulated translation revision situation as one of my datasets. This data collection method combines characteristics of an interview and observation. As the data type closely resembles the more familiar think-aloud protocols (TAP), and is somewhat novel in a translation studies context, I will discuss it here with some thoroughness. In fact, this dataset has been described in Article III as think-aloud verbalizations that have been used in a novel manner not to learn about the internal cognitive processes of the participants, which is how TAPs are usually used, but to obtain information of the participants' working procedures and use of communication and information resources. Since the publication of that article in 2021, I have understood that considering the data gathering procedures as well as the purpose of the data, this data collection method should be more appropriately called a guided tour. I have described the setup in Article III as follows:

> Three highly experienced editors (further sessions were cancelled due to COVID-19 restrictions) were asked to use their regular working procedures and tools to edit a text with the goal of producing a well-written online article fit for publication. The editors were told that the text had been translated by a professional, and that the client wanted the style to be clear, natural and to the point and would pay for one hour of work, but was not currently available for direct queries. No instructions on specific working methods were given, which is usual in the CST context (Korhonen 2021), and the editors were not told who would process the text after them. The editors worked on their own computers and in a familiar working environment, and were asked to verbalize all thought processes, including emotions. A short warm-up text was used before the actual editing simulation to familiarize the editors with working while thinking aloud. (Korhonen and Hirvonen 2021, 258)

Orthographic (verbatim) transcription was used for these recordings, with indications of pauses and their lengths, non-verbal and partial utterances, and

expressions of emotion. The transcription was more detailed than that of Dataset 2, even though both can be called orthographic. An account of the editing actions taking place during the verbalisations was added to the transcriptions.

The goal of this dataset was to accrue information on how translation revisers work: their actual working procedures, which tools they use, what kinds of problems they identify in the text and how they deal with those problems (although a full investigation of many of these questions could not be included in the present work). All these aspects of the revision effort were also to be investigated from a cognitive perspective, adopting the theory of distributed cognition and looking for evidence of how a system of distributed cognition may be constructed in a translation environment, and how translation professionals act as part of that system. The object of study was thus reasonably well available for observation, at least compared to the object of study in other kinds of cognitive translation studies in which the goal is to learn about the inner workings of translation professionals' minds.

A simulation setup was chosen over observation of genuine work situations because of the practical problems with obtaining work process data from a completely realistic work situation. There are at least two major problems. The first of these is one of schedules; permission from the translation client would have to be asked for using their project in such a setup, and this would probably result in a delay in the project, which might cause problems for the translation business. Secondly, the permission process would steer increased attention towards that particular translation project, which might lead to a situation in which it also receives more attention from the reviser than it otherwise would. This would of course undermine the hard-earned authenticity of the situation. Setting up the video recording equipment that was necessary to elicit detailed information about the revision process already caused disturbance; the permission process would have further accentuated the impact of increased attention.

Due to these considerations, I concluded that a simulated situation would offer data that would be so close to authentic ethnographic data that the difference would be negligible considering the current research objective. I designed a data collection process in which I used translated texts from other projects, carried out in another translation agency. Permissions had been asked from the translation agency as well as the client whose texts were used. I also wrote a typical revision brief, which contained as little information as experience from the translation industry has shown to be the case in most projects.

The guided tours were video recorded with the video camera directed at the participant's computer screen. The purpose of the recording was to avoid having to install screen capture software on the participants' own computer, which could have led to technical difficulties for the participants. The three revisers worked in physical environments in which they often work: one chose to perform the simulated revision task at their own office workplace, one at their own home, and one at a public café in which they stated having often worked before. More importantly, they worked on their own computers, using their familiar software tools and information sources. Two of the three participants were independent entrepreneurs and were therefore paid their standard hourly rate. The third was employed by an LSP and was able to carry out the task on their working time.

The guided tour was carried out as a simulation and not in an authentic situation, and is therefore neither pure ethnographic observation nor a laboratory experiment. As such, it requires careful consideration of ecological validity, which is also the subcategory of validity that Braun and Clarke (2013) consider most relevant in the case of qualitative research. The other subcategories – construct validity, internal validity and external validity – are generally less important. In the following, I will discuss ecological validity mainly based on Mellinger and Hanson (2022), although they focus on slightly different studies. Mellinger and Hanson (ibid.) stress the importance of aligning the design of the research with its goals and take a strong stance against misconstruing ecological validity as mundane realism and overemphasising naturalistic tasks.

The main difference between the simulation that I designed and an authentic situation was that the text to be revised was provided by the researcher. This means that there was no communication with a client, nor a need to pay attention to a real-life customer relationship. While the familiar physical environment may not have been a crucial factor in creating a realistic simulation, the digital environment was all the more essential; if the revisers had been given a computer in which various functions and applications would not have been where the reviser was used to finding them, they would have been likely to perform the task in a very different manner. In their discussion of ecological validity in the context of cognitive translation studies experiments, Mellinger and Hanson (2022, 3) argue that the importance of using "authentic materials, equipment, or setting" in research experiments has been overemphasized. My own goal, on the other hand, was to get a realistic picture of the tool-related working processes of professionals, which made it necessary that they were allowed to use the exact same tools that they were normally used to having available.

Mellinger and Hanson (2022, 6) list a three-part definition of ecological validity based on Schmuckler (2001): 1) the setting of the experiment, 2) the stimuli that are used, and 3) the response demanded of the participants. It must be noted that as my experiment aimed at obtaining qualitative data, it had no actual variables that would be measured, whereas Mellinger and Hanson, and probably also the literature they cite, discuss experimental research which aims to identify causal relationships between such variables; it is therefore questionable whether all the same considerations apply here. Since my experiment – or rather, simulation – aimed at a naturalistic setup, however, I think Mellinger and Hanson's discussion offers a useful basis for considering whether I can genuinely claim ecological validity for it.

I designed the simulation first and foremost as a naturalistic task. Mellinger and Hanson's (2022, 9) primary concern for such studies is that researchers have a reduced ability to control the experiment in the sense of manipulating variables. Since my study does not require the manipulation of any variables – I did not change the time limits, or restrict the use of tools, for example – this concern is not relevant for me. Causal claims cannot be made in this type of study, and the results will mainly apply to situations that are very similar to the experimental setting (ibid.), but if causal claims are not the objective and the purpose of the experiment is to get information about one type of task, these aspects of the naturalistically oriented research setup are not problematic either.

Since I paid plenty of attention to making arrangements so that the participants would carry out the task "using their own computer equipment, in their own space, under typical time pressure, for their standard rate of pay" – as Mellinger and Hanson (2022, 9) list some of the typical characteristics of what they call mundane realism – I must take a critical look at my experiment to establish whether I have, in fact, only achieved mundane realism, and not ecological validity. According to Mellinger and Hanson (2022, 10), the latter can only be claimed if the participants "react as if the experimental setting were real, regardless of any artificiality"; the setting must not have any distracting features that would compromise the data. In my experiment, the most important feature that could be assumed to contain a risk of affecting the participants' reaction was the fact that since the text to be revised was not actual customer work, they did not have to take into account the impact that their actions and communications could have on a customer relationship. This could have led to a haphazard way of working. To avoid this, I emphasized the importance of the research project and the fact that the participants had been selected for the simulation due to their status as experienced professionals. As part

of the guided tour simulation, the participants provided information about how they would communicate with the client in an authentic situation; all these descriptions seemed realistic and valid based on my own experience of similar work.

The presence of a video camera and, of course, the researcher herself could also be mentioned as distracting elements, albeit necessary for gathering the data. One of the experiments was carried out in a café environment, which naturally resulted in some distraction, but nothing that wouldn't be a normal part of other working sessions that the participant has had at the same café. As far as I am able to judge, all the participants carried out the task with a high degree of professionalism. My presence as another translation professional may even have motivated them to do so: a professional is unlikely to want to seem anything but competent in the presence of another professional. Whether that could constitute a distortion of results in that the experiment perhaps then failed to reveal any shortcuts or weaknesses that revisers might sometimes succumb to, is of course possible. This must be taken into account when interpreting the results.

The fact that this dataset only includes three instances of guided tour simulations already prevents the making of any actual generalizations. Although each of the three settings can be described as typical for the participant who worked in it, it would have been untypical for the others. This dataset should therefore be treated as three case studies, which together provide us with relatively reliable information about the ways in which translations are revised in the current Finnish translation industry. Nevertheless, they should by no means be treated as an exhaustive account of what translation revision means even in this context. None of these considerations pose threats to the validity of the research setup as qualitative research (see Braun and Clarke 2013, chap. 12).

The guided tour dataset has been used in Article III together with the first three interviews. In that article, these data were combined and compared with video recordings of audio description (AD) teamwork processes and interviews with AD team participants, provided by Dr Hirvonen (for a description of Dr Hirvonen's dataset, see Section 6.1.3 of this summary). The goal was to study some characteristics of the systems of socially distributed cognition found in these translation contexts, with special interest in charting the common ground regarding the working methods and communication channels employed by the production teams.

Less visibly, the guided tour dataset offered important background information for the interviews that were carried out later.

5.1.4 Dataset 4: Translated and revised texts

To gather this dataset, several LSPs were asked to provide translated files which would display the source text, the translation, and the changes made by a reviser. The LSPs were also instructed to ask their clients for the necessary permissions for using the texts in research. I obtained a total of 10 translated and revised text files from three LSPs between 2020 and 2022. However, only seven of these texts displayed all the required information and were therefore suitable for an analysis using the method I chose. The total number of texts was rather small, mainly due to the strict confidentiality policy that LSPs exercise: customer texts are practically always treated as confidential and handing them over to researchers may require a laborious process of asking permission from several people. This makes it difficult to gather large datasets of LSP translations.

The LSP production workflow consists of several phases, most notably of the following: 1) the preparation phase carried out by a project manager or technical personnel, 2) translation, 3) revision, and 4) finalization and delivery. The translator may also go through the reviser's changes between phases 3 and 4. Revision files such as the ones included in this dataset are generated by the translator at the end of phase 2 and processed by the reviser in phase 3. If the reviser uses e.g. the Track Changes function of Microsoft Word to make the changes, the translator (or in some process models, the project manager) is able to accept or reject the changes as they see fit. The exact workflows and policies vary between LSPs.

All the seven files included in this dataset were exported Trados Studio revision files (for file layout, see Figure 1) that contain the translated text in a table format, designed to facilitate easy comparison of the source and target texts. The file format is intended for processing in Microsoft Word. From left to right, the table columns contain a translation segment ID number, information on the translation status and translation memory (TM) match level (in Figure 1: 0%, 83% and 99%, respectively) for the segment, and the source and target text segments. Segmentation is primarily based on sentence boundaries. The colour coding, which can be modified in the translation software program's settings, reflects the TM match level, with yellow indicating a partial match in this case. The files in the current data display the revision changes that have been made to the target text using the Track Changes function of Microsoft Word, and the comments that have been added by the revisers (the last of these not being represented in Figure 1). The reviser must not make any changes to the first three columns.

Figure 1. An example of an exported Trados Studio revision file

2	Translated (0%)	Energistä aamua.	I hope you'~~-~~are all having an energy-filled morning!
3	Translated (0%)	<8>M</8>aailma sähköistyy vauhdilla<14>.</14>	<8>T</8>he world is rapidly electrifying.
4	Translated (83%)	Tällä hetkellä vajaa neljännes energiankäytöstä Euroopassa on sähköä.	Electricity now accounts for around 24 percent of Europe's total energy consumption,
5	Translated (99%)	Tulevaisuudessa osuus voi ylittää 60 %.	but ~~in the future~~ this figure~~it~~ may~~could~~ exceed 60 percent in the future.

The properties of the files are listed in Table 7. The language pair was English–Finnish in three of the files, and Finnish–English in the other four files. The text length, number of segments, and proportion of corrected segments varied greatly between files. All the files were communications from business enterprises to various stakeholder groups: investors, potential or current customers, and technical personnel. Six texts were intended to be distributed in written form, and one was a speech.

Table 7. The text data

ID	Language pair	Source text words	Target text words	Translation segments	Corrected segments, %	Number of comments	Topic and genre
F1	EN-FI	629	464	63	17%	N/A	Chemistry, Instruction
F2	EN-FI	583	422	70	9%	N/A	Medical, User instr.
F3	EN-FI	699	464	39	38%	0	Business, Strategy summary
F4	FI-EN	988	1611	85	22%	2	Business, Web article
F5	FI-EN	292	462	26	15%	2	Energy, Press release
F6	FI-EN	174	272	17	65%	3	Energy, Speech
F7	FI-EN	526	904	52	54%	0	Energy, Web article
TOTAL		3891	4599	352		7	

Dataset 4 was used in Article IV as the primary data.

5.2 Methods

The overall research approach applied in this PhD project was qualitative. This means that the results primarily apply to this translation context – the Finnish translation industry in early 2020s – and describe it as experienced by the professionals who participated in the studies; others could see the presented trends differently. However, even though the qualitative research paradigm requires that the context-bound nature of the results is recognized (see Braun and Clarke 2013), their wider applicability does not need to be categorically rejected. Results such as presented here, while not directly generalizable to all LSPs or the global translation industry, still add to our understanding of the practices of translation service production.

To establish some general trends on a number of topics, quantitative results were presented in Article I, and Article IV included a prevalently quantitative section. Neither of these quantitative parts of the overall study should, however, be understood as generalizable outside the current population, which is the Finnish specialized translation service industry.

In the following subsections, I will describe the methods employed in the studies reported in Articles I–IV.

5.2.1 Article I: An analysis of survey responses

Article I presents a selection of the results of the initial survey (Dataset 1). Six survey questions were adopted as research questions for the article, and their results were presented as bar charts. The results were discussed and interpreted in their context based on my own knowledge of the business and its operation methods. Responses to open-ended questions in the survey were used for additional depth when considering the implications of the quantitative results.

The results presented in Article I were quantitative, but since the survey respondents had been selected to only include one person from each company, and the total number of Finnish LSPs large enough to be included in the study is not very high, the final number of responses was too low to have any statistical validity. The simple diagrams presented in Article I must therefore be understood as one possible picture of the reality, and hypotheses for further study. In effect, the nature of the knowledge accrued in this article resembles that produced by a

qualitative study: it presents what is possible, or perhaps even normal in the context being studied, not what always takes place.

5.2.2 Article II: A qualitative exploration of relationships between factors and variables based on interviews

The study presented in Article II comprised a qualitative analysis of the transcribed interviews (Dataset 2). The interviews were semi-structured, and the question lists that were used included some direct questions on the theme as well as more indirect ones. The contents of the interviews have been listed in Section 5.1.2 above; the parts of the interviews that were most relevant for the analysis described here were B.1.i for managers, and C.1.i for revisers, both including questions about revision practices. The analysis was not, however, limited to these parts, but encompassed the entire interviews.

The exact questions that were asked in each individual interview varied to reflect what had already been mentioned by the interviewees. In the interviews of LSP representatives (managers), the following questions were often asked (in Finnish) regarding revision practices (although the exact wording varied):

- Should all translations be revised?
- In which kind of cases is revision not necessary, or a spot check will suffice?
- Is this always a conscious decision?
- What are the things that have an impact on the revision process that is chosen?
- Are there differences between text types in this respect?
- Are there differences in which revision parameters should be emphasized?
- Should revisers receive instructions on this?
- Should quality levels be defined?
- Should revisers be told whether a bilingual or unilingual revision should be chosen?
- Which of these is more appropriate, or does it vary between texts?
- If it does vary, what factors have an impact on the decision?

In the interviews of revisers, the same topic was handled using e.g. the following questions. Again, the Finnish wording varied and some of the questions were not asked at all in some interviews, or were formulated differently depending on the flow of the discussion during the interview.

- Do you carry out different kinds of revision or editing tasks?
- What are the most important differences between them?
- What are the things that have an impact on what kind of process is chosen?
- Are there differences between projects regarding the revision parameters that should be worked on?
- Do you get instructions on whether to carry out a unilingual or bilingual revision?
- Is there variation between projects in this respect?
- If there is variation, what factors have an impact on the decision?

Information about the theme was often also obtained in other parts of the interviews.

I became well familiar with the data while carrying out and transcribing the interviews myself. I coded the transcripts in ATLAS.ti software, starting from some revision variables and factors that had been identified in previous revision studies (Rasmussen and Schjoldager 2011; Hernández Morin 2009a; 2009b; Schnierer 2019; Korhonen 2021). The goal of the coding and the subsequent analysis was to establish the interviewees' conceptions of three things: 1) major ways in which revision tasks varied (called revision variables), 2) the factors that influenced variation in individual projects, with special focus on project-specific factors, and 3) the connections between the types of variation and the influencing factors. In the first two points, the analysis was purely qualitative; the third could be described as quasi-quantitative in that it aimed at recognizing salient trends in how strongly each of the project-specific factors influenced various revision variables. Two coding cycles were carried out, and the list and report functionality of the software were used to check consistency of the coding. The coding system was developed during the work; the final list had six revision variables and a long list of influencing factors that the interviewees conceptualised in different ways. These could, however, be condensed into a system of factors that was finally presented in the article. In the second round of coding, I also made an effort to identify the factors behind every revision variable decision that was mentioned, and to identify

the exact impact of every influencing factor that was mentioned. This was, of course, not possible in all cases.

The coding results were interpreted within the theoretical framework of socially distributed cognition (SDC). I considered the translator and reviser as forming a situated cognitive unit, a dyad, and used the information constructed from the interviews to describe how the factors present in the situation influenced the task scope of the reviser as part of the cognitive dyad.

5.2.3 Article III: A process of incrementally sharpening qualitative focus

The study carried out for Article III was characterized by a deeply qualitative approach and a process that included several stages of defining new research questions based on a deepening understanding of the topic. The method as such remained the same throughout the process, being based on thematic coding of the transcribed data (Dataset 3 and the first three interviews of Dataset 2, as well as Dr Hirvonen's dataset from her MUTABLE research project) in the ATLAS.ti software.

Dr Hirvonen and I first set out to investigate how socially distributed cognition may manifest in the collaboration of translation professionals in the two different translation contexts, audio description and commercial specialised translation. This research question soon proved to be too extensive, but going through the data based on it helped us steer our interest towards questions that took us forward in the process. In the next phase, we worked on descriptions of the joint creative process as well as the overall system of distributed cognition, encompassing all the people and artefacts involved in the work.

At the end of this phase, we found that the scope of our analysis was still too wide. We focused on the description of the joint creative process and added depth to it with an investigation of the communication channels that the participants used to build their collaboration during that process. This proved to be an appropriate scope for the study, and its results brought me forward in my work through the identification of the revision file as an important channel of communication and a vehicle of socially distributed cognition. This discovery led to the methodological work that became Article IV.

5.2.4 Article IV: Applying and developing cognitive ethnographic methods

Article IV tests two independent analysis methods that could be applied to revision files when using it as cognitive ethnographic data. The methods, artefact analysis and discourse analysis that makes use of systemic functional linguistics, address different aspects of the digital artefacts and could be combined or used separately as part of full cognitive ethnographic studies. It should be noted that I do not intend to suggest using either of them as stand-alone methods; observation and interviews provide essential background information that is needed for interpreting the results yielded by these methods. In the absence of observational or interview data directly connected to the revision files being studied here, I have used the interviews and guided tour protocols in Datasets 2 and 3, as well as my own 20-year experience from the translation industry, as sources of relevant background information.

5.2.4.1 Artefact analysis: examining the revision file as a digital artefact

The first method to be tested in Article IV, artefact analysis, has been described by Manfred Lueger (2000) and brought into translation studies by Hanna Risku (2009, 114–15). The method has been previously used to analyse a wide range of translation tools and artefacts (see Risku 2009; Sannholm 2021), but not revision files. The main steps of the analysis are the following (Risku 2009, 115):

1. Producing a description of the artefact in its context with possible schematic representations; the description should include an account of the artefact's external characteristics, elements, author(s), storage locations and explicit (intended) uses. The artefact's affordances are also examined.

2. Comparison between the intended and actual usage of the artefact with the aim of identifying differences in the usage logic:

    a. Which logic have the tool developers intended to implement? Which logic is supported by the artefact itself? Which logic do the users actually follow?

    b. A comparison of the respective underlying assumptions of the tool developers and the users, which result in specific collaboration structures and become visible in folder structures, spatial relationships and roles.

3. How do the artefacts change during their use?

4. What is their impact on the situated action?

The goal of this process is to facilitate understanding and discussing a complex object, and to grasp the meanings that the artefacts have in the context in which they are used. Observation of actual use would therefore be an important part of an actual cognitive ethnographic research project.

The key to analysing artefacts as tools for cognitive operations is to understand that the artefacts always afford some operations and limit or prevent others. The enabling and limiting characteristics can be observed as *affordances*, which Borghi (2021, 12485) defines as "the opportunities of action defined by the environment". The concept of affordance is therefore central for a cognitive theory that accentuates embodiment and the role of the environment (ibid.).

The design of any artefact and the functions available in or for it are based on assumptions about the work; as a result, the artefact supports a certain way of working and steers the participants towards certain practices. Artefact analysis aims to make these assumptions and the steering impact of the artefact, which users are often unconscious of, visible. This is done by describing the various affordances of the artefact and considering their impact on the task scopes and the users' practices.

In testing the artefact analysis method, I have based my use of it on the description given by Risku (2009, 114–15) with the exception that I have focused on describing the elements and external characteristics (affordances) of the artefacts and the software programme, and given less attention to the intentions of the tool developers as to how the artefact should be used. Since I have no data on the intention of the developers, and no actual observational data on how the users have worked with these specific files, I have also not compared the developers' intention with actual use. I therefore described the affordances of the artefacts based on the characteristics of the artefacts, without observation of usage. In addition to the digital artefacts themselves, I also analysed the functionality of the software programme used to process the artefacts; while planning and performing the analysis, it became obvious that the revision files and the text processing functions available in the software form an interconnected entity best analysed together.

5.2.4.2 Discourse analysis: Systemic functional linguistics

The revision files' communication features had been first identified in Article III and examined in more detail in the artefact analysis presented in Article IV. Those studies had revealed that the files contained two types of communication between the translator and reviser: comments that normally display in the margins and that were directed to the other participant, and the translated (and revised) text that communicated the proposed translation solutions to the other participant. For Article IV, both of these were subjected to discourse analysis. The analysis of the comments aimed to discover how translators and revisers position themselves in relation to the other participant. The analysis of the translated text, on the other hand, aimed at finding out how they distribute the linguistic meaning-making task between them: on which aspects of meaning do translators pay most attention to, and which aspects revisers focus on.

The contents of the revision files (Dataset 4) were thus analysed as communication that builds cognitive collaboration – a system of socially distributed cognition, or a cognitive dyad – between the participants. The tool of analysis was systemic functional linguistics (SFL) as described by Halliday and Matthiessen (2014). The analysis remained at the level of metafunctions and whether shifts (lexicogrammatical changes) could be identified in them. The shifts were assumed to provide information about whether the translators and revisers emphasised the textual, ideational or interpersonal lines of meaning when carrying out their tasks. The analysis focused on whether a shift took place or not, without giving any detailed account of the lexicogrammatical structures being used. For an example of using SFL in the analysis of translation shifts, albeit without the cognitive perspective, see Hill-Madsen (2020).

The basic three-fold system of meaning-making introduced in systemic functional linguistics is given in Table 8.

Table 8. The three lines of meaning (metafunctions) of systemic functional linguistics

Metafunction	Type of meaning	Structure or system
Textual	Message	Theme + Rheme
Ideational	Representation	Process + participants + circumstances
Interpersonal	Exchange	Mood, modality, appraisal

As stated by Halliday and Matthiessen (2014, 91), "the Theme of a clause is the first group or phrase that has some function in the [ideational] structure of the

clause". Shifts in the theme + rheme structure of the textual metafunction are thus relatively easy to analyse.

The ideational metafunction deals with the actual semantic content of the sentence: typically, the logical subjects and objects and the various processes expressed by verbs, complemented by expressions of temporal, spatial and other relevant circumstances (Halliday and Matthiessen 2014, 220ff.). Similar elements can in most cases be found in both Finnish and English, even if the exact linguistic devices used to express them differ.

The interpersonal metafunction is fairly complex in that it resides in several different systems and has two distinct tasks: firstly, to build the relationship between the speaker or writer and the recipient of the message, and secondly, to express the speaker's/writer's attitudes towards the expressed content (Banks 2019, 47). The relationship between the speaker and the recipient is established by the system of mood, that is, choosing between questions, statements and instructions (Halliday and Matthiessen 2014, 134ff.). The attitude toward the content, on the other hand, is expressed through modality – including probability, permission, and obligation – and the extensive system of appraisal, which covers expressions of affect, engagement, graduation, judgement and appreciation (Banks 2019, 84ff.; Martin and White 2005, 35).

Systemic functional linguistics was originally developed with reference to English. When using it to analyze other languages, including Finnish, some differences must be accounted for. Ideally, the analysis should be based on a systemic functional description of that particular language. A full description of Finnish from this perspective does not exist; partial ones have been produced by Susanna Shore (1992; 2020). The analysis being performed here, however, remains at the level of metafunctions, which can be found in both English and Finnish, and does not deal with more detailed systems and structures, which often differ considerably between languages. Therefore, the description of Halliday and Matthiessen (2014) has here been considered adequate for dealing with both Finnish and English. Halliday's grammar has been directly applied to different languages with at least reasonable success, including numerous studies of communication in Finnish as well as when developing grammars of the Finnish language; this could be taken as evidence of SFL having at least some applicability across languages. For example, in a classic account of Finnish syntax, Hakulinen and Karlsson (1979) use Halliday and Hasan's (1976) presentation of cohesion in English as one source on which they build their description of cohesion in Finnish.

I used systemic functional linguistics to analyse both the comments and the translated texts. The comments are direct interaction that can be assumed to have an impact on the relationship of the translator and the reviser, which is why the analysis focused on the interpersonal line of meaning: investigated how, using the systems of mood and modality, the authors expressed their stance towards their own utterances and constructed their own role as well as that of the other party in the shared cognitive dyad.

The analysis procedure that I developed for the translated texts was the following:

1. Identification and quantification of all the translation segments that contain reviser intervention (changes made by the reviser).

2. Classification of the segments identified in Step 1 into a) edits and b) error corrections. Error corrections were defined as necessary changes that, based on my experience as a translation professional, were done to remove problems in translation accuracy or linguistic correctness.

3. Identification and quantification of metafunctional shifts introduced by the reviser in the segments classified as edits; both the total number of segments with one or more shifts and the number of shifts in individual metafunctions were counted. Apparent shifts that were due to ellipsis or explicitation/implicitation were excluded from the calculations.

4. Identification and quantification of metafunctional shifts introduced by the translator during the translation phase; both the total number of segments with one or more shifts and the number of shifts in individual metafunctions were counted. Apparent shifts that were due to ellipsis or explicitation/implicitation were excluded from the calculations.

In this pilot experiment, the analysis thus proceeded from the reviser's intervention to the translator's intervention, but it could just as well be carried out in the reversed order. The results were presented starting from a comparison of the metafunctional shift ratios of revisers and translators, with consideration of the text genre's impact on the roles assumed by the participants. Next, each participant's cognitive focus was discussed based on the proportions of shifts in different metafunctions: did the translator and reviser pay the most attention to the textual, ideational or interpersonal line of meaning? These results will be discussed in Section 6.1.4.

5.3 Ethical considerations

5.3.1 My position as a researcher and practitioner

The qualitative research paradigm brings with it the question of subjectivity, which, in turn, requires reflexive thinking of the researcher's identity and background and how it may have influenced the results gained (Braun and Clarke 2013). My own assumptions and perspectives not only as a researcher, but also as a translation professional with a long experience from the industry I research, have certainly had a great impact on every stage of the study, reaching from the research design to interaction with my informants and finally to the interpretation of results. For this reason, I will now briefly consider my position as a practitioner turned researcher.

I worked in the Finnish translation industry for approximately 20 years, so I can say that I'm familiar with the field. However, I only worked in two translation companies, and in one of them only for a few months. The vast majority of my experience was accumulated in one single company. I must therefore keep in mind that my preconceptions may not apply to large parts of the field; companies have different policies and practices, and I must be careful not to let my potentially false assumptions to get in the way of understanding their workings. The same would, of course, also apply to some aspects of the company that I think I know thoroughly; even within one company, there are different ways of doing things, and I'm almost certainly not aware of all of them. When gathering and analysing my data, I have therefore made an active effort to give space to my informants' perspectives while knowing that remaining fully neutral and objective is not possible, nor is it even necessary in a research project that emphasises qualitative methods.

During my career, I have witnessed many changes in how things were done, which made me acutely aware of technical development being a constant in this industry. At the point when my data was gathered, I was still very familiar with the ins and outs of the field. I am aware that as I am no longer employed in the Finnish language industry, this has been gradually changing during the analysis and publishing of results; while I'm still in the position to understand the goings on, I'm no longer an insider and don't have the opportunity to engage in first-hand observations. As the tools of the trade change, I will soon be truly an outsider, and one who has to actively let go of any remaining preconceptions so that they won't distort any future research.

5.3.2 Protection of personal data and the participating companies' information

Research data contains many kinds of personal data that needs to be protected in accordance with the General Data Protection Regulation (GDPR, EU Regulation 2016/679). All the data gathered within this project has been stored within Finland. Access to materials that contain personal data has been restricted to myself and potential research partners, as stated in the privacy notices delivered to all interviewees and guided tour participants. The personal data included video image of interviewees recorded through Microsoft Teams or Zoom, audio recordings of their voices, names on screen in online video recordings as well as the guided tour video recordings, and information provided during the interviews that could be used to identify the persons if combined with other information of similar kind. For the textual data, author and editor information was removed. A data register in the form of a contact information spreadsheet was compiled and has only been processed and accessed by me. Anonymised excerpts of interviews have been included in published research articles.

In addition to personal data, the materials also include information about companies and their operations. While the processing of such information is not regulated by law, trust between researcher and the informants can only be retained if all information about an individual company's operating methods and business choices is kept confidential. I have therefore imposed a strict policy of not disclosing which companies my informants work for. For this reason, I have not provided detailed lists of the companies' characteristics even in this dissertation. The interview excerpts that have been included in published articles also do not contain any information that could lead to the recognition of the company.

6 SUMMARY AND DISCUSSION OF THE RESULTS PRESENTED IN THE ARTICLES

In this chapter, I will first present the main foci and results of the individual articles. After that, I discuss the results achieved and contributions made in the different thematic areas as conceptualized by the research questions outlined in Section 1.2 of this dissertation.

6.1 A brief summary of the articles included in this dissertation

6.1.1 Article I: Variation in the scope of translation revision

Table 9. Article I: Dataset and research questions

Dataset	Themes	Research questions
Dataset 1: A survey of revision at LSPs	Revision policies and task specifications of LSPs	Does the typical translation workflow include a revision task carried out by someone other than the person who translated the text?
		Which text features (revision parameters) is the reviser expected to pay attention to?
		What types of stylistic editing is the reviser expected to carry out?
	The impact of circumstances on the allowed creativity of revision	In what situations may the reviser make or propose changes to deviate from source text content?
	Authority on revision scope	Has the company defined different revision levels, or may the reviser decide the scope of revision?
		Is the reviser provided with a description of the scope and objectives of each revision task?

Article I sets the perspective of the whole dissertation in adopting the premise that translation is one of the three types of text production (writing, translation, and

adaptation; Dam-Jensen and Heine 2013) which, like the other text production tasks, takes place in stages. Translation revision should thus be seen as an editing step in that text production process, not as quality control for a completed translation: "A shift in how revision is seen and defined is […] necessary: instead of merely checking for errors, it needs to be seen as part of the text production effort" (Korhonen 2021, 146). By choosing this perspective, the article joins the translation studies trend that challenges the traditional image of translation as an individual effort by a translator, taking place in isolation. Accordingly, the article also recognizes the need to expand descriptions of translation processes from one person's brain-internal processes to the entire production process in which two or more people work together to produce the translated text (see Risku, Rogl, and Milosevic 2017).

Building on the foundation of translation as a process with various stages and participants, Article I explores variation found in the scope of the revision stage, addressing the need to better understand the different ways in which revision may be used as part of the translation service production workflow. In line with the original objectives of my research – to describe the use of a specific type of creative editing task in the translation production workflow – the article's primary area of focus are revision and editing policies, and it has the distinct aim of proposing ways in which LSPs could define different types of revision tasks more efficiently. However, as my perspective and the goals of my dissertation project shifted, the article's most important result from the perspective of this dissertation proved to be the conclusion that the scope of LSPs' revision tasks does indeed vary: firstly, different LSPs have different policies regarding revision, and secondly, revision may be carried out adopting different task-specific requirements within one LSP. This latter type of variation has been examined in subsequent articles from several different angles.

The results presented in Article I concerning the article's first thematic area, *Revision policies and task specifications of LSPs* (see Table 9) indicate variation in the revision policies between different LSPs and can be summarized as follows: For a majority of the responding LSPs, revision is a normal part of the translation workflow, although surprisingly many do not consider it necessary. When revision is carried out, all LSPs expect the reviser to pay attention to the linguistic and terminological correctness of the text, and most consider translation accuracy, stylistic suitability, smoothness and cohesion, and idiomatic language to be important areas of focus. Layout and typography are not usually included in the reviser's task scope. Stylistic editing is allowed when its aim is to ensure that the

translation follows the target-language conventions for the text type, to improve the flow of the text, or to sharpen the text so that it meets its objectives better. Many respondents also expected the reviser to engage in minor content editing that renders the message of the text more effective.

Results in the other two thematic areas, *The impact of circumstances on the allowed creativity of revision* and *Authority on revision scope* provide us with some information on variation within individual LSPs. The circumstances that influence the scope of revision, which were later spotlighted in Article II, are mostly discussed in Article I with regard to the allowed creativity of the revision task. The respondents were asked to choose options that described different situations in which the reviser was allowed to make changes that constituted deviating from the source text. More than half of the respondents allowed such changes in special cases such as certain text types of a specific client, and in cases of factual errors. Several respondents also allowed deviations from the source text if they improved the flow of the text.

Although the original purpose of the survey section focusing on authority was not to gauge variation, the results in this thematic area nevertheless portray variation and flexibility as essential aspects of the revision task. Nearly all respondents indicate that the level or scope needs to be determined for each revision task at some point, either by the reviser themselves or by another party (presumably the project manager, possibly following some predetermined policy). Only two of the eleven respondents said that the same principles or level apply to revision in all cases. Instructions as to the scope and objectives of the reviser's task were often considered necessary in the case of non-typical revision tasks, if the reviser was new, and when revising texts for certain clients.

Based on this information about how revision tasks vary, Article I proposes that LSPs should define their different revision tasks with reference to prioritized revision parameters, the allowed creativity, and other similar characteristics in order to ensure an appropriate processing of the text and to avoid wasting resources. The article concludes that while revision is an important part of LSPs' quality assurance, it can be more than that if it is understood as text editing and not merely checking for errors.

6.1.2 Article II: Factors influencing the variation in the scope of translation revision

Table 10. Article II: Dataset and research questions

Dataset	Main research question	Project-specific factors being investigated
Dataset 2: Semi-structured expert interviews	How may a translation project's characteristics contribute to determining the composition and internal task configuration of the situated cognitive dyad of a translator and a reviser?	Text genre
		Experience and competence of the selected translator
		Client's needs and requirements

Article II marks an important step in the overall research process in that it defines the object of study as the cognitive dyad of translator and reviser, which is a system of socially distributed cognition (SDC) formed for the purpose of producing a translation within a specific translation project. While the idea of describing cognitive systems that are larger than one individual stems from Hutchins (Hutchins 1995a; 1995b), my approach differs from his in that I only focus on one dyad, not the whole system of people and artefacts that are involved in the cognitive work being investigated.

The results presented in Article II showcase translatorial work as situated cognitive tasks that are deeply rooted in concrete, observable circumstances. The impact of these circumstances is described based on interview data, and the focus is on translation industry professionals' views on which factors influence the form and task characteristics of the dyadic system. While the cognitive angle is prevalent in the article, it also offers interesting new knowledge for revision researchers and practitioners.

The form that the cognitive dyad takes is operationalised on two levels, firstly with regard to the dyad's *composition* (whether it consists of both a translator and reviser, or only a translator with a null reviser) and secondly through the role given to the reviser, or adopted by them, which is described as *internal task configuration* through a set of five revision variables. The composition of the cognitive dyad is conceptualised in the article as the first of the revision variables listed below. The other five variables in the list (numbers 2–6) describe the internal task configuration of revision:

1) revision vs. non-revision

2) revision parameters (Mossop 2014; Korhonen 2021)

3) one vs. more rounds of revision

4) full vs. partial revision

5) bilingual or unilingual revision

6) level of detail

The sixth revision variable, level of detail, refers to choosing whether the reviser performs a careful revision or only focuses on major errors.

Before discussing the impact of the three project-specific factors introduced in Table 10, the article presents an overview of all the elements that could be identified in the data as having major influence on the revision process. In addition to the project-specific factors, these include company-level factors and external pressure elements. These are presented in Table 11.

Table 11. Elements that influence the revision process

Company-level factors	Project-specific factors	External pressure elements
• Process policies • Reviser pool • Tools	• Text genre • Translator's experience and competence • Client's requirements and needs	• Schedule • Cost

Company-level factors are enabling or limiting conditions that are relatively permanent and have usually been established by the LSP management. Process policy refers to a standard production workflow used in a company. Reviser pool consists of the available revisers who have specific competencies, allowing specific kinds of revision tasks. Companies usually use or employ considerably fewer revisers than translators, which is why the reviser pool is included in the company-level factors and not in project-specific factors. The third group, external pressure elements, mainly has a restricting impact, and may force process or workflow choices that are less than ideal.

The interview data was subjected to qualitative analysis that aimed first at identifying the most important project-specific factors and revision variables, and then at discovering relationships of impact between these two groups. Variables 1, 2 and 6 received the most attention during the interviews and received therefore a more thorough discussion in the article as well. While the analysis presented in the article focused on the project-specific factors, other element groups were also discussed as contributing factors.

The impact trends revealed by the analysis will be discussed below. More importantly, the analysis showed that a complex network of factors is continuously at play when workflows and the reviser's task are defined:

> Interviewees seem hesitant of identifying direct causal relationships from a single project-specific factor to any specific characteristic of the cognitive dyad; rather, several project-specific and company-level factors as well as external pressure elements seem to contribute to how the work is carried out. The process is construed as a negotiation between elements that may take on different emphases and most likely often contradict each other. (Korhonen 2022, 181)

Some interesting trends were nevertheless observed when exploring the impact of text genre, translator's experience and competence, and the client's needs and requirements. The first and third of these had a similar impact on the cognitive dyad: neither the text genre nor the client's needs and requirements were considered an adequate basis for deciding whether to revise or not, but both had high impact on which revision parameters to emphasize. A closer investigation of how revision parameters were applied for revision tasks revealed that translations could be roughly divided into two groups, which I labelled *fluent translations* and *precise translations* in this article. Both the text genre and the client's needs and requirements were used as bases for choosing between these two goals. Table 12, taken from Article II, lists the typical text genres (conceptualized in accordance with the utilitarian text classification system used by interviewees; hence the overlapping categories) and revision parameters that they prioritize.

Table 12. The two major genre categories (Korhonen 2022, 175)

Translations	Genres	Important parameters
Fluent translations	Marketing text Creative text Blog Magazine article	Smoothness, logic, style, idiom, appropriate style for purpose, appropriate style for users, linguistic correctness
Precise translations	Specialized text Legal Investor communications User manual Medical Public administration Contract Research survey or data	Accuracy, terminology, factual errors, linguistic correctness, completeness

It is not surprising that the impacts of genre and the client are similar, since many clients have their own typical genres that they need translated; this may affect the client's conception of what a good translation looks like – precise or fluent.

Although the impact of neither genre nor the client on the composition of the cognitive dyad (revision vs. non-revision) was found to be high, some special cases might be worth noting. Some genres are considered critical, and always require revision; these include court decisions and some other legal materials as well as some medical texts. High visibility texts and texts that are intended for large audiences or will be public for a long time also merit revision.

The genre category division presented in Table 12 relates to the translator's and the reviser's respective competencies in that both participants, or at least one of them, need to have genre competence: an understanding of how the text should be translated and revised. Genre competence is one of the four translation sub-competences that were revealed when analysing how the translator's experience and competence influence the formation of the cognitive dyad. The others were skill in the language pair (also related to directionality), knowledge of the client, and knowledge of the client's industry or the text's subject matter.

The impact of the translator's experience and competence on the cognitive dyad is very different from the impact of text genre and the client. While the other two factors mostly affected the revision parameters that would be emphasized, the translator's competence has a high impact on whether the text is revised at all, and how detailed the revision work is. Some impact on revision parameters can also be recognized, mainly through the translator's genre competence and skill in the language pair.

In practice, project-specific factors form an "intricate network of co-dependencies […] that influence the cognitive work" (Korhonen 2022, 176). For example, when discussing the necessary competence of translators, it is important to recognize that in a professional context, texts are not difficult or easy *per se*, but in relation to the professional's competence areas; a text that is difficult for one person may be easy for another. The decision on revision vs. non-revision – that is, the composition of the cognitive dyad – is therefore not usually done based on whether the text is difficult or easy to translate, but based on whether it is difficult or easy *for that translator*. But how does the project manager or reviser know whether the text is difficult or easy for the translator? They often depend on previous experience of the translator's skills and work ethics, which may have generated strong trust towards the translator in that genre and language pair. Similarly, trust is a major mediating element in how the translator's competence

affects revision's level of detail: if the reviser trusts the translator, they may work faster and only pay attention to the most prominent errors. Directionality also has an impact: when the translator works into L1, the translation may not be revised at all, or it may be revised with a lower level of detail.

In an ideal case, the competence profiles of the translator and reviser should be complementary; this would seem to be the best guarantee of a successful cognitive dyad. The need for complementary competencies can be identified in all the sub-competencies: genre competence, language pair (directionality), and knowledge of client and the client's industry/subject matter. If the translator is known to lack genre competence or to have too little knowledge of the client's preferences or the industry-related contents, the reviser must be able to fill these gaps. In the area of language pairs and directionality, the impact is more complex, and relates to revision parameters: when the translator works into L1, the reviser sometimes needs to pay special attention to the accuracy parameter (that is, the correctness of the translation; this impact is most prominent when the source language is a language of low diffusion such as Finnish). If the translator works into L2, the reviser should be highly skilled in that language, perhaps ideally a native language professional, to ensure the smoothness and appropriate style of the translation. This sets high requirements for the reviser's professional competence, as they may exercise considerable agency in recognising the translator's competence level and in identifying the text aspects that need working on.

The article shows that Finnish translation professionals conceptualize the cognitive dyad's internal task configuration most prominently as the relative emphasis placed on revision parameters, and as an appropriate level of detail in performing the revision. These are strongly influenced by factors external to the cognitive dyad: the text genre and the client's needs and requirements. The composition of the cognitive dyad – whether the translator works alone or in collaboration with a reviser – is often influenced by the translator's experience and competence, particularly with regard to genre and the language pair.

6.1.3 Article III: Cognitive collaboration of translator and reviser in a joint creative process

Table 13. Article III: Datasets and research questions

Datasets	Main research question	Sub-questions
I Dataset 3: Guided tour + Dataset 2: Semi-structured expert interviews (3 first interviews) II From the MUTABLE corpus by Dr Hirvonen; 6 video recordings of audio description teamwork processes	How do two or more people form a system of socially distributed cognition when performing the inherently creative undertaking that aims at producing a translation?	How can the joint process of translatorial co-creation, based on Guilford's (1950) classical model of divergent and convergent phases, be described?
		How do the collaborators interact in each of the translation production cases being investigated?

Article III, written together with Dr Maija Hirvonen, describes the work of the cognitive dyad (without using that term) from the perspective of the distributed creative process that the participants jointly engage in. The cognitive activity of translation professionals, working in two very different translation contexts and modalities, is examined as an essentially creative effort. The contexts being investigated are commercial specialized translation (CST), which represents interlingual translation, and audio description (AD) of audiovisual materials, representing intersemiotic translation. The article develops new knowledge of the collaborative translation processes by presenting an illustration of the distributed co-creation process (building on Joy Paul Guilford's (1950) description of the creative process as a sequence of divergent and convergent thinking) and analysing the communication that binds the cognitive dyads together.

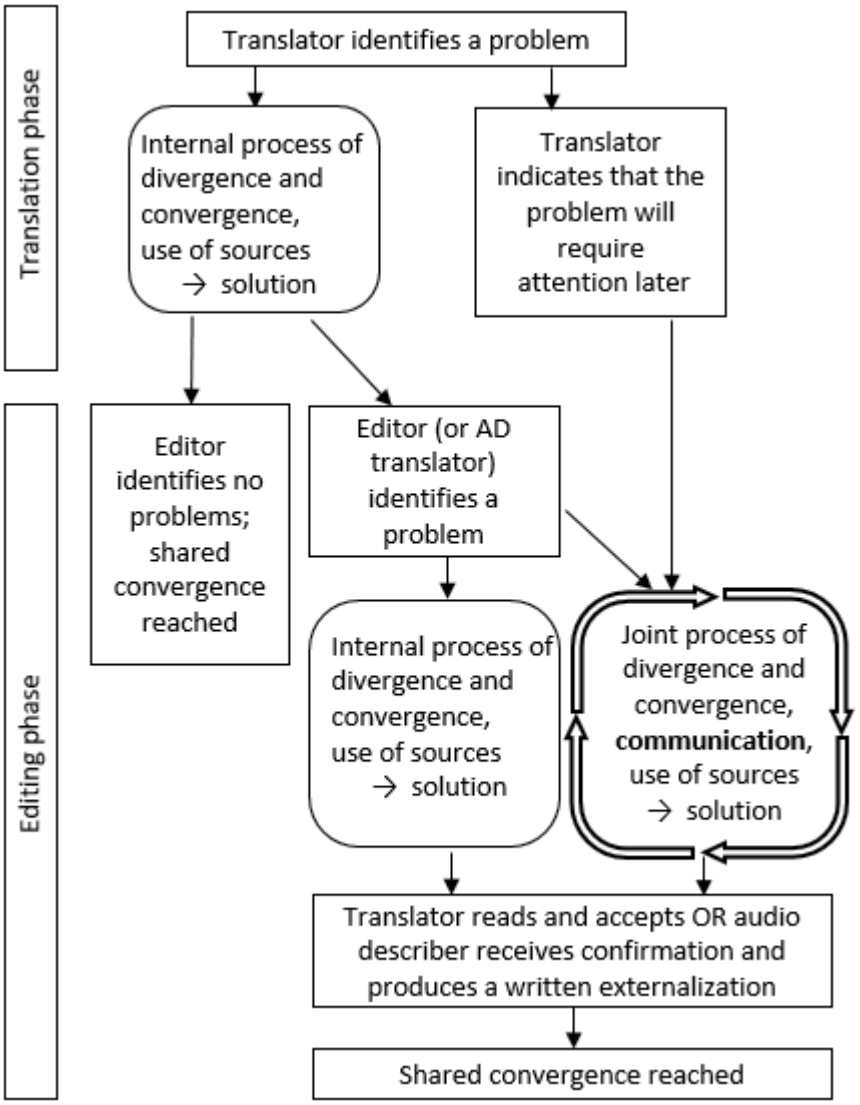
When carrying out the study, Dr Hirvonen and I embarked from the premise that translation in any context is an inherently creative undertaking. When more than one person is involved in the creation effort, it can be described as co-creation, or a joint creative process, and the participants engaging in it form a system of socially distributed cognition (possibly a cognitive dyad). Similarly to other systems of socially distributed cognition, this system is built through communication. After familiarization with the data and further specification of our research goals (described in section 5.2.3), we thus set out to analyse all the different channels of communication that the two participants use, not restricting the investigation to traditional channels such as messaging applications or speech.

This way, we aimed to show step by step how the system of socially distributed cognition, conceptualized as cognitive dyad in Article II, takes form through communication during the process of co-creation.

The study presented in this article was based on two datasets. First of these comprised my own Dataset 3 (three guided tours) combined with the three first interviews from Dataset 2, carried out with the same informants who helped produce the guided tours. The second dataset was compiled from the MUTABLE corpus that comprises video recordings of audio description (AD) processes carried out as teamwork between a sighted translator/audio describer and a blind consultant/editor. Six instances of AD editing processes, two of them performed in Austria and four in Finland, were included in this second dataset, together with *a posteriori* interviews with the participants. Both datasets were analysed in ATLAS.ti focusing on the externalized representations that constituted communication between the participants. The results were mainly presented as a graphical representation of the process of co-creation (see Figure 2), and an account of the communication in which the process unfolds.

Comparison of the two translation contexts revealed that a similar co-creation process takes place in both, but it materializes in different ways due to the different work setups and the consequent employment of different communication channels. In audio description, the team members work side by side and are observed to have rich interaction, using not only direct verbal communication, but non-verbal communication such as gestures, body positions, and artefacts. Gestures and artefacts in particular are used to express meanings related to movements and shapes, for example. In commercial specialized translation, on the other hand, the translator and editor/reviser rarely work in the same space, rendering non-verbal communication unavailable for them. Telephone or email is sometimes used for discussing solutions, but more often the communication is limited to the channel directly available to them: the draft translation file (also called the revision file). This digital artefact acts not only as a cognitive resource and a tool for working, but at the same time also as an intermediary of communication (see Perry 1999, 87). The file is used as communication first from the translator to the reviser, informing the reviser of the translation solutions that the translator has produced, and then from the reviser to the translator, communicating the reviser's input to the translator.

Figure 2. The distributed creative process of the cognitive dyad (Korhonen and Hirvonen 2021, 263)



Through these channels of communication and interaction, a distributed creative process (see Figure 2) unfolds with alternating phases of divergence and convergence. As the figure shows, solutions are produced in several ways during the overall process: in most cases, the translator reaches a solution as a result of their internal creative process during the translation phase. This solution may be questioned by the reviser, who may then produce another solution alone, or discuss the problem with the translator to find a solution together. All these

alternatives include phases of divergent thinking (finding alternative solutions) and convergent thinking (choosing an appropriate solution). In this process description, it is assumed that the translator processes the text in the last phase, accepting or implementing the final solution as an indication that shared convergence has been reached.

The identification and description of the joint creative process marks a step into a new territory for researching creativity in connection with translation. The description is meant to apply to all translation activities in which translation and editing or revising phases are observed, making no difference between translated genres or translation contexts. Translation as such is seen as a creative process – one of responsive creativity in Unsworth's (2001, 291) matrix – and the dichotomy of creative and non-creative translations, which can often be observed in everyday talk about translation, is thus effectively rejected.

6.1.4 Article IV: Using a digital translation artefact as cognitive ethnographic data: methodological testing

Table 14. Article IV: Datasets and research questions

Dataset	Main research question	The methods being tested
Dataset 4: Translated and revised texts	What can we learn about the cognitive collaboration in translation contexts by using revision files as data?	Artefact analysis
		Discourse analysis using systemic functional linguistics (SFL)

Article IV focuses on making a methodological contribution to cognitive ethnography (see Hutchins 1995a, 371) of translation operations. Previously, Article III had revealed the importance of revision files as communication between the translator and reviser, and it became necessary to find out how these digital artefacts could be used to learn more about the cognitive collaboration of the participants. I wanted to examine the revision files on two levels: firstly, how the artefact's characteristics may steer, limit, or enable the cognitive work of the reviser, thus having an impact on their collaboration with the translator, and secondly, what the translation solutions communicated in the artefact could tell us about how the participants distribute the linguistic (and cognitive) labour of meaning-making between them. In the course of the investigation, the comments that may be added to the file by the participants also became a major target of study.

Revision files are here used as cognitive ethnographic data for researching cognitive collaboration, which is understood as taking place in a system of socially distributed cognition. Such use of this data type is based on the premise that socially distributed cognition is always built through communication. As was mentioned above, revision files were identified as a communicative device in an earlier study included in this dissertation. Other channels of communication such as email, telephone and messaging applications are also sometimes used between the participants being investigated here, but their use is more irregular and does not take place in all translation projects. The revision file is thus the most widely used communicative artefact in such working configurations, and as such, a valuable source of knowledge. While direct observation should always be a part of a full cognitive ethnographic study, relevant information – traces of the participant's cognitive work – can also be found in the files. These traces indicate a system of distributed cognition in action.

The methods developed during this study have been described in Section 5.2.4; here, I focus on the results that were achieved when testing the methods, and that increase our understanding of cognitive collaboration in translation contexts. The first part of the explorations, artefact analysis, focused on describing the affordances of the revision file's special formatting features as well as the text processing software's review functions, and on analysing their impact on the work. In the second part, comprised of discourse analysis using systemic functional linguistics, I analysed the comments added to the files as well as the translated text that contained the proposed translation solutions.

Figure 3. An example of the layout of the revision file

2	Translated (0%)	Energistä aamua.	I hope you~~'~~ are all having an energy-filled morning!
3	Translated (0%)	<8>M</8>aailma sähköistyy vauhdilla<14>.</14>	<8>T</8>he world is rapidly electrifying.
4	Translated (83%)	Tällä hetkellä vajaa neljännes energiankäytöstä Euroopassa on sähköä.	Electricity now accounts for around 24 percent of Europe's total energy consumption,
5	Translated (99%)	Tulevaisuudessa osuus voi ylittää 60 %.	but ~~in the future~~ this figure~~it~~ may~~could~~ exceed 60 percent in the future.

The artefact analysis spotlighted several ways in which the reviser's cognitive work is limited and even hindered, making it difficult to ensure coherence, for example. The formatting of the file (see Figure 3) prevents access to information such as where paragraph breaks are located, and even whether some segments are list items or headings, or part of the body text. The readily available TM match level information may steer the reviser's attention away from high match level segments, which also works against revising the text as a coherent piece of communication.

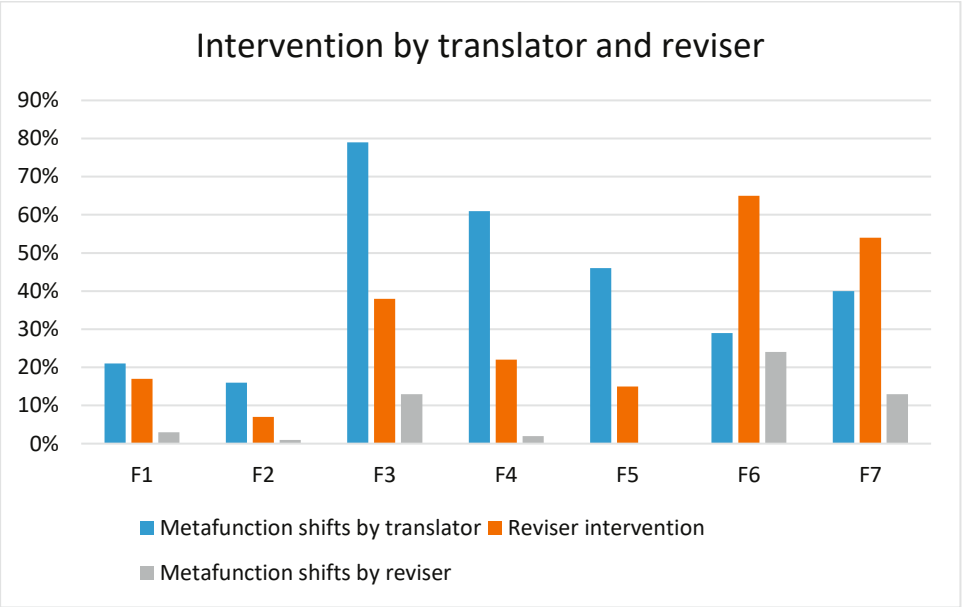
The reviser is steered towards comparing the source and translated text segment by segment, focusing on accuracy and linguistic correctness. This is probably not the ideal way of working if the goal is to produce texts with high quality and successful communicative impact. It seems that the design of the revision files is guided by economy rather than communicative quality: it is relatively easy for revisers to check the translation for critical errors and to focus on new content instead of spending time reading legacy segments that may have already been revised previously.

The revision files' and the software programme's affordances foster two types of communication between the translator and reviser. Firstly, both participants may add comments to the file, directly addressing the other participant. Secondly, they communicate their proposed translation solutions to each other through the text; in the current data, the revisers had inserted their solutions using the Track Changes function of Microsoft Word. This affords the translator – or another member of the workflow – the opportunity to go through the changed items and accept or reject them. Both of these communication types were analysed.

Analysis of the comments found in the margins of the texts was carried out with focus on the interpersonal metafunction, particularly the systems of mood and modality. It was found that the comments in this limited data (only seven comments were available for analysis) consisted of declarative sentences that contained many softening elements and expressions of uncertainty, presumably aiming for politeness. The revisers who were the authors of the comments demonstrated great willingness to yield decision-making authority to the translator. It must be noted that since any authoritative editing requests would be given using the Track Changes function in such files, the comments would rarely need to be written in an authoritative tone.

The analysis of the translated text and the changes made by the reviser was presented in two parts. The analysis procedure has been described in Section 5.2.4. The first part of the results aimed to quantify the meaning-making effort that each of the participants engaged in: if many metafunctional shifts had taken place, it was deduced that the participant had taken on a large share of the joint effort of producing an appropriate translation. Figure 4 shows the percentages of segments with metafunctional shifts introduced by the participants, as well as the reviser's total intervention level in each of the seven files. For the translator, the total intervention level must normally be 100%, since a translation is normally needed for all segments.

Figure 4. Distribution of meaning-making effort between translator and reviser (Korhonen, submitted)



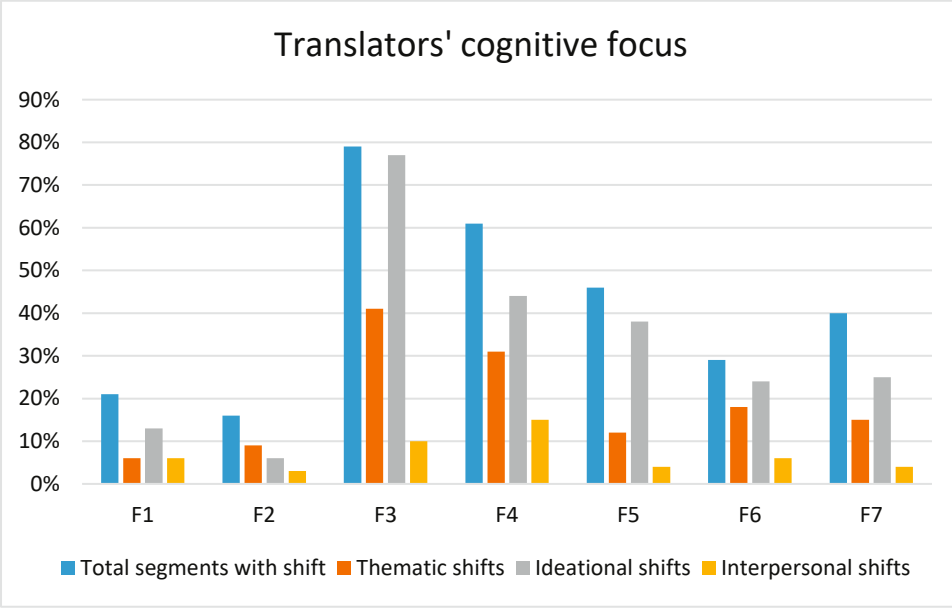
Analysis of the individual files revealed that the distribution of the cognitive labour of meaning-making in individual files could be connected to configurations in which three factors came together: 1) the characteristic translation principles for the text genre, conceptualised here as a dichotomy of fluency-oriented and precision-oriented texts (see Korhonen 2022, 175), 2) the apparent quality level produced by the translator, and 3) the role adopted by the reviser. Regarding the first of these, when the text requires high fluency, such as the texts F3–F7 in the current data, both the translator and the reviser often introduce many metafunctional shifts into the translation; on the other hand, when precision has priority (as in files F1 and F2, which are technical instructions), there seem to be relatively few metafunctional shifts. These trends can be seen as indications of a higher level of linguistic creativity being required when translating fluency-oriented texts.

The apparent quality level produced by the translator has played a major role in file F7. The translation is characterised by a high number of errors, and the reviser has made changes to more than half of the translation segments – in many cases, more than one change in the same segment. The final translation still has many errors. The reviser may not have had enough time to correct the text carefully; they have also introduced relatively few metafunctional shifts, which may also be an

indication of neglecting stylistic improvements due to insufficient time. Without interview data, it cannot be concluded whether time has been the issue, or what other factors may have led to such failure of the collaboration.

Files F3–F5 can be used to demonstrate the different roles that revisers may assume. The texts are targeted at large audiences, and the translators have made many metafunctional shifts, aiming at fluent translations and, judging based on my own experience and the nature of the revisers' corrections, succeeding quite well. The revisers, however, have selected different strategies: in F3, the reviser has introduced relatively many metafunctional shifts, making minor stylistic changes that do not always seem necessary. In F4 and F5, the revisers have mainly corrected minor errors.

Figure 5. Translators' cognitive focus and the three aspects of meaning (Korhonen, submitted)



As the last part of the analysis, I zoomed in on the metafunctional shifts to find out which metafunctions – textual, ideational or interpersonal – got the most attention from translators and revisers, respectively. Unfortunately, the outcome of this analysis was inconclusive in that the data on revisers' interventions was not sufficient for results to be presented with any confidence. Both translators (see Figure 5) and revisers, however, seemed to direct most attention towards ideational and textual metafunctions, and only little towards the interpersonal metafunction. Even though the audience of the text changes, this does not seem to lead to

changes in the linguistic realisation of the relationship between the text author(s) and the audience or the attitudes that are expressed in the text. The translation professionals' desire to stay invisible may be one reason for this: they are perhaps careful not to insert any of their own attitudes or ideas of interpersonal relationships into the texts.

Overall, it was observed in Article IV that "revisers don't restrict their cognitive work to locating and correcting errors; rather, they engage in a much more extensive translation and editing task, aiming at the overall improvement of the target text both as a reproduction of the source and as an independent text" (Korhonen (submitted), Ch. 3.2.2). Translation revision should thus be seen as translatorial work that can be compared to that of the translator with regard to its objectives and often even its extensive scope. The fact that revisers demonstrate considerable agency and may choose different working strategies in situations that seem similar – such as the cases of texts F3–F5 above – further supports this view.

The identification of the different cognitive configurations described above shows that the analysis of metafunctional shifts with reference to related factors such as text genre and the apparent quality of the raw translation could provide a relevant basis for considerations of how revision work is or should be performed under various circumstances. Another area of research that could benefit from such linguistic analysis would be investigations into creative elements found in specialised translation. As was mentioned above, fluency-oriented texts encourage or possibly even require linguistic creativity that shows in the current data as frequent metafunctional shifts; this topic would merit dedicated studies.

The basic principle of analysing firstly, the artefact's characteristics and secondly, its communicative content could be applied to many different artefacts used in shared cognitive work. First, such artefacts need to be identified; secondly, their communicative and cognitive affordances need to be investigated; and finally, suitable methods must be found or developed for analysing how those affordances are used to carry out the work and, in doing so, to build a system of socially distributed cognition through communicating what has been done, and what is expected of the other participant(s). The nature of the cognitive work and the context in which it is carried out must be taken into account when considering suitable methods. For example, since translation as a cognitive effort largely focuses on meaning-making, methods that are able to account for how meaning is created should be considered. In all cases, the goals of the study and the nature of the data must be carefully considered when choosing or developing methods.

6.2 The nature and characteristics of cognitive collaboration between translator and reviser

In the above, I have presented the results of my research separately for each included article. In this and the next subsection, I will go through the research questions that were developed in the course of my dissertation project and that were presented in Section 1.2. I will first discuss what has been found out about the nature and characteristics of the cognitive collaboration (6.2), and then delve into elements that shape the collaboration (6.3).

6.2.1 Research question 1a: Distributing the translatorial effort between the translator and the reviser

The first research question, *How is the translatorial effort distributed between the translator and the reviser?* is a rather open one, giving the opportunity to gauge the distribution of the translatorial effort from several perspectives. When looking at all the sub-studies as a whole, some principles of how translatorial effort is distributed in the complex operating environments of the translation industry can be distinguished. These principles include flexibility, trust, complementarity, and negotiation. In the following, I will discuss what they mean in practice.

The defining feature of shared work in LSP translation contexts is flexibility, demonstrated in the composition of the teams, in the goals of each participant's task, in how their competence profiles complement each other, and in how the participants exercise agency and negotiate their respective decision-making spaces. As both translation and revision are carried out as part of the translation service workflow, translators and revisers must adapt to the needs of the project and to the other participants' input. It is therefore vital that the distributed translation production work is examined as situated, context-bound tasks: if these tasks are only studied independently of each other, the mechanisms and practices of reciprocal flexibility could remain invisible.

Much of the shared work depends on trust (for previous discussions of the topic, see, e.g., Chesterman 1997; Abdallah and Koskinen 2007; Pym 2004), starting from situations in which trust is so strong that the work is not distributed at all; a translator who is highly trusted in their subfield of translation may produce the translation alone, and no collaboration takes place. Trust also plays a role when the reviser exercises their agency during the revision work, identifying the features

of the translation that need correcting or editing. The reviser often seems to connect these specific features to the translator's strengths and weaknesses and adjusts their trust in the translator's work accordingly. During the revision process, the reviser may find confirmation that the translator can be trusted to produce a good translated text – or trust that has been built previously may be broken if the reviser finds that the translation is sub-standard. The task distribution is thus not clear until the translation project has been completed. Any decisions on how the text should be revised can be revoked when deemed necessary during the course of the project.

In a successful translation project, both the translator and the reviser should of course be competent professionals. In practice, however, there may be gaps in either participant's competencies. This is completely natural in an industry which requires a multitude of different skills related e.g. to language and communication competences, text genres and the conventions related to them, and all the different substance matters of the texts, which are sent for translation by customers who operate in a wide variety of fields and industries. It is therefore not realistic to expect that in every translation project, both translator and reviser would possess all the competencies that would be useful for that project. Instead, the competence profiles of the participants should be complementary: if the translator works into their L2, for example, that language should be L1 for the reviser. Similarly, at least one of the participants should have good knowledge of the substance matter of the text, and the client's terminological preferences.

In the final part of my dissertation project (Article IV), I turned to the translated and revised texts (Dataset 4) and searched for linguistic evidence of how the translator and reviser distribute the cognitive labour of translation production between them. I theorised that shifts in the three metafunctions introduced in systemic functional linguistics (Halliday and Matthiessen 2014) could be investigated as indications of how deeply the participants invest in the shared meaning-making effort: a high number of metafunctional shifts by one of the participants would indicate a higher level of cognitive effort and probably also a commitment to creating a stylistically appropriate translation. These results have been presented in Section 6.1.4, Figure 4, and I will repeat some of them here in so far as they demonstrate the complementarity of competencies and the flexibility of the work configurations. When looking at these results of what was primarily a methodological exploration, it must be kept in mind that the method is still in need of further development and testing before its most useful areas of application can be determined.

When analysing the metafunctional shifts in the texts, I found traces of complementary competence profiles and examples of cases in which either the translator or the reviser took on a relatively large share of the meaning-making effort. The complementarity of language competencies, for example, was evident in the translation of a speech from Finnish into English. The translator was most likely a native Finnish speaker translating into L2, in this case English. This is normal when the source language is a language of low or limited diffusion. The reviser is a native English speaker. The raw translation produced by the translator had very few errors, and the reviser has focused on improving the naturalness and flow of the speech. The resulting distribution of meaning-making labour has been given in Figure 4 (file F6): the intervention level of the reviser is very high even though there were barely any errors, and the reviser has introduced nearly as many metafunctional shifts as the translator, which is very exceptional in the data.

Files F3, F5 and F7 of Dataset 4 provide good examples of different ways of dividing the work and demonstrate the flexibility of the collaborative practices as it appears on the linguistic level. As was said in Section 6.1.4, F3 and F5 are similar in that the translators have introduced a relatively high number of metafunctional shifts, and there are not many errors in the raw translations. In F5, the reviser has only corrected a few errors, and has introduced no metafunctional shifts; in F3, on the other hand, the reviser has chosen to adopt a more visible role and has made stylistic changes that may not always have been necessary, and that contain metafunctional shifts. This is also an example of the reviser's agency: they have the freedom to choose such different approaches to the work. The third file (F7) taken here as an example is one in which the reviser has been rather forced to take a large role, as the translation has many errors.

In the above, I have considered the distribution of the work based on the translated text itself and the translation solutions that have been communicated in it. However, the comments that revisers had added to the text also shed light on how the work is distributed. The comments included in the texts of Dataset 4 contained information on some translation items and suggestions on how they should be solved. The comments proved to be particularly valuable from the perspective of the interpersonal relationship between the translator and reviser, as a space for negotiating relationships of authority and fostering good cooperation. The revisers had written their comments in a distinctly polite way, avoiding any expressions that might emphasise their authority, and showing willingness to give all decision-making power to the translator. It would seem that in the maintenance

of such collaborative working relationships, respect is valued over authoritativeness.

6.2.2 Research question 1b: The creative characteristics of the combined task

The way in which I understood creativity in professional specialised translation changed during the dissertation project. I started with the idea that creativity in translation means deviating from the source text; such translations are creative, and others are not. The first article included here reflects this conception. When getting on with my research, however, it started to appear to me that this was not the full picture of what creativity is in translation. The need to know more led to my second research question: *What creative characteristics does the combined task have?*

Firstly, some translations seem to require more creativity than others even if no actual deviations from the source text content are allowed. Secondly, when studying the distributed process of translation that the translator and the reviser engage in (Article III), it was clear that the process could easily be described as a creative process of divergent and convergent thinking. With two participants and several work stages, the divergent and convergent phases merely needed to be identified in all the stages carried out by the two participants separately or together. This resulted in a description of a process of co-creation (see Section 6.1.3, Figure 2). In that process, the translator typically first thinks of possible translation solutions (divergent thinking) and then chooses the one they find most appropriate (convergent thinking); the reviser then evaluates the solutions, and if they identify a problem, then develops at least one new solution, and again chooses the best one considering not only the new solution(s), but also weighing these against the translator's original choice. Finally, the translator evaluates the solution suggested by the reviser. This process can be carried out from start to finish without the participants meeting each other or using any direct communication device, but they may also meet or use telephone or a messaging application to discuss some problems more thoroughly.

The question of some texts requiring more creativity than others first appeared when analysing the interview data (Dataset 2) to chart the impact of text genre on which revision parameters (see Section 6.1.2, Table 13) were emphasised. The interviewees typically divided texts into two rough genre categories, which I named *fluent translations* and *precise translations*. Although linguistic correctness was

considered important for both of these, fluent translations required particular emphasis of style-related parameters, which were regarded as requiring creativity from the reviser. Although the results presented in Article I indicate that many LSPs allow revisers to do minor content editing to sharpen the effect of the text, such changes were not being referred to here; the content was expected to remain the same also for the texts belonging to the category of fluent translations, and the creativity resided in the way language was used. This conclusion also received support in the analysis of metafunctional shifts (lexicogrammatical changes) presented in Article IV: there were a higher number of shifts in texts that belonged to fluency-oriented genres. Since metafunctional shifts are essentially cases in which a different lexicogrammatical structure is used in the target text to express the meanings of the source text, they can be assumed to reflect linguistic creativity, and would thus offer a possible analytic tool for investigating such creativity. The scope of the dissertation did not allow me to fully engage with this kind of analysis; I will return to it in future publications.

6.3 Processes and circumstances shaping the reviser's task scope and thus the cognitive collaboration

In the second theme covered by my research questions, I look at the bigger picture and consider the processes and circumstances that shape the cognitive collaboration of a translator and a reviser. Articles I, II and III contribute to an understanding of the factors that influence the reviser's tasks and thus the entire collaboration. Communication channels and their role in building cognitive collaboration are described in Articles III and IV.

6.3.1 Research question 2a: Project-specific background factors shaping the reviser's task as part of the cognitive collaboration

The aim of this research question – *How do project-specific background factors shape the reviser's task as part of the cognitive collaboration?* – was to show how situated cognitive tasks are rooted in concrete, observable circumstances. The first major background factor to be identified was the role of the client and their needs and requirements in determining the task scopes; the importance of the client became apparent in Article I. At this point of my research project, the reviser's task scope was mainly

discussed regarding the types of changes that revisers are expected or allowed to make in the translations. According to the survey respondents, it is vital that the client's wishes are heard, and service specifications are agreed on together. In particular, any deviations from the source text must be based on the client's and the translation professionals' mutual understanding of the goals of the translation. Respondents seemed to place considerably more importance on the client than on the users (target audiences) of the texts. In the interviews carried out later, this was justified with the statement that it is the clients that LSP representatives work with and serve, and with whom long-term relationships are fostered.

Other background factors mentioned by the survey respondents included the text type, the intended use, requirements set by local legislation, and the restrictions imposed by the layout of the text, but these were not elaborated on. The necessity of adequate pricing was also mentioned; this would naturally need to be negotiated with the client, which again stresses the importance of the client and the good business relationship that must be maintained with them.

More specific results on this topic have been achieved in Article II, which builds on what was previously known about the influencing factors and draws a picture of what gives the cognitive collaboration its shape. Many factors were found to be at play, and I grouped them into three categories (see Section 6.1.2, Table 11). The first of these are company-level factors, which remain relatively stable from one project to the next, and include process policies, the reviser pool, and tools. Secondly, there are the external pressure elements of costs and schedules. These do often relate to individual projects and could therefore be categorised as project-related factors, but as their impact is predominantly restricting and often the result of a complicated network of production operations running simultaneously, e.g. overlapping deadlines and the apparent scarcity of translators and revisers in some service areas, they have been treated as their own category. They should perhaps also be seen as the original reason why all the other factors need to be considered: if costs and schedules were never an issue, all translations could be polished to perfection regardless of the cost.

The third category, and the focus of this research question, are project-specific factors: text genre, the translator's experience and competence, and the client's requirements and needs. Results related to these have already been accounted for in the summary of Article II in Section 6.1.2. In brief, the results indicate that causal relationships between background factors and the form that the reviser's task takes are rare. The translator's skills and experience are relevant in two ways: firstly, they may lead to non-revision, if the translator is, for example, considered to

be an expert in that text genre and that client's terminology. Secondly, the translator's competence profile has an impact on which text features the reviser focuses on: accuracy, grammatical correctness, or fluency, for example. At the same time, the reviser must also take into account the text genre's requirements, primarily whether the precision or fluency of expression should be prioritised. Ideally, the reviser is also familiar with the client and their priorities. The result is a network of potentially conflicting requirements and expectations, which the reviser may need to weigh against each other. This raises many interesting questions that have not yet been answered, such as whether the client's importance as an influencing factor exceeds even the impact of the text genre, as it was observed to exceed that of the target audience in Article I. In any case, the client and the text genre were found to be closely related factors in the LSP world, where a client may regularly send texts of the same genre for translation. Some clients are known to prioritise precision in their translations because their text genres require it – or the client at least perceives the genre as requiring it.

In addition to the influencing factors discussed in Article II, Article IV spotlights another process element that has an impact on the revisers' work: the chosen file format that is used for sending the translation to revision. Several options are available, but only one of them has been analysed in this work: the Trados Studio export file, illustrated in Figure 1 (and repeated in Figure 3), that uses the .docx file format and is processed in Microsoft Word software. The affordances of the digital artefact steer and limit the reviser's work considerably. When this file format is used as the sole tool, the organisation and formatting of the text may become obscure. The side-by-side text configuration and the TM match information encourage the reviser to focus on accuracy and the translation segments that are new, instead of paying attention to coherence and the text as a whole. This could be taken to mean that coherence and the formatting of the text should be managed by the translator – but as the translator works in the translation memory environment with only little more information and a similar side-by-side view, these aspects of the translation may not receive much attention at any stage of the overall translation effort.

What has been described here as a list of background factors could also be investigated from the perspective of the people. Between the influencing factors and the workings of the cognitive dyad there are people making decisions and choices. Moving forward, the real-life practices and procedures of the people would be an essential object of study. Within this research project, I have started that effort by investigating the channels of communication that are used by the

participants of the cognitive dyad. These are discussed under the next research question.

6.3.2 Research question 2b: The channels of communication employed between the participants to establish cognitive collaboration

When a cognitive task is shared between two or more participants, communication (externalised representations) is where the individuals combine their efforts into a joint task. In this dissertation, such collaborative task and team configurations have been called systems of socially distributed cognition in which "the outcomes of interest are not determined entirely by the information processing properties of individuals" (Hutchins 1995b, 265; see also Perry 1999). Collaboration is only possible when there is some form of interaction between the participants. When investigating the cognitive collaboration of translators and revisers, it is therefore essential to describe the communication that takes place between them. This has been done in Articles III and IV. In the following, I answer my final research question, *How are channels of communication employed between the participants to establish cognitive collaboration?*, based on these articles.

Article III showed that the channels and media of communication used when performing a collaborative task vary greatly between different translation contexts based not only on the agreed working processes, but also on the physical working environment and how the participants are situated in it. In audio describing, for example, the teams sit side by side and communicate naturally, while in the world of specialised translation, dominated by outsourcing, the team members may never meet each other. LSP translators and revisers usually do have the option of communicating directly using any channel available to them – email, telephone, messaging applications – but they tend not to do so. Instead, they seem to prefer to only communicate via the revision file, which also acts as the place of cognitive collaboration.

The communication features of one type of revision file, the.docx files exported from Trados Studio translation memory software, were described and analysed in Article IV. The participants may use the Microsoft Word's commenting function to address each other directly, but the shared cognitive task becomes most tangible and obvious in the communication of the translated text itself. Engaging in the joint creative process as described in Article III and also discussed in section 6.2.2 of this summary, the translator uses the file to send the results of their individual

creative process to the reviser. The reviser evaluates the translator's solutions, uses the Track Changes function to introduce their own suggestions, and may also add comments to provide questions, observations and additional information concerning any problems identified in the translation. When the reviser has sent the edited file back to the translator, they are usually expected to click through the edits and accept or reject them. The affordances of the file and the software thus contribute to determining the work practices of translators and revisers at this stage of the workflow, directly influencing their cognitive efforts.

The communication that takes place in a digital tool such as the revision file is characteristically task-oriented; based on the current data, this is not a place for informal communication that helps maintain good personal working relationships. It is increasingly important to consider the implications of this lack of direct communication since translation work, like many other types of work traditionally performed in an office environment, seems to be permanently moving to remote configurations with people working from home and rarely meeting their colleagues. This may result in teams in which nearly all communication is task-oriented, and informal face-to-face communication is neglected.

7 CONCLUSION

7.1 Summary of contributions

7.1.1 Theoretical contributions

From article II onwards, I have applied the theory of socially distributed cognition (SDC) as the framework for investigating collaboration in translation production, with particular focus on the reviser's task. I have aimed at making a clear distinction between SDC and other theories that can be grouped under the situated/embodied/4EA paradigm of cognitive science, namely extended, embodied (in a narrower sense), embedded, and individually distributed cognition. Under SDC, I have focused on describing the distributed work of a team of two professionals.

The results presented in Articles II and III could be seen as building blocks of a translation-specific theory of socially distributed cognition. Article II conceptualises the ad-hoc team of translator and reviser as a situated cognitive dyad that takes shape under various interconnected and often conflicting factors, adapting to them in a flexible manner. Article III provides a description of the communication channels used for building a socially distributed cognitive system between the participants of the dyad, recognising the revision file as an important communication channel in the specific cognitive system of specialised translation. These elements should be included in any description of systems of distributed cognition found at an LSP or other translation organisation. This dissertation can thus be seen as offering a model for describing such systems.

The descriptions of the translation companies' policies and professional practices provided here can also be read as contributions to translation process research in its extended sense as defined by Risku et al. (2017), who call for process research that would encompass the entire translation workflow instead of merely one individual's cognitive processes. The contributions are largely the same as those described above: the role of various workflow factors in shaping the revision

task, and the use of communication channels within the workflow. When describing systems that encompass entire workflows, the latter will of course need to be developed further with the inclusion of other digital communicative tools such as project management systems. The present work has also spotlighted the deeply collaborative nature of the drafting of translations, which adds an important perspective to the extended form of translation process research.

In addition to the above, I have also pointed out some considerations to the theory of specialised translation, and translation in general, as a creative undertaking. I believe that the ascent of large language models and their potentially revolutionary impact on translation operations gives ample justification for making the research and theoretical development of translational creativity a future priority: as language professions change, they are likely to change into directions in which different kinds of creativity will play an increasingly important role.

7.1.2 Methodological contributions

In absence of direct observation data, I took the opportunity to search for and develop other cognitive ethnographic methods for investigating distributed cognitive tasks in context. Interviews are naturally a backbone of any research aiming at understanding how processes unfold, and why certain choices influencing them are made. Not wanting to rely solely on interview data, though, I turned to the guided tour method using a simulated task, and analysed textual data – the revision files – for traces of how cognitive work had been distributed.

The implications of using a simulated rather than a genuine task have been discussed in Section 5.1.3 above; here, I will briefly discuss the benefits of the guided tour method, which bears close resemblance to think-aloud protocols, but has a different purpose. In traditional translation process research, the problems of the think-aloud method have become obvious (for a thorough discussion, see Jääskeläinen 2017). When the object of research is not defined as the internal brain processes of an individual, however, but as the extended cognitive processes also encompassing situational elements and collaborative networks, the problems are less obvious. The nature of the obtained data does, however, change rather drastically. The protocols generated using such a method should not be treated as direct evidence of thought processes; instead, they should be seen as a type of interview. When the interview is carried out while the interviewee is performing their work, the accumulated information will be directly relevant to that work, and

more likely to provide a true picture of the tasks than an interview carried out in a different setting would. The guided tour method, as described by Olohan (2021, 125), would therefore merit more extensive use in translation studies.

In Article IV, I turned to my textual data and began to look into its potential as cognitive data; to my knowledge, this data type has not been used in previous socio-cognitive studies. I applied parts of the artefact analysis method (Lueger 2000, 144ff; Risku 2009, 114–15) and explored the possibilities of using discourse analysis for investigating distributed linguistic work as a cognitive effort. The latter method in particular must be seen as a first tentative step in finding out how such methodology, combined with the particular framework of systemic functional linguistics, could provide new insights into how translational action is distributed within professional teams, and which aspects of meaning translators and revisers use their cognitive energy on. The significance of the questions that were asked, the suitability of the chosen discourse analysis method and procedure, and the suitability of the data for this purpose remains to be evaluated in future work.

7.1.3 Contributions to the field

As a practitioner, I find it important that my work may also be interesting and perhaps useful for people working in the translation industry. Using empirical data that have given voice to professionals of specialised translation has hopefully advanced this goal: I have based my analyses of translatorial action on the views and explanations of experienced professionals. Results presented in Article II provide directly applicable information about how the scope of the revision task could be determined and what should be taken into account when deciding on revision procedures and practices. Turning the attention to the properties of the digital files and their formatting features may also help practitioners develop their use of tools and the related practices, as their understanding of the significance of artefacts and their affordances increases. This will also apply to the adoption of AI tools for producing language services: professionals need to learn how to use them in an efficient and appropriate manner. This requires an understanding of the tools' characteristics and affordances.

When discussing translation with practitioners, I have found that they tend to compare their text production work to that of writing professionals, for example, and may fail to see the creative characteristics of their own work. The conception of what creativity is often bears resemblance to traditional ideas connecting

creativity exclusively to major artworks, high culture, and technical inventions. Rushing to meet a deadline with a technical manual may not feel like engaging in a creative activity. This could also be due to the fact that translation professionals develop into masters of problem-solving and finding the best linguistic solutions, and become so skilled in it that they no longer notice the creative elements in what they do. The present work can thus help the practitioner to think about what they actually do when translating or revising, and to value their own work as a creative effort.

7.2 Limitations

It has been observed above that some of the datasets in the studies presented here were small. Useful results can still be achieved: for example, the guided tour dataset was comprised of three cases, and for the present purposes, this is an adequate number. The survey (Dataset I), on the other hand, would naturally have benefited from a larger number of respondents, which would have allowed giving more emphasis to the quantitative results. At present, the results presented based on Dataset I should be considered preliminary, and their use should be limited to forming hypotheses for future studies and creating a qualitative interpretation of the research object together with verbal responses to open-ended questions. The textual data (Dataset IV) was also limited, albeit well suited for testing the selected research methods; since the analysis was carried out manually instead of using corpus tools, a larger data could have been too laborious to analyse.

Considering the reshaping of the objectives of the research project during its course, the simulated guided tour was not the ideal way of gathering data on the working processes and, in particular, the communication practices of revisers. The simulations did yield data on communication as the revisers mentioned how they would communicate with the translator or the client in a genuine situation, but this information is comparable to the same topics being discussed in an interview. All the minutiae of interaction, which could have been a valuable target for cognitive ethnographic analysis, remained hidden. Direct observation of the execution of a genuine customer project would thus be the ideal way of accumulating knowledge about the processes and the communication practices.

7.3 Future research

In this dissertation, I have investigated the cognitive collaboration and action of translation professionals working in the translation industry through triangulation using various methods that do not require long periods of fieldwork. I have looked at my object of research from several perspectives, but always from a distance, and have not witnessed collaboration first hand in a genuine working environment. This has been due to the evolving nature of the study, and the fact that when I began to see the usefulness of observational data, COVID-19 effectively kept me from even dreaming of such a data gathering project. This forced me to turn into methodological directions that would probably have remained undiscovered if a more conventional route had been available to me. Nevertheless, the obvious next step in my research would be to gather observational data of LSP operations and the work of cognitive dyads to validate and complement the results that have been reported here.

I have so far used the theoretical framework of socially distributed cognition to approach my object of study. This is not the only possible choice, and trying out other frameworks such as practice research, including the theory of practice architectures (Kemmis 2022) could prove to be a fruitful path into a deeper understanding of the collaborative and distributed practices employed at LSPs. In addition, sociologically oriented theories could help flesh out the picture of LSP work through the examination of affect and other similar aspects of translatorial action. All of these are compatible with the situated approach that I have taken.

The results achieved in this research project have given rise to numerous new questions, many of which have been mentioned in the published articles. Considering the work as a whole, questions of individual and distributed agency as well as authority in these translation processes have become increasingly pressing, and should be investigated in connection with the distributed cognitive systems and the use of artefacts: how do positions of authority, for example, manifest in the minutiae of tool use, and how do the affordances of the tools influence the participants' agency and the systems of authority? The increasing proportion of remote team configurations adds another aspect to these areas of inquiry, as the affordances and constraints of online communication and conferencing tools also have an impact on teamwork and the distributed cognitive effort involved.

As the present work has only begun to chart the possible creative characteristics of specialised translation, it is clear that more research is needed to understand the different types of creative work involved in translation production. Differences in

what kind of creativity translators vs. revisers need not to mention other translation professionals such as project coordinators, are examples of areas that we know little about. This topic could be studied from numerous perspectives and using widely varied data, including interviews that delve deeper into the professionals' own conceptions and linguistic analysis that would shed light on which translational norms professionals follow when writing translations: how much creativity, and what kind, do they exercise in their linguistic work?

Finally, a note on AI, or large language models (LLMs). The entry of AI tools into translation changes things; this we all agree on. In this work, I have explicitly defined translation revision as processing of human translations and excluded post-editing of machine translations (MT) from my research. This does not, however, mean that machine translation could not be a part of the same process. Translation engines are becoming a common addition to the translation environment in which today's specialised translation is carried out; the software that previously only produced suggestions from a translation memory database now also offers input from a translation engine to expediate the human translator's work. This doesn't make the final product any less a human translation. The results presented in this work thus apply to such translation processes just as well as to processes that include no MT tools.

That said, the investigation of translation environments in which large language models and machine translation have an even bigger role is a crucial goal for the future. The evolving processes, procedures and practices of translation workplaces and professionals who work with new advanced tools need to be looked into, described, and made visible. How does the work really change? Why? How should professionals work, and what competencies do they need? How does the entry of AI change what creativity means in the context of translation? Those are some of the questions that need to be answered again and again, with each new step forward that the industry and its tools take. As the tools evolve, so do the overall systems of translation work, and professionals need to regroup and adjust their place in the system. To be able to support them in this task, translation studies research must keep up with the changes and produce up-to-date descriptions of actual tool use.

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PUBLICATIONS

Article I Korhonen, Annamari. 2021. "From Language Check to Creative Editing: Exploring Variation in the Revision Stage of the LSP Workflow." In *Translation Revision and Post-editing: Industry Practices and Cognitive Processes*, edited by Maarit Koponen, Brian Mossop, Isabelle S. Robert and Giovanna Scocchera, 131–147. Abingdon: Routledge.

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PUBLICATION I

From Language Check to Creative Editing: Exploring Variation in the Revision Stage of the LSP Workflow

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FROM LANGUAGE CHECK TO CREATIVE EDITING

Exploring variation in the revision stage of the LSP workflow

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ABSTRACT

This chapter presents a survey charting the revision policies of Finnish language service providers (LSPs) and proposes a visual model that can be used for developing the policies further in a systematic manner. The purpose of the survey is to learn more about real-life LSP practices in order to develop a theoretical model and a practical tool concerning the use of revision in translation production workflows. The survey results presented here focus on revision parameters, the allowed level of creativity, various cases that require a specific kind of revision, and decision-making power. It was found that there is much flexibility in practices, and the client's wishes are generally considered paramount. To further develop translation workflows, it is proposed that revision tasks that differ from each other in purpose and in variables such as the text type, degree of creativity, practical procedure or revision parameters could be systematically defined using a revision continuum which would range from simple linguistic checking to creative editing and tailoring and would help secure the financial viability of LSPs' operations by highlighting the appropriate pricing of different revision tasks.

According to Arnt Lykke Jakobsen (2019: 64), “translation and revision are more in transition than ever before”. Jakobsen is referring to the transition that is brought about by new technologies, above all machine translation. This chapter, however, discusses another way in which revision could take on a bigger role in the translation industry’s workflows: different kinds of revision tasks could be used in the design of new services when language service providers (LSPs) expand from translation into a wider selection of multilingual communication services. In such production environments, revision takes on a purpose beyond translation quality assurance.

Jakobsen (2019: 69), like many others, groups translators together with writers. Dam-Jensen and Heine (2013: 90–91; see also Risku, Milosevic & Pein-Weber 2016) discuss writing, translation and adaptation as three types of text production and consider similarities and differences between these three tasks. This chapter builds on that line of thought, seeing translation first and foremost as text production, as creating communications for many different purposes, and it looks at the potential of revision not only in correcting translators’ errors, but also in editing texts further. To help understand the flexibility, complexity and vast potential of revision, the concept of revision continuum is introduced.

The ideas presented here are based on the different ways in which LSPs that operate in Finland, and mainly serve corporate and public sector clients, use translation revision in real-life business contexts. These different ways have been investigated by means of an online survey of LSP representatives. Specific focus is firstly on revision task specifications in terms of revision parameters (see Mossop 2014) and the allowed degree of creativity, secondly on various circumstances that may require revision to be carried out in a specific manner, and thirdly on who decides the scope of revision. The role of revision in the production workflow of different creative translation services will also be discussed based on the survey. The survey results, as well as the idea of the revision continuum, is expected to be of interest to various stakeholders including LSPs, translator educators and researchers.

The survey was sent to LSPs in May 2018, with the aim of increasing the so far rather meagre body of empirical studies of revision policies (see Rasmussen & Schjoldager 2011, Uotila 2017, Ko 2011). The questionnaire was largely based on Brian Mossop’s (2014)

comprehensive discussion of revision policies and procedures. When presenting and discussing the results of the survey later in this chapter, I will also draw on the experience accumulated in my 20 years as a translator working at LSPs.

Before moving on to the results of the survey, I will briefly discuss the importance of studying the LSP workflow and, more specifically, the revision task. I will also introduce the idea of a revision continuum, and take a look at some previous research on revision policies. The survey design will then be introduced, and the findings from the survey presented with the help of diagrams. Before the final conclusions, I will return to the concept of revision continuum and how it could help us chart revision policies in all their inherent flexibility.

1 Revision as part of the translation workflow

In this chapter, the focus is on revision as a separate step in the workflow performed after translation, and by someone else than the translator. Self-revision as well as other types of revision, such as the kind a translator does when producing a translation based on translation memory matches, remain outside the scope of this chapter. This means that revision is primarily defined in terms of its position in the workflow and role in producing a service for clients.

In translation studies, process research traditionally refers to investigating the translator's (or sometimes the reviser's) thought processes (see Englund Dimitrova 2010). However, translations are hardly ever produced in isolation. In reality, translators work in production networks (see for example Abdallah 2012, Solum 2017) with many different people taking on various roles. These roles and the workflow that consists of the tasks they perform have a great impact on how translators work, and Drugan (2013: 40) quite appropriately calls attention to the need for investigating the production processes and models of translation industry operators. Lauscher (2000: 161) even states that the lack of knowledge of translation production processes – the workflow – results in a lack of real-life foundation for all scholarly models of translation quality. In their discussion of contextual factors that influence the production of translations, Dam-Jensen and Heine (2013: 91, 94) list the physical environment, technical tools and collaborative networks – but the networks are only referred to in terms of social interaction, ignoring the role of the workflow. More

empirical research is therefore needed to lay down a proper theoretical foundation that will help understand the implications of different workflows.

LSPs usually follow a more or less standardised production workflow that consists of various tasks from planning and file preparation to translating, revising and generating target files (see for example Drugan 2013: 105–106, Dunne 2011: 169–170, Gouadec 2007). Although descriptions of workflow differ in some specifics, they generally agree that revision is a well-established and necessary part of the workflow. The translation industry standards EN 15038 (European Committee for Standardization 2006) and ISO 17100:2015 also require revision of the target texts as part of the translation workflow.

Bisiada (2018: 290–291) presents a workflow description that is of particular interest in that it foregrounds the text modification phases. His model includes a translation stage (Orientation – Drafting – Revising), which takes place within a translation company, and an editing[1] stage (Stylistic editing – Copyediting – Structural editing – Content editing), which takes place outside the translation company (within a publishing company in the case of Bisiada's data). However, such a straightforward division may not apply in the context of translation services offered to corporate clients. When an industrial client outsources the translation of its corporate communications to an LSP, they usually expect to receive finalised products that are ready for publication online or in printed form. While in most cases they review the materials before actually publishing them, this review may not constitute an actual editing process. From the point of view of efficiency and financial viability, it makes sense to include the editing stage in the translation stage or, more specifically, in the revision task that is considered part of the translation stage in Bisiada's workflow model and takes place within the LSP.

2 The revision continuum introduced

The revision continuum is a visual representation of the hypothesis that the scope of revision can be, and in fact frequently is, adjusted to meet different objectives in a manner that also secures the financial viability of LSPs' operations. According to Martin (2007: 60), "fit-for-purpose translation, when applied systemically to a varied workflow, is a viable way of using translation and revision resources intelligently." This is precisely what the revision continuum aims at – providing a systematic model for the intelligent and flexible use of

revision resources to produce fit-for-purpose translations. The continuum will help pin down the various revision practices that LSPs apply when processing many different text types from technical manuals to marketing materials and blogs.

Figure 1: *The revision continuum*

The survey presented in this chapter provides information on some of the variables that together define the revision task, and reveals some factors that LSPs consider when making decisions about the scope of the task. The survey is a step towards placing different kinds of revision task on a continuum ranging from simple linguistic review – or just a quick proofreading – to creative stylistic editing and tailoring for a specific readership (see figure 1). Between these two extremes, any number of revision levels with different task definitions may exist, all of them used for a specific purpose.

The revision continuum could be used in two different ways: firstly, as a theoretical model that would help us imagine all the possible ways in which revision could be carried out, and secondly, as a practical tool that describes the different revision levels applied by an individual LSP. Building such a theoretical model and creating such a practical tool are not simple tasks, and are in fact well beyond the scope of a single survey. In-depth interviews and analysis and classification of revised materials would probably be necessary. I will return to the potential uses and benefits of the revision continuum after the analysis of the survey data.

3 Previous studies of revision policies

Much of the academic study on revision focuses on revisers' working procedures and mental processes. Important studies in this area have been carried out by Künzli (for example, 2007); for an account of other interesting studies, see Mossop (2007). The practical viability and benefits of certain procedures have also been investigated (see for example Robert & Van Waes 2014). Less attention has been paid to LSPs' policies and workflows, and only a few systematic surveys of them have been published. Perhaps the most important of these is the research project of Rasmussen and Schjoldager (2011) on

Danish LSPs. They used a questionnaire and interviews to find out whether unilingual or comparative revision was preferred, which revision parameters were included and who the revisers were. They found, among other things, that problems in financial viability and tight schedules often prevent thorough revision.

Uotila (2017) repeated Rasmussen and Schjoldager's questionnaire, but not the interviews, in Finland for her master's thesis. Most of Uotila's findings regarding revision policies agree with those of the Danish study, but she found that fewer Finnish than Danish LSPs have specific guidelines for revision. Neither Uotila nor Rasmussen and Schjoldager consider the advantages of designing the revision task to suit different purposes or text types; they only look at whether texts are subjected to revision or not, and why. From the point of view of the present study, however, Uotila's survey provides valuable additional insight into the revision policies of Finnish LSPs.

Ko (2011) considers revision in the Chinese translation market through some personal experiences, but discusses revision as well as the review carried out by clients under the single concept of translation checking. The analysis is based on case studies. Ko's approach brings out the client's role in the translation production process more clearly than the surveys carried out by Rasmussen and Schjoldager or Uotila. Ko (2011: 133) also states that as translation jobs have different purposes and requirements, general guidelines applied to all revision or review jobs would be impractical. Instead, any guidelines for revision or review should be tailor-made. The need to tailor the task description for different purposes of course resonates well with the idea of a revision continuum.

All these studies discuss revision as quality assurance. Variation in the scope of revision is not a particular area of focus in any of them, nor are the creative aspects of revision tasks considered. The present study aims to fill this gap and take revision research in a new direction to uncover the full potential of this important part of the workflow.

4 Research design

The survey to be discussed here looked at workflow processes from the LSPs' viewpoint, examining how they have designed their production workflow and the related revision policies. The participants were therefore representatives of Finnish LSPs that identify primarily as translation agencies. Based on publicly available sales information, LSPs

that were at least medium-sized as translation businesses, although not very large from the point of view of Finnish businesses generally, were selected as recipients of the online questionnaire. To allow the inclusion of an adequate number of companies, no definite sales limit was established; instead, sales figures from several years were examined to identify companies with steady annual sales of several hundred thousand euros or more.

In order to obtain some preliminary quantitative data on the kinds of revision policies and practices that might be prevalent among LSPs, the link to the questionnaire was sent to a single representative of each company. They were informed that their responses would be used for research purposes and published. To ensure protection of business secrets, the survey recipients cannot be described in more detail here.

In the cover letter, it was emphasised that the respondent should be familiar with the company's revision processes and services. The respondents were thus expected to provide answers based on the companies' established ways of working instead of the respondents' own preferences. However, it was not possible to control who actually responded to the survey. The respondents were not required to enter their own or the company's name, because it was assumed that they would then be more reluctant to respond. This means that the respondent may have been someone with incomplete or outdated knowledge. Similarly, it cannot be confirmed that an actual company policy or practice exists regarding all the details addressed by the survey; some of the matters discussed here may not have been considered by some LSPs at all. In these cases, the responses would in fact reflect the respondents' individual preferences.

A link to the online questionnaire was sent by email to 26 Finnish LSPs. Reminders were sent, and some of the large companies were contacted via personal connections to ensure a response. A total of 11 LSPs responded to the survey (response rate 42.3%); these represent a major portion of the Finnish translation industry in terms of combined sales. The most prominent LSPs were well represented among the respondents.

The questionnaire had 29 questions, some with two parts. The questions were posed in Finnish and divided into four sections: 1. basic background information about the company, 2. the company's service range, 3. the revision procedure, and 4. creative translation and editing services offered. Both open and closed questions were used.

Not all the data yielded by the questionnaire are analysed in this chapter; here, the focus is on the section dealing with the revision procedure, with particular attention to the

scope of revision, its allowed level of creativity, and who has the authority to make decisions about these matters. To learn more about the role of revision in the workflows for creative translation and editing services, some of the questions in the fourth part of the questionnaire were also looked at. The following questions are discussed here:

1. Does the typical translation workflow include a revision task carried out by someone other than the person who translated the text?
2. Which text features is the reviser expected to pay attention to?
3. What types of stylistic editing is the reviser expected to carry out?
4. In what situations may the reviser make or propose changes to deviate from source text content?
5. Has the company defined different revision levels, or may the reviser decide the scope of revision?
6. Is the reviser provided with a description of the scope and objectives of each revision task?

Basic information about all these matters was obtained from closed questions, and the responses to them are presented below in section 5. However, some of the open-ended questions provided a more nuanced picture by revealing contextual factors behind the practices. Information from these questions has therefore also been included in the present analysis.

In analysing the responses, the companies were divided into major (5 respondents) and minor operators (6 respondents) based on their number of employees, countries of operation, service range and selection of language pairs. The responses to the background information section of the survey showed that all the major operators offered translations in all language pairs, had operations in several countries, and had an extensive service range including creative translation services. The division into major and minor operators will be used in the presentation of the survey results below.

5 Results of the survey: revision policies of LSPs that operate in Finland

In this section, I will go through the responses to the six questions listed above and briefly discuss the possible implications of the responses. With the exception of the first question, the results will be presented in a graphical format. As the data were limited, it must be kept in mind that any conclusions are only preliminary, hypotheses for further study at best. Since it is difficult to obtain a larger sample among Finnish LSPs, any further study will have to rely on in-depth methods such as interviews.

The status of revision in the typical workflow

To begin charting the LSPs' revision policies, they were asked whether the typical translation workflow included other-revision, that is, a revision task carried out by someone other than the person who translated the text. The question was worded to ask about a *typical* translation process, because based on Rasmussen and Schjoldagers (2011) as well as Uotila's (2017) findings, it was expected that most LSPs allow some flexibility in their processes and do not revise each and every translation. Rather surprisingly, only seven of the eleven respondents stated that their typical translation workflow includes revision. Among large operators, only two of the five companies did, which was even more surprising as large companies could certainly be assumed to have adequate resources for revision. When asked to give an account of the entire workflow, however, most of those who did not indicate revision as part of the typical workflow still mentioned it as a possible step; only one did not mention revision at all.

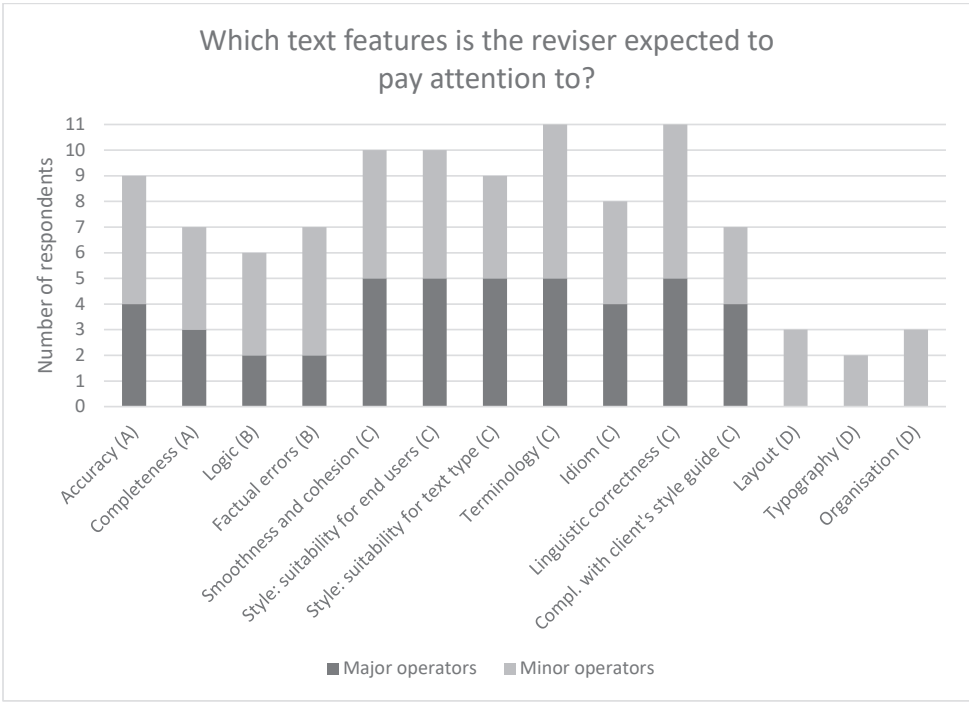
In Uotila's (2017) survey of Finnish LSPs, the respondents were not asked whether a typical workflow included revision. Instead, they were asked to estimate what percentage of their translations are revised. Of Uotila's nine respondents, four claimed that they revise all translations, and nearly all revised more than half of the translations. The texts were chosen for revision based on criteria such as the language pair, the client's requirements, knowledge of the translator's skill, and whether the translation had been subcontracted to another service provider that has its own quality assurance process (Uotila 2017: 48–50).

Uotila's findings as well as the present survey indicate a strong emphasis on flexibility in LSPs' workflows. It would be interesting to find out more about why so many LSPs, even the large ones, do not include revision into their typical translation process despite the fact that revision is strongly recommended in the literature on translation workflow and even required by the translation industry standards EN 15038 and ISO 17100. One of the possible reasons is that they have a very reliable translator base. Perhaps they translate high volumes of non-critical text types where low pricing does not allow revision, or subcontract a large proportion of translations to other service providers that have their own QA procedures. Further research is needed to achieve any degree of certainty about why some companies do not consider revision so important as to make it a standard part of the workflow.

Revision parameters

Figure 2 lists 14 revision parameters from four groups (A–D) and shows the number of respondent companies that included each parameter in the scope of typical revision. The respondents were able to select several options – which was also the case for most of the other questions presented in this chapter.

Figure 2: *Parameters to be checked*



The options used in the questionnaire roughly follow the revision parameters identified by Mossop (2014: 134–135). Some modifications were made to use wordings that were more likely to be familiar to the respondents[2]; this was somewhat challenging as the jargon used at LSPs varies considerably from one company to the next (see Uotila 2017: 45). Two of Mossop's parameters were divided further so that more detailed information of the task content could be obtained: the parameter 'sub-language' was divided into 'stylistic suitability for the text type' and 'terminology', while 'mechanics' was divided into 'linguistic (grammatical) correctness' and 'compliance with client's style guide'. It is true that client-specific style guides often include instructions on appropriate grammar. Still, general grammatical correctness and compliance with a style guide constitute two different things to check, which made it logical to separate them in this context. Similarly, style and terminology, while both aspects of sub-language, are different from each other in that style can be understood as a feature of all texts, while terminology is more important in some texts than in others. The differences in how many respondents selected each of these options proved the divisions justified.

The only two parameters that all respondents marked as part of the typical revision procedure were 'linguistic correctness' and 'terminology'; the same two parameters were considered most important by Uotila's (2017: 54) respondents. Most of the parameters related to language and style – Mossop's (2014: 134) parameter group C – were, in fact, routinely included in revision by nearly all respondents. 'Idiom' and 'compliance with a client's style guide' were selected slightly less frequently than the other parameters in this group.

The first two parameters, which deal with meaning transfer (Mossop's group A), were also included by the majority of respondents, although 'completeness' was selected less often than 'accuracy'. As accuracy can only be verified if a comparative revision is carried out, it can be concluded that this revision method seems to be the norm. Uotila's (2017: 51) findings support this conclusion: seven of her nine respondents used a comparative procedure for all their revisions. In their survey of Danish LSPs, Rasmussen and Schjoldager (2011: 104–105) also found that comparative revision was the prevalent practice, although it was not always carried out for the entire text.

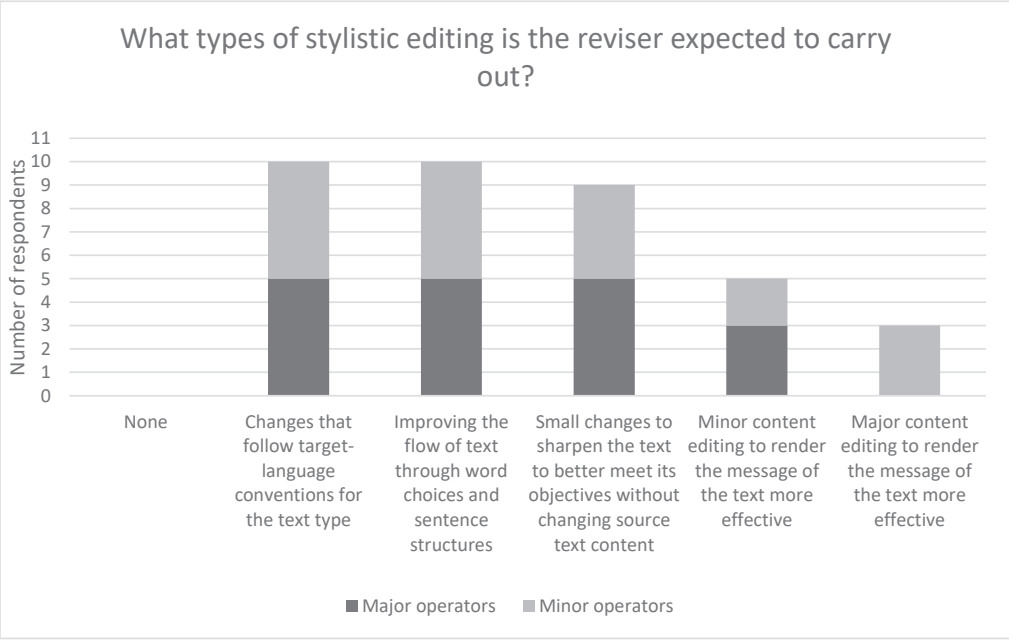
What is perhaps most striking about figure 2 is how marginal the visual aspects of the text are (parameter group D). This group includes the parameters 'layout', 'typography' and 'organisation', which refers to the use of headings and footnotes. Each of these parameters was only selected by two or three respondents, and by none of the major operators. One respondent explained that the working file formats used in the translation environment prevent a layout check, even though reference material with the original layout is often available. Layout may be separately checked at a later stage, but the check is not part of the revision task and is offered to clients as an additional service by this particular LSP.

The parameters related to content ('logic' and 'factual errors', group B) are an interesting category. More than half of the respondents included them in the normal revision procedure, but the difference from the language and style parameters was clear. While it is generally agreed that obvious source mistakes such as dates that do not match should be corrected – and the client notified – many apparently consider the content parameters to fall under the client's and not the LSP's responsibility.

Variation in the level of creativity

When the logic of the text or factual errors are corrected during translation or revision, the resulting target text will naturally differ at some points from the source text. The question of whether the logical and factual errors should be corrected in a translation thus takes us towards a bigger question: are actual changes to the content of the text allowed during translation and revision? Two of the survey questions addressed this issue. The first of these concerned the degree of creativity allowed in stylistic modifications, and the second dealt with the specific situations in which the reviser was allowed to make changes to the content of the text. The options and responses are presented in figures 3 and 4.

Figure 3: *Types of stylistic editing*

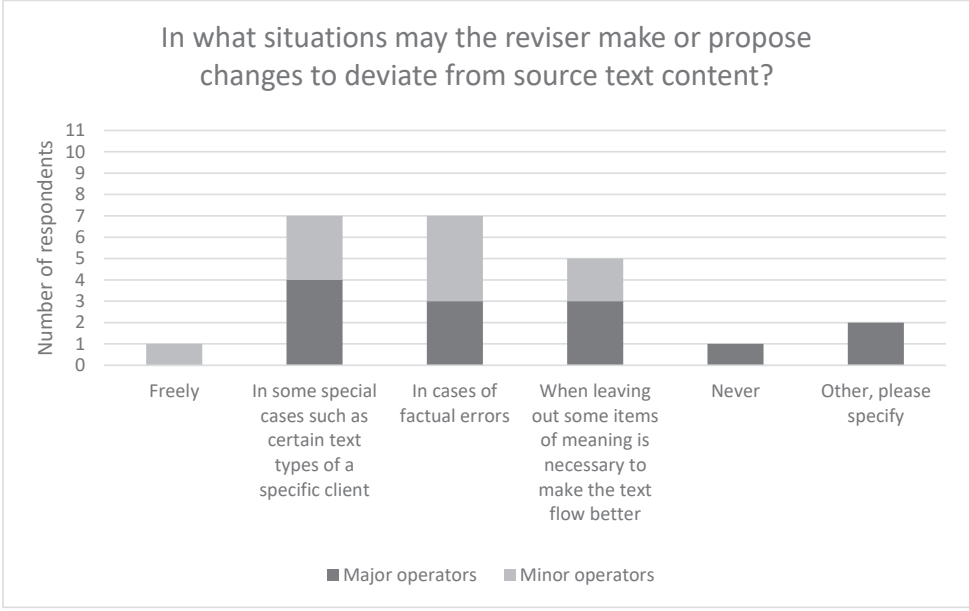


Nearly all respondents expected the reviser to correct the style of the text in accordance with text type-specific target-language conventions, to make the text flow better through improved word choices and constructions, and to sharpen the text by small changes. However, many drew the line at actual content editing. None of the large operators expected the reviser to engage in major content editing. It is rather interesting

that three minor operators did, but we can only speculate whether these companies specialise in creative translation and communication services, or whether the respondents perhaps just had a different definition of major content editing in mind.

Figure 4 lists some situations in which LSPs may allow content editing during revision. Only one respondent indicated that they allow revisers to freely deviate from source content; on the other hand, one respondent allowed no deviations at all. It seems to be a fairly common practice that changes to content are allowed with certain text types of specific clients. In my own experience, which is supported by the responses to some of the open-ended questions in the survey, this is usually based on an agreement between the LSP and the client to the effect that some text types are given a special treatment. Two respondents selected the 'Other, please specify' option: both described cases where the client has specifically ordered a creative translation or wanted the text to be edited further. It must be noted that both of these respondents also selected other options; these were therefore not the only situations where they allowed deviation from source text content.

Figure 4: *Situations allowing changes in source text content*



The responses to some of the open-ended questions in this survey indicate that the client's requests and what had been agreed with the client are the most important factors in

deciding what kinds of changes are allowed during the revision task. The respondents repeatedly mentioned the wishes of the client and the fact that service specifications must be mutually agreed upon. In some other translation contexts, the client's wishes may not need to be automatically observed, and Mossop (2014: 123) indeed does not recommend doing so. When producing a commercial service in an extremely competitive operating environment, however, listening to the client is clearly of crucial importance. Dunne (2011: 176) stresses that a translation can only be adequate or inadequate in relation to the communicative function that it should fulfil (see Nord 1997: 34–37), which is "not a quality inherent in a target text, but rather is a quality assigned to the target text by an evaluator from his or her particular point of view" – and that point of view, in the context of a business-to-business translation service, can only be the client's.

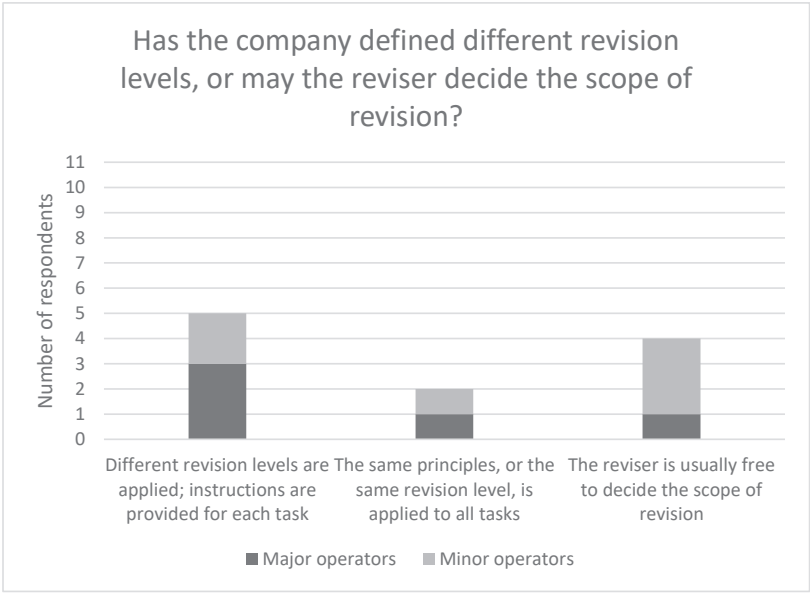
Other factors that respondents mentioned as having an impact on the scope of revision include the text type, the target audience and the intended use: the text must be revised so that it works as intended in the target context. However, the target audience, or the end user, was mentioned far less frequently than the client, which clearly implies that in all considerations, the client comes first. Other factors to be considered include local legislation, which may require changes to the text, and layout, which may require omission of some content so that the text can fit into the designated space. With some text types, strict limits on the number of characters are imposed.

One respondent foregrounded a further factor that can be best described as a precondition for all the other revision policy choices: the pricing of the job must allow enough time to produce the necessary quality level. As creative editing is a time-consuming activity, it can only be carried out if the price of the project has been negotiated to allow the use of adequate time. According to the respondent who raised the price issue, translations of marketing texts must be sold to clients under service labels that justify the higher price. The label makes it easier for the client to accept that creative quality takes time to produce. This is a crucial matter for LSPs, because in the commercial reality within which they now operate, translation prices are often pushed down to the limits of profitability (see European Commission 2018), and it is simply not possible to spend enough time on all translations to hone them to perfection.

Distribution of decision-making power

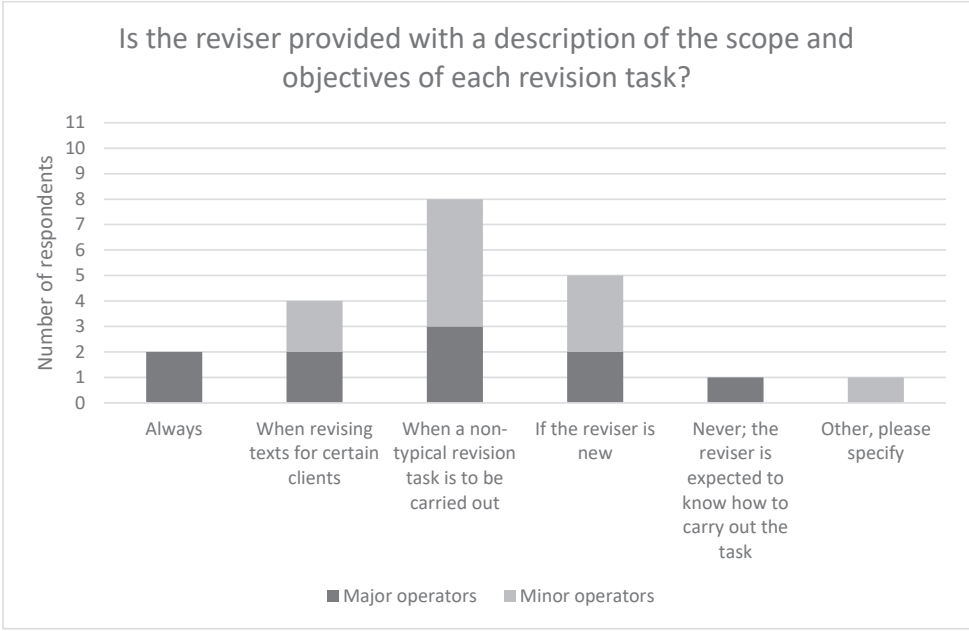
Who then decides what the scope of revision will be and what the reviser can or cannot do? Do revisers receive instructions, or a brief, for each task? In this area, the respondents seemed to give somewhat contradictory answers to two slightly overlapping questions (figures 5 and 6). The first question is whether the LSPs have defined revision levels that are given to revisers as instructions, and the second explores different situations in which instructions may be provided.

Figure 5: *Revision levels and decision-making power*



For the question presented in figure 5, the respondents were only allowed to select one option. It seems that large operators favour providing instructions, while smaller ones more often rely on the reviser's judgment. It remains unclear whether the respondents who always apply the same revision level communicate their revision principles to revisers. These responses also provide proof that most LSPs recognise that variation exists between revision tasks: the responses represented by the first and the third column are based on the assumption that the scope of revision needs to be decided at some point. The respondents who selected the first or the third option only differ on whether the decision is made by the LSP or whether the reviser may decide the scope independently.

Figure 6: *Availability of scope and objectives of revision*



The responses presented in figure 5 seem straightforward enough – until figure 6 is examined. The respondents were now again allowed to select several options. While five respondents had previously indicated that the company applies different revision levels and that revisers receive instructions for each task, now only two stated that revisers always receive a description of the scope and objectives of the task. This can only be understood by assuming that in the previous question, the respondents did not mean that instructions would be provided for each and every task; instead, they meant that instructions for different revision levels existed and would be provided when necessary. Furthermore, eight respondents now state that a description is provided when a non-typical revision task is to be carried out, although only five had previously said that such descriptions exist. This must mean that a task description can be provided on an ad hoc basis for each case even when definitions of revision levels have not been established in advance.

One respondent did not find an appropriate option among those provided and explained that the procedure was well established and no actual instructions were usually required, but when they were, even detailed instructions could be provided by the project

manager, the translator or the account manager. This seems to be a good summary of all the responses to this question: the procedure is very flexible for most LSPs, and is based on only providing instructions when they are needed. In other cases, instructions would only waste the reviser's time. On the other hand, if the procedure is indeed well established and revisers are normally expected to know the routine, this could mean that there is little variation in how revision is carried out, and the service that is being provided is usually the same. There may therefore be a lot of untapped potential in how the workflow's revision phase could be used to produce different services for clients.

Some of the responses to section 4 of the questionnaire, which charted the creative translation and editing services of the LSPs, provided proof that revision is already being used in that manner by some LSPs. Respondents from companies that offer both a transcreation[3] service and a separate creative editing service were asked to explain how these two differ in terms of the workflow or the practical execution of the task. Two respondents answered this question; both stated clearly that the workflows used when producing these two services are similar. One of the two also explained that both services are based on a regular translation workflow to which a more extensive editing phase is added.

Although this shows that dividing the work into phases is clearly considered a useful practice, using the same production process for different services could also indicate a need for further service development. Such a need was in fact identified by several respondents: when asked whether they have established definitions for their creative translation and editing services, only one respondent stated confidently that service descriptions exist for all services. All the others were more or less unhappy with their current service definitions or admitted that service design had not yet been completed. Five of the eleven respondents did say that their companies had increased their service range in recent years; most of them in the area of marketing and content production services. With the development of new services, service design is probably an ongoing effort for many LSPs.

6 Role and benefits of a revision continuum

Section 2 of this chapter introduced the concept of a revision continuum that ranges from simple proofreading to extensive creative editing of a translated text. As we have seen,

editing can indeed be used to produce creative translation services. Furthermore, figures 4, 5 and 6 showed that variation exists in the revision tasks carried out at LSPs. All in all, the survey yielded important information about how different situations influence revision practices and seem to require specific procedures. This information helps us understand the flexibility inherent in LSP policies. To turn this flexibility into efficient workflows, systematic definition of specific revision types that meet different needs will be required.

As was mentioned in section 2, the revision continuum could be used as a theoretical model, providing insight into all the different ways in which revision could be carried out, or it could be a valuable practical tool used as a basis of daily operations at LSPs. At least two practical uses can be identified: firstly, as a service design tool when defining the scope of a revision task that is part of a specific service, and secondly, as a way to help ensure the financial viability of LSPs' operations.

When using the revision continuum as a service design tool, the first step is to consider which variables will be involved in the different types of revision that would be useful to LSPs. Choosing which revision parameters to apply is an obvious starting point. Going by the results shown on figure 2, some revision parameters are considered more essential than others. This makes it fairly easy to define a budget revision service that only includes the most important parameters (linguistic correctness and terminology being the most obvious candidates based on the present study as well as Uotila's (2017) findings), as well as a full service that would encompass all or most of the revision parameters. The level of creativity to be allowed – which was discussed above as deviation from the source text content but could also be understood as creative use of language – is another powerful way of making a difference between types of revision. Further variables would include choosing between a spot check and complete revision, and between unilingual and comparative revision, or including both in the workflow as separate steps.

Next, let's look at how the revision continuum could help LSPs avoid wasting resources. LSPs often engage in fierce competitive bidding in which price is the most important factor. The company that has the best production process, resulting in adequate quality at the lowest price, wins. Adequate (or fit-for-purpose) revision can be considered as key to adequate quality. In practice, this means that LSPs must consider when to apply extensive revision and when a less thorough check will do, and the depth of revision must be reflected in the price.

The need to make the task description and the price meet has not previously been fully recognised in revision research. Martin (2007: 58), for example, takes it for granted that revision needs to be kept "within sensible and affordable limits". The underlying assumption appears to be that the price the client pays for revision is always the same, and the cost to the LSP of revision must be affordable with respect to that price, which of course often limits revision to a minimum level. This results in problems that could be solved by increased variation in the price of revision. The survey results presented here have shown that LSPs already use the revision step in the workflow to produce services that are sold under various labels for which a higher price is charged, for example creative editing or transcreation. This proves that revision is an important part of the workflow, with potential to make a difference between regular translation and a high-quality creative communication service; charging different prices for different types of revision is thus justified. From the clients' point of view, it also makes sense that they receive texts with the quality level and style that they need in each case, and only pay for the level that they need.

It could of course be argued that in the case of extensive editing of a translation, we are no longer talking about revision in the sense usually ascribed to the term in translation studies. Creative editing could be seen as falling outside the realm of translation revision, and ample justification for that approach can certainly be provided. One such justification can be found within this very survey: it seemed to be a fairly common practice that when the translation workflow includes creative editing, it also includes another revision step such as language review or proofreading. However, I believe creative editing should be discussed under the overall concept of revision when it is carried out within the LSP directly after the translation phase in the workflow, by the same people who also do other revision work.

The revision continuum is presented here as a hypothesis only, and its further development and practical application is left to future work. The factors that determine the placing of tasks on the continuum must be elaborated based on more thorough empirical research on LSP practices. Different revision tasks can then be identified and defined in order to create a representation of how revision is currently being used. On that basis, new efficient ways to make use of revision in service production could be revealed. The very shape of the visual representation could change as a result of more detailed research: a simple continuum between two extreme task types might not be adequate for dealing with all the different factors involved. The roles of different actors or agents, such as the project

manager as the one who decides what to include in the workflow (see Stoeller 2011: 296), as well as the client as an agent that influences all decision-making, are also worth examining.

7 Conclusion

The survey results presented here make it clear that although LSPs are often seen as a fairly unified entity, a closer look at their service workflows reveals many differences between them and in how they serve their clients. It is logical that differences should exist: LSPs are free enterprises that compete against each other and work hard to find the best practices that will allow them to get a bigger share of the available business. It is unlikely that clients, whose knowledge of translation is usually limited, are aware of all the differences in how the services are produced. Clear definitions of services, referring to workflow and task content, and using terminology that can also be understood by people who are not experts in translation, would be useful to clients and would allow them to make informed purchase decisions.

It must be noted that when revision is expanded to include creative editing, it no longer equals quality assurance. Revision and quality assurance have always been strongly linked by both researchers and practitioners. When Drugan (2013: 37) asked her interviewees how they manage translation quality, they responded by explaining their revision procedures – forgetting at first all the quality management measures that take place at other stages of the process. However, if we look at revision as a task that goes beyond checking and reaches into the production of creative translation services, we must also accept that quality assurance is only one possible purpose of revision. A shift in how revision is seen and defined is therefore necessary: instead of merely checking for errors, it needs to be seen as part of the text production effort.

As mentioned earlier in this chapter, the translation industry standards EN 15038 and ISO 17100 both take a strict view on revision, requiring that all target language content is revised. Considering the flexibility of practices generally adopted by LSPs, and the need to ensure profitable operations by not wasting resources, it seems that any widespread adoption of the standards may not take place unless these requirements are reconsidered. As has been repeatedly found in empirical studies, for example Rasmussen and Schjoldager

(2011: 101) and Schnierer in Chapter 6 of this volume, revision is sometimes not possible for practical reasons. Adoption of the standard would, therefore, mean having to follow requirements that are not financially and practically viable in the translation industry.

Research into LSP workflows challenges the way a translator's work is traditionally seen – as an individual, isolated effort where a translation is created as a result of one person's thought processes. Any up-to-date theory of translation must account for how translations are created in real production contexts. In the ongoing effort to bridge the gap between translation theory and practical work (see Chesterman & Wagner 2014), a move towards recognising the impact of teamwork in everyday working environments would be a welcome development. Research in areas such as the sociology of translation has already resulted in great advances in our understanding of such environments in recent years; more detailed investigations of translation workflows would contribute to this same goal.

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[1] It must be noted here that while Mossop (2014) uses the term 'editing' primarily when discussing non-translations, Bisiada (2018: 290) explicitly states that he uses the term for both translations and non-translations. There is really no reason why the various editing tasks could not be performed for a text that has been previously translated; the text is then no longer treated as a translation. This process is also recognised by Mossop, and is in fact included in his glossary definition of the term 'editing' (Mossop 2014: 224).

[2] A good example of the terminological variation is that Finnish LSPs generally do not use the concept of revision (or the direct Finnish correspondent of the word) when referring to checking translations (Uotila 2017: 44–45), and that for Danish LSPs, it is only one of several terms that are used (Rasmussen & Schjoldager 2011: 100).

[3] Risku et al (2017: 54) cite Rike's (2013: 72f.) definition of transcreation as "a concept in which the advertising text and message are completely rewritten and redesigned in order to produce a creative and effective target text". The term is used here in this sense, referring to a commercial service that meets this definition.

PUBLICATION II

When and How to Revise? Building a Cognitive Dyad of Translator and Reviser through Workflow Adjustment

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When and how to revise?

Building a cognitive dyad of translator and reviser through workflow adjustment

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The translation production team that consists of a translator and a reviser can be investigated as a specific kind of (sub)system of socially distributed cognition, a cognitive dyad; this system is defined as only including the translation professionals who are directly involved in the drafting of the translation. Based on interviews with translation professionals, I argue that this fine-tuned cognitive dyad gets its form not only as a result of its participants' characteristics, but also under the influence of other factors, some of which vary from one project to the next, leading to the flexible formation of the reviser's task in particular. The three most important project-specific influencing factors are the text genre, the translator's experience and competence, and the client's needs and requirements. While genre and the client's needs and requirements seem to have a markedly similar impact, mainly influencing the internal task configuration of the cognitive dyad, the translator's experience and competence often leads to non-revision. Trust is an important element in this process.

Keywords: socially distributed cognition, cognitive dyad, translation revision, translation workflow

1. Introduction

Commercial specialized translation services are often made possible through collaboration between several people; the participants and characteristics of this collaboration vary between translation projects. Here, I apply the theoretical framework of *socially distributed cognition* (SDC) and explore how a translation project's characteristics may contribute to determining the composition and internal task configuration of what I call a *situated cognitive dyad*—a two-member (sub)system of SDC—formed by a translator and a reviser, the two participants

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often found at the core of a translation project. The emergence of such a subsystem through communication via several channels, including the translation file, has been described in Korhonen & Hirvonen (2021). Limiting the observations to these two actors who participate in the concrete drafting of the translation allows a focused investigation of the factors that influence the division of cognitive work between them. The approach adopted here spotlights how situated cognitive tasks are rooted in concrete, observable circumstances, and helps us understand the challenges that such fine-tuned features present for translation professionals' work. Since the aim is to delve deep into this part of the collaborative network of translation production, attempting to grasp how the intertwined cognitive contributions of the two participants take shape, a full description of the entire network as an instance of distributed cognition must remain outside the scope of the present study.

I argue that the cognitive dyad takes on its form not only as a result of its participants' characteristics, such as their L1 and genre-specific skills, but also under the influence of other factors that vary from one project to the next, and that the complexity of these characteristics necessitates and leads to the flexible formation of the reviser's task in particular. Rather than being the result of authoritative decision-making, the cognitive dyad gets its form in complex, situated processes. I will base my description of the cognitive dyad and its formation on experts' views on which factors are most influential in these processes. The description will focus on the reviser's task, which has hitherto received much less attention than the translator's scope of the work. The results presented here give new precision and a stronger empirical foundation to the current understanding of SDC as it appears in the language service provider (LSP) context; for descriptions, see Risku (2009), Sannholm (2021) and Korhonen & Hirvonen (2021). This article also contributes to the body of knowledge about LSPs' revision policies and foregrounds the reviser as an equal collaborator in translation production, rejecting the role of mere proofreader that revisers have so often been identified with.

The results presented here are based on 20 expert interviews with translation professionals—LSP decision-makers and revisers—who talked about whether and how translations should be revised, and which factors may or should influence these decisions. A qualitative analysis was then carried out to establish some project characteristics that have an impact on how the cognitive dyad takes form. Although many interviewees openly discussed their organizations' ways of solving these questions, this study does not claim to survey the current real-life operating methods of LSPs with full accuracy; that would require extensive fieldwork at several LSPs. Rather, the goal is to explore the conceptions of experts, most of whom make choices on revision practices at one level or another as part of their

work, and thus participate in determining how the cognitive dyad will carry out its work.

The rest of this introduction presents the theoretical background of the study and combines knowledge about the revision practices and procedures of LSPs, theories of distributed cognition as well as their application in translation studies. Following an account of the data and methods in § 2, the results (§ 3) show how the composition and internal task configuration of the cognitive dyad are determined as a result of many factors which often have a combined impact. The focus will be on three major project-specific factors—text genre, translator's experience and competence, and client's needs and requirements—which vary between translation projects.

1.1 Revision practices and procedures of LSPs

Revision policies of LSPs have been investigated in several European countries, including France (Hernández 2009a, 2009b), Denmark (Rasmussen & Schjoldager 2011), Finland (Uotila 2017; Korhonen 2021) and Austria (Schnierer 2019), providing valuable background information and a starting point for the current analysis. These surveys have addressed several aspects of revision, such as the choice between revision vs. non-revision, and whether the revision procedure includes one or more rounds and bilingual or unilingual reading. The relative emphasis on different revision parameters (a list of problem types which revisers may correct; see Mossop 2014: 134–149) has also been discussed to some extent. Some of the studies consider the grounds for these choices, but not in any depth.

Rasmussen & Schjoldager (2011: 101) found that most companies where their respondents work revise all or nearly all translations. Schnierer (2019: 189) presents very similar results from Austria, with 22 of her 31 respondents stating that, in the companies where they work, all translations are revised. Korhonen (2021) placed the question slightly differently and found that, while revision was not part of the typical workflow for all respondents, it was still a possible step for almost all of them. In summary, the findings of all these surveys seem to point to the same direction: revision is considered a normal part of the process, but not an indispensable one. Rasmussen & Schjoldager's (2011: 102–103) and Schnierer's (2019: 190–191) surveys also cast some light on the grounds for sometimes leaving out revision. Factors such as the translator's competence, the text genre and the customer's wishes were mentioned, as well as the difficulty and intended use of the text. Practicalities such as lack of time and the need to save costs were also recognized. Hernández (2009b: 70–72) also found that costs and lack of time sometimes forced translation operators to leave out revision, while highly competent translators or easy texts rendered the task unnecessary.

Both Rasmussen & Schjoldager (2011) and Schnierer (2019) found that bilingual revision is the norm. As grounds for choosing a procedure, Schnierer (2019: 185–187) lists similar factors as those influencing the choice between revision and non-revision.[1] Korhonen (2021: 137–139) did not deal with procedures directly but, when asked about revision parameters (slightly modified from Mossop's original list; see § 2), a clear majority of her respondents included accuracy in the necessary parameters, which usually requires bilingual revision. Studies on the effectiveness of different revision procedures have found that bilingual revision generally leads to higher quality than unilingual revision (e.g., Brunette et al 2005). This is the likely explanation for LSPs' preference of comparative reading. In these surveys, direct discussion of revision parameters has been limited (see, e.g., Hernández 2009a: 142, where only four *critères de qualité* are discussed). Rasmussen & Schjoldager's (2011: 105–109) respondents placed most importance on linguistic correctness. Variation between different projects was not discussed, but one of the interviewees raised the following point: "Why would we need a checklist? It all depends on the text type and on the wishes of the customer" (Rasmussen & Schjoldager 2011: 108). Korhonen (2021: 138) also found that Finnish LSPs tend to emphasize language-related parameters, together with accuracy.

1.2 Distributed cognition

For the purposes of examining a collaborative cognitive task, we can assume a distributed cognitive system. As stated, this article describes how the project's characteristics influence the formation of a situated system of distributed cognition, a cognitive dyad, encompassing a translator and a reviser. I thus adopt the view that cognition is not merely an individual's brain-internal logic device, but that it emerges from the interaction between people and their environments, which may comprise other individuals, material artifacts and various tools. In what follows, I will first introduce theories of distributed cognition as they have been presented in cognitive science, and then overview how these theories have been applied in translation studies.

1.2.1 Extended and distributed cognition in cognitive science

Cognitive science, much like translation studies, is a relatively young field of study, and still in the process of developing its paradigms (cf. Dawson 2013). The three

1. While the translation service standard ISO 17100 defines *revision* as bilingual examination of the translation, in translation studies literature the same term is used of both bilingual and monolingual examination.

main branches of cognitive science are classical, connectionist, and embodied cognitive science; the first of these is largely based on the metaphor of the brain as a computer, the second assumes a neural network-based cognitive architecture, and the third sees cognition as a system that coordinates perception and action directly, without the intermediate stage of creating representations of the world (Dawson 2013: 3–8, 11, 205).

Under the umbrella of *embodied cognition,* several slightly differently positioned theories about cognition have built ever strengthening ties between the mind and the world, and introduced related concepts.[2] The extended mind hypothesis (Clark & Chalmers 1998) postulates that many items of the material world may be such essential scaffolds to cognitive operations that they should be considered part of the cognitive system of an individual. In a translation context, artifacts and tools such as translation memories, quality assurance tools, and the translation software that arranges the source and target texts neatly together could be seen as scaffolds that greatly increase the translator's capacity to carry out cognitive action. The extended mind hypothesis is an individual-centred theory; some related theories consider cognitive systems that include two or more people. Such systems have been discussed under the labels of distributed cognition (e.g., Hutchins 1995a, 1995b) and, more specifically, socially distributed cognition (Perry 1999). In this article, I follow Perry (1999: 87), who defines socially distributed cognition as a term "used specifically to investigate multi-person activities, often in concert with physical artefacts that act as cognitive resources […] but also act as intermediaries in communication between individuals".

1.2.2 Distributed cognition in translation studies

Translatory collaboration has been addressed in translation studies from various theoretical perspectives, including the actor-network theory (Abdallah 2012) and the concept of translaboration (Alfer 2017; Zwischenberger 2020). The lens adopted here, however, is a different one: collaboration in the translation workflow is seen as an instance of socially distributed cognition, constituting a system in which people adopt the roles of translator and reviser, among other relevant roles, and jointly engage in the cognitive task of creating a new translated text.

Theories of situated, extended and distributed cognition have been mainly developed in translation studies by Risku (e.g., 2009, 2014; Risku & Rogl 2021, 2022), Muñoz (e.g., 2016, 2017) and also Krüger (2016). Practical applications of such theories include Nurminen (2020), Sannholm (2021) and Korhonen &

2. *Embodied cognition* here refers not to a particular theory but to a set of interrelated approaches to cognition (cf. Risku & Rogl 2021) also known as *situated cognition* and *4EA cognition* (cf. Muñoz 2021: 210).

Hirvonen (2021). Most of the theoretical development as well as practical research applications have, however, focused on individual-centred extended or distributed cognition; socially distributed cognition has only been expressly discussed by Korhonen & Hirvonen (2021), who describe a joint cognitive—and creative—process of translation that a translator and reviser engage in. Pleijel (2021), while not adopting the SDC terminology, studies group cognition in the context of Swedish bible translation, observing *we-mode* translation (Gallotti & Frith 2017) and stating that "the properties of the translation team are not possible to either reduce or attribute to anyone of the individual members of the team" (Pleijel 2021: 323). Sannholm (2021), on the other hand, discusses the social aspect of translation as a type of scaffolding, in which translators interact with social networks with the goal of finding assistance in their translation tasks; the perspective can thus be said to be that of an individual.

2. Data and methods

The data for this study consists of 20 semi-structured thematic expert interviews between 41 and 87 minutes with translation professionals working in the Finnish translation industry. The first three interviews took place in March 2020 (face to face), and the rest in autumn 2021 (via Microsoft Teams or Zoom). The interviewees can be roughly divided into two groups, LSP decision-makers (e.g., managing directors, production managers, project managers) and revisers, although in many cases, the individuals took on several different roles as part of their work. Two of the revisers were independent professionals, while all the other interviewees were employed by LSPs. The interviewees' years of experience in the translation industry ranged from nearly 4 years to 30 years, with long careers being strongly represented (average experience, 20 years). A total of eight LSPs were represented in the data. Some of these are large multinational companies with ownership outside of Finland, and others are smaller companies that only operate in Finland. All interviews were carried out in Finnish. The examples presented in this article have been translated into English by the author.

The interviews covered several themes. The present analysis is largely limited to the interview sections focusing on revision policies and procedures. Revisers were asked about how a revision task proceeds at a practical level, while decision-makers were asked about business-level matters and decisions. Open-ended questions were followed by more detailed questions when necessary. In the 17 interviews conducted in 2021, some support materials were shown during the interviews, including a list of revision parameters (introduced in Mossop 2014 and modified by Korhonen 2021: 137–139). The following revision parameters

were included in the list: accuracy; completeness; logic; factual errors; smoothness and cohesion; style: suitability for end users; style: suitability for text type; terminology; idiom; linguistic correctness; compliance with client's style guide; layout; typography; and organization.

I carried out and transcribed the interviews myself, which ensured thorough familiarity with the data. Coding was performed in ATLAS.ti with the aim of identifying links between influencing factors and the revision variables that define the task of the reviser. As the starting point of the analysis, I used revision variables (whether to revise or not, how many revision rounds, etc.) that some earlier revision surveys (see § 2) had identified. I carried out two full coding cycles and checked the consistency of some codings using various list and report functions available in ATLAS.ti. The final coding system placed main focus on six revision variables (see the list in the following section) and all the elements that interviewees mentioned as influencing the decisions on these variables. For each mention of a revision variable, I strove to identify what the interviewees had said about the elements that influenced it, and vice versa. Finally, I interpreted the results using the theoretical framework of socially distributed cognition.

The coding effort was thus partly informed by previous research, particularly in the area of revision variables and, to a minor extent, in the area of the project-specific factors. A much larger portion of the coding system was, however, data-informed, reflecting the reality as the interviewees understood and constructed it. The code reports and co-occurrence tables available in ATLAS.ti were used as a tool that helped direct focus to the most prominent links between project-specific factors and revision variables.

3. Results: Forming a cognitive dyad under the influence of project-specific factors

In this section, I list the revision variables relevant for the present study, and then illustrate the most important elements which translation professionals mentioned as influencing the revision process; these elements are also the ones that seem to determine the overall composition and internal task configuration of the cognitive dyad encompassing a translator and a reviser. In the following three subsections, I describe the impact of three most important project-specific factors. These descriptions indicate that factors external to the distributed cognitive system may have a major bearing on how the cognitive collaboration within it is constructed.

The composition of the cognitive dyad as well as its internal configuration are conceptualized here based on six revision variables (listed below), most of which are derived from previous research, and which have also been identified in

the current data. The first of these defines the *composition* of the system—that is, whether a reviser is included in the workflow, becoming the second participant in the cognitive dyad. In some cases, the translator is alone responsible for the translation, and no cognitive dyad is formed, which also constitutes an interesting situation. On the other hand, having more than two persons directly involved with the drafting of the same text or part of a text seems to be rare; such configurations will not be discussed here. Variables 2–6 define the *internal task configuration* through setting the scope of the revision task. In the current data, variables 1 (Revision vs. non-revision), 2 (Revision parameters) and 6 (Level of detail) received the most emphasis; therefore, they will also appear most prominently in the analysis.

1. Revision vs. non-revision
2. Revision parameters
3. One vs. more rounds of revision
4. Full vs. partial revision
5. Bilingual vs. unilingual revision[3]
6. Level of detail: A very careful revision vs. focus on major errors only

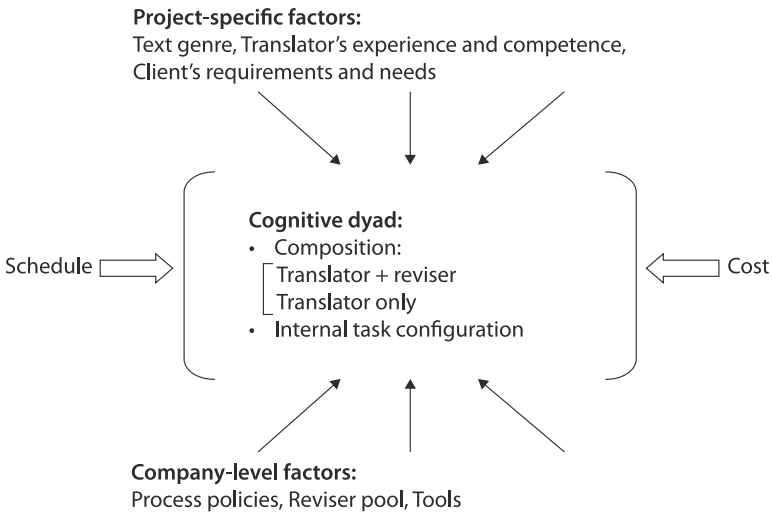

Figure 1. The cognitive dyad and the elements that influence its formation

Moving on to the factors that influence the composition and internal task configuration of the cognitive dyad, Figure 1 presents the cognitive dyad and the three types of elements identified in the data as having major influence on its forma-

3. In the interviews, this revision variable was rarely discussed explicitly, but as it relates closely to one of the revision parameters (accuracy), it was often discussed implicitly.

tion. These elements can be divided into three groups. First, there are the *project-specific factors,* which demonstrate considerable variation from one project to the next; the current data indicates that the three top factors are text genre, the translator's experience and competence, and the client's requirements and needs. Second, the *external pressure elements* of schedule and cost mainly have a restricting impact, and sometimes seem to force workflow choices that lead to a less than ideal cognitive dyad.

The third group of influencing elements are the *company-level factors,* relatively permanent enabling or limiting conditions that have often been determined or chosen by the management of the LSP. The most important company-level factors appear to be process policies, reviser pool, and tools. By process policy, I mean the standard workflow chosen as the basis of translation production in that company. Reviser pool refers to the available revisers and their competence profiles that allow the performance of a specific kind of revision. The revisers are included in company-level factors rather than project-specific factors because based on the current data, the reviser pool is usually much more scarce than the translator pool, and often seems to be limited to LSP employees. Finally, the properties of the pre-selected tools guide the cognitive work: for example, revising tools may limit and guide what the reviser can do, or what information is available to them, thus setting boundary conditions for the task.

In the following subsections, I discuss how the interviewees construe the influence of the three major project-specific factors—text genre, translator's skill and experience, and the client's needs and requirements—on the composition and internal task configuration of the cognitive dyad. In everyday terms, this means decisions on whether and how revision will take place. While the analysis focuses on project-specific factors, company-level factors as well as schedule and cost will also be considered when they have been mentioned as contributing factors. A more thorough discussion of these elements will, however, remain outside the scope of the present article.

3.1 Text genre

When talking about different kinds of texts, the interviewees did not follow any consistent theoretical framework of genre or text type. Rather, they used a utilitarian text categorisation system that combined genres, topic domains and, for example, classification of texts into the client's internal and external communications. For the sake of simplicity, this complex system, largely based on prototypes, is conceptualized here as genre.

Figure 2 summarizes the interviewees' opinions on the relative importance of genre for decisions on whether and how a translation is revised. The numerical information included in the graphics, based on the coding of the data in ATLAS.ti, cannot be used in any actual statistical analysis, as the data is not structured to produce quantitative results.

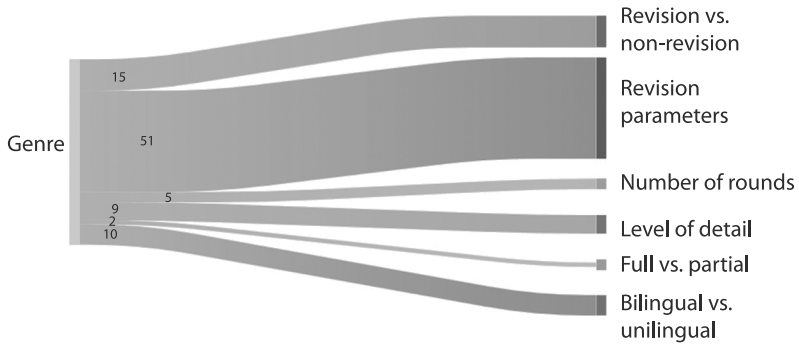

Figure 2. Genre in relation to the six revision variables

From the topmost part of Figure 2, it appears that genre has no great impact on whether the translation will be revised or not, and does thus not greatly influence the composition of the cognitive dyad. A more detailed examination of the data does, however, reveal that some genres are understood as critical and always require revision: court decisions and other legal materials as well as some medical text genres are mentioned as examples. On the other hand, non-revision is rarely chosen based on genre alone: additional factors such as translator's genre competence, schedule and cost are often taken into account when deciding on non-revision. The degree of visibility, the size of the target audience and the longevity of the text also play a role.

For texts that are considered to be creative, attitudes towards revision vs. non-revision seem to be divided. Some believe that these texts do not required revision if the translator is known to be at home with them:[4]

(1) *Sometimes it's also enough if it is a more creative translation* […] *to have no reviser but to have it finalized directly by a translator who is really good at creative texts*

On the other hand, others consider revision to be particularly beneficial for such texts:

4. In the LSP context, *creative* does not mean actual literary texts; various kinds of marketing communications, for example, are often characterized as creative translations.

(2) […] *for creative translations* […] *it's not automatic that they would always be revised but maybe for this type* […] *the benefit of revision is higher than for some straight-forward translations*

It is likely that in Example (2), the interviewee means a particular kind of revision, one that focuses on smoothness of expression; this implication leads us nicely to the second tier of Figure 2, which shows that interviewees indeed recognize text genre as an important factor for determining which revision parameters are emphasized. It seems that most genres can be included into one of two general categories, which could be roughly characterized as "fluent translations" and "precise translations". The former prioritize smoothness, the latter accuracy. Table 1 lists genres that were brought up by interviewees, and the revision parameters that interviewees typically connected to these. This categorization system seems to be fairly universal across the operators represented in the data.

Table 1. The two basic genre categories and the revision parameters typically connected to them

Translations	Genres	Important parameters
Fluent	marketing text creative text blog magazine article	smoothness, logic, style, idiom, appropriate style for purpose, appropriate style for users, linguistic correctness
Precise	specialized text legal investor communications user manual medical public administration contract research survey or data	accuracy, terminology, factual errors, linguistic correctness, completeness

Knowledge of these genre categories and what they require is, of course, as important for a translator as it is for a reviser. In this area, genre and the translator's competence together determine the distribution of cognitive work: if the translator doesn't have adequate genre competence, the reviser must take on a larger share of this work. This, among other matters related to the translator's competence, will be further discussed in the next subsection.

3.2 Experience and competence of the selected translator

In addition to the translators' general experience or competence, the interviewees recognized four types of sub-competence which influence the distribution of cognitive labour between the translator and the reviser: skill in the language pair (often in combination with directionality); knowledge of the client; knowledge of the field or industry (subject matter); and genre competence, which was already mentioned above. In this subsection, I will first discuss the perceived impact of the translator's general experience and competence as well as genre competence, and then take a look at language pair-specific skills and the translator's knowledge of the client and the industry.

Some interviewees considered the competence profile and level as well as the experience of the translator to be the most important factor shaping the revision task (and thus also the cognitive dyad). In the following example, the interviewee implies that the difficulty of the text is not an absolute, but is often determined by the translator's competence level:

(3) RS19: *it's more about who translates, that's more essential. Of course if we know that* [the text] *is very difficult, but even then it's more about* [the translator] *not knowing the subject matter that well, or not knowing the kind of language to use*

The same text may be difficult for some translators, and relatively easy for others, depending on their competence profiles. This example demonstrates well the intricate network of co-dependencies between different project characteristics that influence the cognitive work.

Figure 3 describes the relative importance of the translator's competence and experience on the revision variables. Again, the data does not allow any actual quantitative analysis. The figure shows that the translator's skills and experience are often used to justify decisions on whether revision is necessary at all, which revision parameters (Mossop 2014: 134–149, Korhonen 2021) should be focused on, and how detailed—or meticulous—the revision should be. The impact on other revision variables seems to be marginal.

Starting from the top of Figure 3, non-revision often seems to result from previous successful experience from working with the translator: their translations have been found consistently good (sometimes through standardised measurements), and revision would only waste resources that were more urgently needed elsewhere. Work ethics also count: translations created by a translator who is not only highly skilled but also known for doing their due diligence may be revised less often or less thoroughly. This indicates that a relationship of trust between the project manager and the translator may lead to a situation where no cognitive dyad will be established. (On the importance of trust in translation, see

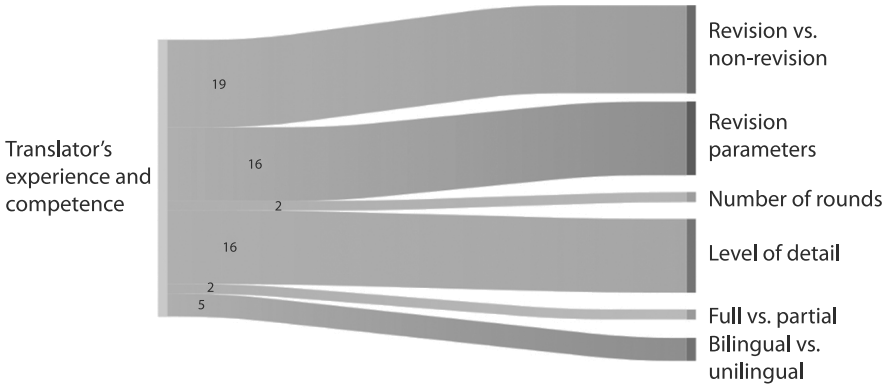

Figure 3. Translator's experience and competence in relation to the six revision variables

Abdallah & Koskinen 2007; Pym 2004; Chesterman 1997: 180–183.) The need to select translators carefully was brought up in the interviews, and one manager expressly stated that they are willing to pay more to a consistently excellent translator, and prefer this practice over buying from inexperienced, cheaper translators whose work needs to be revised more carefully.

Additional factors including tight schedules and sub-competences such as experience with similar texts (genre competence) were mentioned when discussing non-revision. Interestingly, subjecting the work of a high-level translation professional to revision might even lead to deterioration of quality if the reviser is not as highly qualified as the translator, but fails to recognize this and assumes too large a share of the cognitive task:

(4) RS15: *sometimes there's top people working so that it will only get worse if someone else then messes with it, it would be crazy to force an unnecessary revision into the process*

Moving on to the second tier of Figure 3, the translator's experience and competence also impacts the selection of the revision parameters that the reviser should pay attention to. In the previous section, it was noted that the translator and reviser should both be equally aware of how to treat a text: whether, for example, smoothness or accuracy should be emphasized. The translator's genre competence, or rather the possible lack of it, explains why the reviser still sometimes needs to fix the translation in this respect. The reviser may, for example, know that the translator is not knowledgeable in appropriate terminology, or has problems with smoothness or style.

Several decision-makers emphasized the need to know their translator resources, and, if possible, to make sure that the translation management system contains information on the translators' genre-specific competences. If this information is not available, project managers will have a difficult time choosing

translators for projects that require certain skills, for example for marketing translations which require the ability to write a very fluent translation in an appropriate style. This could lead to a less than ideal configuration of the cognitive dyad, and potential failure of the shared cognitive task. The reason some interviewees emphasized the need for this information may be that the translator's preferred language pairs and the clients for which they have worked are basic information that can be found in the translation management system, but genre competence may never be recorded or may be much more difficult to extract from the system. It may require extra effort from project managers who tend to be busy and rather want to avoid any extra tasks.

Level of detail is the third revision variable that the translator's competence appears to have a high impact on; again, much seems to depend on trust. If the translator is well known and trusted, the reviser may carry out a less detailed revision—not necessarily disregarding any particular revision parameters, but reading the translation with the predisposition that they will only correct definite errors and not stop to consider every detail. If we then observed the distribution of tasks after their completion, we would notice that a larger portion of the shared cognitive task has fallen on the translator.

Sometimes emotions come to play, however, and may change the way the reviser works, leading to them assuming a larger share of the work mid-task:

(5) RS6: *I trust that they have done the background work, and if that trust is betrayed* […] *then you get negative emotions towards the translator. And you start to take a different attitude and get more critical, and don't forgive them for something that you might forgive someone else* […] *you notice they have clearly used Google Translate* […] *and have not checked it, and you start to go through it line by line, and once you go line by line, you start finding all kinds of things.*

Directionality and the translator's skill in the specific language pair have a combined impact that shapes the cognitive dyad in several ways. The impact is most prominent in the areas of revision vs. non-revision, and the revision parameters. Interviewees were more inclined to allow non-revision when the translator translates into L1, but other criteria such as genre competence would also be considered. In some cases, an L1 translation may first be subjected to a spot check which will then reveal whether full revision will be necessary. This procedure is practical for example for very long texts which would take hours or even days to revise. If the quality of the L1 translator's work meets the needs of the project, it is not only unnecessarily costly to revise the material in full, but also a very tedious exercise for the reviser. A similar scenario may of course also arise for L2 translations when the translator is adequately competent in L2.

With regard to revision parameters, directionality divides revision tasks into two groups. When translating into L2, translators may have problems with linguistic correctness, smoothness or idiom. When translating into L1, they sometimes have problems with accuracy due to misunderstanding the source:[5]

(6) RS19: *if the translator was a native English speaker* […] *there was rarely any part of the text where the English would have been incorrect, but the Finnish was often misunderstood*

In a successful cognitive dyad, the reviser should have the opposite language competence profile in order to correct these deficiencies. The scarcity of suitable revisers may, however, sometimes prevent this. The reviser may, for example, have no source language competence at all, and will thus not be able to correct any accuracy issues. This is an example of a company-level factor at work: if the available reviser pool is too limited, the cognitive dyad may fail to achieve its goal.

The translator's familiarity with the client and the field or industry came up in the interviews from both a negative and a positive perspective: if the translator has little or no experience from a client's texts or their industry, their translations must be revised. On the other hand, if the translator has often worked on the same client's texts—preferably of the same genre—revision may not be necessary. It may even be harmful if the reviser is not knowledgeable in the client's materials:

(7) RS12: *I have also seen many times* […] *that errors are introduced through revision, sometimes revisers too boldly make changes for example to terms when the translator may have spent like five days on it and knows* […] *how the device works, and then the reviser* […] *decides to make changes and it is like out of the frying pan, into the fire*

A similar situation was already illustrated in Example (4). The same principles of success as were described above apply: if the translator lacks the required (sub-)competence level, a competent reviser should complete the task. If, on the other hand, the reviser lacks the necessary competence, the dyad may fail in its task.

3.3 Client's needs and requirements

Clients may express their needs and requirements directly, typically via a project manager. Translators and revisers may also decipher the needs from the texts

5. This issue is common when the source language is a language of low or limited diffusion. In the present data, it was discussed with regard to Finnish as a source language.

themselves, accumulating their overall knowledge of the client's preferences over time through experience and feedback:

(8) RS4: *if I know the client and know they just won't accept it if I make it smoother* [...] *they want the translation and the source to be exactly the same*

Sometimes, the accumulated knowledge is in conflict with the client's expressed wish—and this may be surprisingly common:

(9) RS6: *really clients want it to be better than the original, so even if it's called a review job, revision job, in most cases what the client expects is copy-editing*

The reviser thus must be able to recognize the real need and adjust their cognitive work accordingly. The overall impact of the client's needs and requirements on different revision variables is presented in Figure 4.

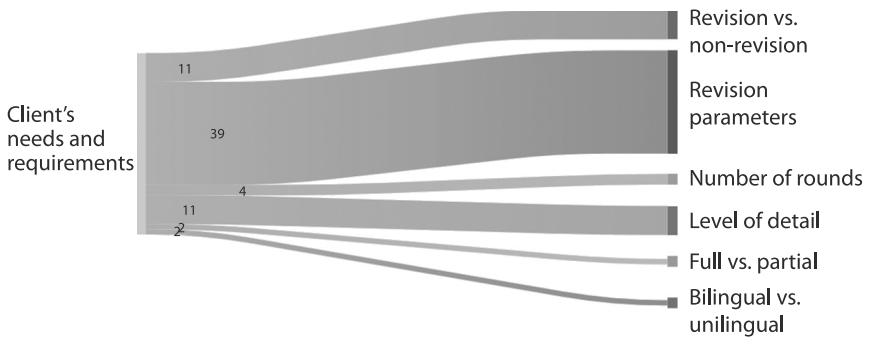

Figure 4. The client's expressed or implied need in relation to the six revision variables

Figure 4 shows that the client's expressed or implied need has often been construed as a factor that leads to emphasizing specific revision parameters, but has less bearing on the decision of whether to revise at all. In this respect, the impact on the cognitive dyad is markedly similar to that observed for text genre, and different from that of the translator's skill, which often led to non-revision. In the client-related non-revision cases that were brought up in the interviews, non-revision was rarely preferred based on the client's needs as such, but rather based on the text genres or subject areas that were typically translated for that particular client. This is indicative of the close relationship between clients and genres: clients typically order translations of the same genre over and over, to the extent that the client's name may become shorthand for their most common text genre.

A closer look at the client's impact on revision parameters reveals another similarity with text genre: it appears that clients tend to emphasize either accuracy (see Example (8) above) or smoothness:

(10) RS20: *sometimes the instruction is not to be too particular with the source, just to make it good and smooth in Finnish, that's nice, that's a joy* (laughs)

Terminology is also important for many clients:

(11) RS12: *terms are also one of those, some clients are very particular about them and if there is a termbank or reference material and it's not being followed, those are bad errors*

As terminology is generally more important in some text genres than in others, this further demonstrates the close relationship between the impacts of genre and the client's need.

Some interviewees confessed that if the client shows frequent interest in translation quality, or is a large and strategically important client for the LSP, their translations may be revised more consistently and carefully than those of some minor or less quality-conscious clients. However, there is no evidence that these client characteristics alone would lead to non-revision to any significant degree. Some decision-makers were very careful not to give the impression that clients would be treated differently in this respect. It was, however, emphasized that the client's real needs must be discussed with them as part of price negotiations. Honesty in these matters was considered an important constituent of successful cooperation; full revision should not be required just in case but only based on actual need.

4. Discussion: A complex network of factors requires flexibility

The results presented above portray a complex network of project characteristics that leads to the flexible formation of the cognitive dyad, and the reviser's task scope in particular. Interviewees seem hesitant of identifying direct causal relationships from a single project-specific factor to any specific characteristic of the cognitive dyad; rather, several project-specific and company-level factors as well as external pressure elements seem to contribute to how the work is carried out. The process is construed as a negotiation between elements that may take on different emphases and most likely often contradict each other.

It appears that the composition of the cognitive dyad is often—but certainly not always, perhaps not even in the majority of cases—determined based on the translator's skillset, particularly genre competence or language pair competence, as well as the element of trust. The internal task configuration within the dyad, discussed here through the scope of the reviser's task, is most prominently conceptualized as the relative emphasis of various revision parameters and the appropriate level of detail, and seems to be often determined by the text genre (albeit

with a close link to the translator's competence profile) or the client's needs or requirements. The scope of the translator's task can also be assumed to be determined by text genre and the client's needs, but the current data does not allow explicit analysis of the translator's portion of the overall process. To sum up, the composition of the dyad often depends on the characteristics of its participants, while factors external to the dyad have a greater impact on its internal task configuration.

Based on these results, the reviser should provide the knowledge and competencies that the translator lacks. The reviser should also be able to assess the quality of the translator's work accurately, and define the necessary scope of the revision work based on it. If the reviser doesn't have the necessary competencies, or fails to recognize the translator's competence and makes changes that deteriorate the translation quality, the cognitive dyad has failed in its task. Ideally, both the translator and reviser need to know how texts of different genres should be translated; however, if the translator lacks the appropriate genre competence, the reviser must correct the text by emphasizing the appropriate revision parameters (for example, accuracy and terminology for a technical text or smoothness and style for a marketing text). Directionality of the translation illustrates even more clearly how the translator's skill profile influences the distribution of the cognitive work: If the translator is translating into L2, the reviser usually needs to pay special attention to smoothness, but may decide to trust the translator's ability to translate accurately.

Impact networks that are formed in an everyday working context are an essentially fuzzy and slippery research object, as the work may take place under many different pressure factors. Everyday LSP work is hectic and decisions often need to be made quickly. Competence gaps that the reviser needs to fill may come as a surprise, but they may also be the accepted result of less-than-ideal circumstances: the project manager may be aware that the available translator does not have all the required competencies, but instead of trying to find another translator (and possibly jeopardizing the project deadline) they decide to compensate for the deficiency by transferring a larger share of the work to the reviser. It is also probable that when making process decisions, some factors may be disregarded and others emphasized not based on a careful consideration, but rather based on what comes to mind in a hurry, when working under pressure. The rational decision-making portrayed by many interviewees may thus not fully reflect reality, which may be considerably more impulsive. On the other hand, the opposite is also possible—decision-making may often be based on routines that people fall back on without considering all the relevant factors.

Trust was found to be an important element in many decisions. Firstly, relationships of trust exist between project managers and translators, sometimes lead-

ing to non-revision; the project manager assigns the entire translation task to the translator. If there is lack of trust, the task is not only distributed to a translator/reviser dyad, but the reviser may also end up carrying quite a large portion of it. Secondly, the degree of trust between the translator and the reviser may play a role in how carefully the reviser processes the text; if the reviser doesn't trust the translator, they may decide to take on a larger part of the distributed cognitive work.

5. Conclusion

The results discussed here can be read as a straightforward account of LSPs' revision practices and how they select revision workflows; as such, the results are consistent with previous surveys of LSP revision policies (see § 2). However, the selected perspective—socially distributed cognition and the elements that are at play in the formation of the cognitive dyad—allows for the construction of a significantly more complex picture. Workflow design should be based on a thorough understanding of the work; it is thus important to recognize the fine-tuned impact mechanisms that lead to establishing a successful, mutually complementary cognitive dyad of two professionals.

The present study is, however, only the beginning, and to confirm these findings, direct empirical observation of cognitive dyads in authentic working environments would be necessary. Competencies, tools, language pairs, types of communication, clients' preferences and other factors need to be considered every day by the LSP management, project coordinators, translators and revisers—often under financial pressure. Many aspects of real-life cognitive labour are also determined by the individual practices, preferences and routines of the translation and revision professionals. Regardless of how carefully the decisions regarding the revision process are made, the final execution of the work relies on the revisers' competencies and motivations, which may after all change the outcome from what has been intended.

The complexity of the network of factors that influence the cognitive dyad brings forth many new questions. To name a few, the impact of the company-level factors needs to be analysed more carefully; the discussion of trust should be given more attention and extended to revisers, leadership, and the client; and the cognitive processes related to how the cognitive labour itself is distributed need to be looked into. Direct ethnographic observation would also allow a rich analysis of tools and artifacts that are immediately available to the reviser and that constitute parts of the extended cognition of a reviser in an individual-centred system; so far, such descriptions have only been produced for translators (Sannholm 2021). The affordances of these tools and artifacts should also be studied on a

detailed level. On a different note, the need for a thorough investigation of the concept of genre as it appears in the LSP industry was recognized during the present study. Research on these and other similar topics will provide us with a sorely needed understanding of situated and distributed cognitive tasks in general, and translation in particular.

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PUBLICATION III

Joint Creative Process in Translation: Socially Distributed Cognition in Two Production Contexts

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Joint creative process in translation

Socially distributed cognition in two production contexts

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In this article, we explore socially distributed cognition (SDC) as a theoretical model of translation and investigate it empirically as an aspect of the collaborative and creative translation workflow. With the aim of developing a better understanding of SDC and collaborative workflows in translation, we analyzed two different settings where more than one person works on a translation: commercial specialized translation (CST) services, and the production of audio descriptions (AD) as teamwork between blind and sighted describers. The analysis focuses on how the process of co-creation unfolds in the communication that binds together the systems of SDC. While the process of co-creation was strikingly similar in the two different translation contexts, the differences were bound to channels of communication (with or without direct contact between participants), and the draft translation was identified as a central artifact that carries much of the communication when the participants do not work in the same space. With an emphasis on socially distributed cognition, our study provides a framework for both the cognitive and social aspects of translation and develops the understanding of collaborative translation processes. It also contributes to the development of translation practices by helping translation operators and trainers make choices between alternative workflows.

Keywords: socially distributed cognition, co-creation, audio description, commercial specialized translation

1. Introduction

Translation today predominantly takes place in collaborative environments, yet translation process research has mostly focused on the cognitive processes of

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the lone translator (see, e.g., Englund Dimitrova and Ehrensberger-Dow 2018). Efforts have been made recently to expand the concept of translation process to encompass the whole translation workflow (see Risku, Rogl, & Milosevic 2017) including other participants, tools and resources. Concurrently, new approaches developed in cognitive science have found their way into translation studies. These approaches challenge the traditional conception of cognition being confined to the individual's brain and suggest that cognition extends from the brain to the environment. Various technical systems, memory aids, etc. can be seen as part of cognition, and cognitive operations may be distributed between two or more people who together form a socially distributed cognitive system (Clark & Chalmers 1998; Resnick 1991; Hutchins 1991, 1995a, 1995b).

In our present investigation of situated translation processes, we combine the social, the cognitive, and the creative to show how two or more people form systems of socially distributed cognition (SDC) when carrying out the inherently creative undertaking that aims at producing a translation. To demonstrate this, we turn the focus to the joint process of co-creation that the participants engage in. Other approaches have been used to investigate collaboration in translation (sometimes dubbed translaboration), such as the actor-network theory (Abdallah 2014; Buzelin 2005). However, as Risku and Rogl (2021: 487) point out, the analysis of distributed cognition (DC) allows an even more specific focus on cooperation and interaction than other approaches do. Risku and Rogl also consider DC well suited for studying collaborative problem-solving; this area of collaboration will be addressed in our analysis of the distributed creative process.

Studies have recognized translation as a collaborative activity even if the collaborators are not always present in the same space; for a discussion of the topic, see for example Cordingley and Manning (2016). Yang (2020) analyses the communication that takes place within a collaborative online translation project, foregrounding the richness of the written communication and the multitude of roles that the participants adopt. Yet many details of collaboration remain understudied. For instance, Jiménez-Crespo (2017: 106) asks how collaboration occurs at the microlevel, that is, in each segment or identified problem. How do the collaborators interact in these cases, and how do they create a system of socially distributed cognition without the immediate presence of the other participants? To answer this question, the communicative practices of two translation contexts will be compared: commercial specialized translation (CST) services, offered by language service providers (LSPs) and independent professionals, and audio description (AD), which is an access service verbalizing the visual contents of visual or audiovisual communication to blind and partially sighted people. The study was designed with the expectation that the juxtaposition of such different translation contexts would help foreground interesting aspects of the translation

process that could otherwise be taken for granted and thus ignored. The main focus is on two participants, whom we call the translator and an editor.

In the following sections, we present a brief overview of the most important theories of (socially) distributed cognition and outline how they have been discussed in translation studies so far. Then, we examine the relationship of translation and creativity from the perspectives of psychology, translation studies and distributed cognition. In the subsequent sections, we move on to our methodology and the results of our analysis. Finally, we discuss these results in light of their theoretical and practical implications.

2. Theoretical background and previous studies

2.1 Distributed cognition

Theories of situated cognition have established the view that cognition should be studied in social contexts, not as an isolated entity (Resnick 1991: 4). Taking the context-bound approach even further, two conceptual frameworks developed in the 1990s describe human cognition as something that is not confined to the individual's brain. These frameworks, 'socially distributed cognition' presented by Hutchins (1991, 1995a, 1995b) and the 'extended mind' presented by Clark and Chalmers (1998) and later renamed 'individual distributed cognition' (IDC) by Perry (1999), both suggest that the brain works in close cooperation with the environment – tools and artifacts – to form a cognitive system. The main difference between these frameworks is that extended mind (or IDC) is an essentially individual-focused system, while socially distributed cognition describes systems that comprise two or more persons plus the external systems.

Perry (1999: 87–89) points out that research into socially distributed cognition must focus on the means and practices of communication between the participants; one important aspect of that communication being the double role of physical artifacts, which act as both cognitive resources and channels of communication (see our empirical analysis in Section 4). These artifacts thus act as social affordances that the socially distributed cognition is built on (Gallagher 2013: 4). Communication between team members essentially comprises externalized mental representations (Hutchins 1995b). Zhang (1997: 180), cited in Dragsted (2006: 445), states that "external representations are not simply inputs and stimuli to the internal mind; rather, they are so intrinsic to many cognitive tasks that they guide, constrain, and even determine cognitive behavior." Later, it has also been suggested that a cognitive system may consist of people who are not present at the same time, and of systems that are used at different times

and in different places; the scientific community is an example of such a system (see Giere & Moffatt 2003; Resnick 1991). However, such wide-reaching cognitive systems also bear the risk of 'cognitive bloat' by extending cognitive systems too far without proper justification (Rupert 2004). The debate on establishing the boundaries of cognition has been lively (see Marsh 2010) and has also continued under other terminology, such as group cognition (Theiner et al. 2010) and team cognition (McNeese et al. 2020). The concept of shared intention, described by Lyre (2018) as a mechanism that connects cognition with the social domain, constitutes another interesting step forward.

2.2 Distributed cognition in translation studies

The theory and terminology of socially distributed cognition have been introduced into cognitive translation studies gradually over the last decade or so, although not yet as comprehensive and consistent approaches (Risku & Rogl 2021: 481). This has meant looking beyond the individual and their background and skills, focusing instead on the individual's interaction with the world. Even though Dragsted (2006) used the concept of collaborative cognition to describe joint translation production, and Risku (2010) and Muñoz Martín (2010) discussed the value of the (new) paradigm to translation process research, empirical research based on these theories remains scarce.

Risku and Windhager (2013: 41–42) coined the term 'extended translation' for investigating translation as a situated and distributed cognitive action; extended translation appears in the technologization of translation work (artifacts and tools as extensions to human translators), and in networks and distribution of work (distributed problem solving instead of one sole translator). Based on an ethnographic, multi-case study into freelance translation, Risku (2014: 347–349) shows how many of the translators' cognitive processes – usually investigated as aspects of internal cognition – actually take place outside the head during translation. The work involves a complex network of actors and tools from both the client's and translator's side as well as various tools and artifacts of cognitive support, such as online dictionaries, prior translations and the translation draft, which functions as a tool for testing and manipulating alternative translation solutions (Risku 2014: 345–346).

Muñoz Martín (2017) summarizes the various cognitive dimensions at play by the 4EA concept of cognition (for 4E cognition, see, e.g., de Bruin et al. 2018). It involves several individual-centered extended cognitive aspects such as embodied, enacted, and affective cognition. Muñoz Martín (2017: 564) also notes a sixth aspect, 'distributed cognition' in which "several cognizing and not cognizing agents conjointly perform complex tasks, such as translating." 'Distri-

bution' thus frames cognitive processing as an a priori *collective* phenomenon (see also Jiménez-Crespo 2017: 101), while the 4EA focuses on *individual* cognitive processing.

Since the seminal works by Muñoz Martín and Risku and colleagues, few studies have dealt with distributed cognition, and even fewer with SDC. Jiménez-Crespo (2017) discusses it as a necessary approach to studying collaborative translation in online environments. Mellinger (2018: 321) argues that SDC is a relevant concept to approach translation revision and to describe "shared responsibility for the final translation product" in computer-assisted and machine translation. Nurminen (2020) applies distributed cognition to an empirical analysis and operationalizes it in describing patent professionals' use of raw machine translations. In a 'coupled system' (Clark & Chalmers 1998), patent professionals enhance their knowledge and competences with input from an MT engine. Other than the MT engine, a network of artifacts and people – the original source document and alternative machine translations, inventors, and other stakeholders – are involved in the work process, and interaction with these individuals constitutes meaning-making within a system of distributed cognition (Nurminen 2020: 115).

2.3 Translation as distributed creativity

In this section, we discuss some theoretical underpinnings for seeing translation as an inherently creative activity comparable with other text production tasks (see Dam-Jensen & Heine 2013: 90; Dam-Jensen et al. 2019: 158; Jakobsen 1994: 144). In translation studies, creativity has mostly been discussed in terms of literary translation or as deviations from the source text content (see Bayer-Hohenwarter & Kussmaul 2021). However, the value of creativity as "a crucial resource to overcome linguistic and cultural difference" has also been recognized (Rojo 2017: 352). The production of an appropriate target text in *any* area of translation is a complex task involving "the ability to create understanding and produce texts in a new, meaningful, situated way; each translation is a new challenge that requires differentiation and creativeness" (Risku 2010: 100). Idea generation and evaluation, also called divergent and convergent thinking, which are the building blocks of any creative process (see Guilford 1950) also form the basis of making translation decisions. Translation also meets the definition of creative activities generally accepted in psychology (see, e.g., Kaufman & Glăveanu 2019: 27): the product being created is both new and appropriate for the task – i.e., fit for purpose, a phrase familiar to any translation scholar.

To understand translation as a creative activity of interpreting and creating meanings, we must look at translation as both an individual and a social event. Firstly, meaning is not located within words; it is created in an individual's mind

as activated episodic and semantic information. Thus, not only the production of a translation but also the act of understanding is a creative process; meaning is, above all, encyclopedic[1] and relies on individually stored knowledge or knowledge networks (Muñoz Martín & Rojo López 2018: 62–63; Langacker 1987; see also Jakobsen & Alves 2021: 3–4). On the other hand, the formation of meanings is a social process: we adjust and adapt our language use to the addressees and correct it based on feedback (Muñoz Martín & Rojo López 2018: 62). According to Resnick (1991: 2), "our daily lives are filled with instances in which we influence each other's constructive processes by providing information, pointing things out to one another, asking questions, and arguing with and elaborating on each other's ideas." This seems a valid description of how translations are created in collaboration. Creative group processes where "no single participant's contribution determines the result" (Sawyer & DeZutter 2009: 81) have been investigated under the label of distributed creativity. Gläveanu (2014), for example, explores distributed creativity in the context of folk art, characterized by traditions and networks of artists and artisans who influence each other's work, and rejects the notion that creative ideas are born within individual minds, isolated from the context. This approach perhaps constitutes another level of distributed creativity: instead of producing a joint creative product, participants base all their work on that of others who have come before them.

When discussing translation as a creative activity, it is important to note that not all creativity is the same – and when saying this, we do not refer to personal abilities or factors that foster creative abilities (see, e.g., Amabile 2018). Instead, we are considering the nature of different tasks as creative activities. Distributed creativity may take place in "relatively predictable and constrained" as well as unpredictable and unconstrained tasks, such as improvisational theater (Sawyer & DeZutter 2009: 82). Translation as text production is a creative task that is relatively constrained – even predictable – in that the target text usually follows the source text more or less in detail. In organizational psychology, Unsworth (2001: 290–291) presents a matrix of creativity types based on whether the problem is open or closed (which is a continuum rather than two distinct categories) and whether the task is voluntary or required. On these axes, translation is characterized by closed problems (the text provided for translation) and an external driver for engagement (a translator is asked to produce a translation). Unsworth calls this section of the matrix 'responsive creativity' and describes occupational creativity, required and expected in many professions, as its prevalent manifestation.

1. Knowledge of the world, as opposed to simplified dictionary definitions of words; see Croft and Cruse (2004: 30).

3. Data and methods

We base our analysis on two sets of data: one from commercial specialized translation (CST) (three research subjects) and one from the audio description (AD) of films and television (three AD teams). Both data sets include recordings of translation editing, with think-aloud verbalizations in the CST data and video-recorded work meetings of teams in the AD corpus, as well as interviews with all (CST) or 5 of 6 participants (AD). To obtain data that would inform us of professional working practices, we selected experienced and/or trained professionals as research subjects.

Similar to much of the previous research on socially distributed cognition (Perry 1999: 88, Risku 2014: 336), we gathered our datasets with ethnographic methods in two different research projects: The CST data stem from the first author's PhD project which uses triangulated data (a survey, interviews, TAP transcriptions and textual data) to describe the working processes of translation revisers and editors with a particular focus on collaborative creativity in situated translation workflows. The AD data was compiled from the second author's microethnographic and ethnomethodological research project MUTABLE (Multimodal Translation with the Blind, Academy of Finland, 2017–2020) which describes the practice of collaborative AD from socio-cognitive and interactional perspectives (see e.g. Hirvonen & Tiittula 2018). Instances of socially shared cognition (Resnick et al. 1991) taking place in collaborative AD have been observed by Hirvonen (in prep.), and for this article we wanted to dig deeper into this phenomenon with a theory-informed qualitative analysis of two *different* translation processes. In Perry's (1999: 88) terms, we examine "the emergent behaviours generated through interactions between its [the functional system's] component parts", which in our cases are – in particular – the translator and the editor participating in the functional system of collaborative translation process. Our data analysis is qualitative and interpretive (see Perry 1999: 89) as we apply theoretical frameworks of SDC to interpreting our empirical, authentic or semi-authentic, data.

The AD data was compiled from the MUTABLE corpus which includes video recordings from authentic teamwork processes in Austria, Germany and Finland. For the present study, only data from AD editing processes were included for the sake of data comparability. The analyzed data involved recordings of face-to-face meetings of teams that tested, commented and revised audio descriptions as part of six different translation commissions; two teams worked in Austria (CFAD7 and CFAD8) and one in Finland, the latter completing four commissions (CFAD2–5). The teams included one sighted translator and one blind editor, and

they worked either at home or in an office.[2] The participants were explicitly asked to work as regularly as possible in the presence of a video camera and a researcher. The meetings were of varied length, from 2 to almost 7 hours. The participants (5/6) were interviewed a posterior to the recorded work about their experience in AD, their regular work practices and about the teamwork in AD.

Table 1. The AD dataset

Identifier	Language	Video data length	Interviews
CFAD2	Finnish	04:08:00	2/2 participants
CFAD3	Finnish	04:20:00	-"-
CFAD4	Finnish	05:10:00	-"-
CFAD5	Finnish	04:38:00	-"-
CFAD7	German	02:48:00	2/2 participants
CFAD8	German	06:50:00	1/2 participant
		27:54:00 in total	

The CST work task was carefully simulated using a draft translation from a genuine customer project of an LSP. The strict confidentiality requirements make it very difficult to record authentic CST work, as permission would have to be asked from the client for each recording, most likely resulting in slowing down editing schedules beyond acceptable limits. Three highly experienced editors (further sessions were cancelled due to COVID-19 restrictions) were asked to use their regular working procedures and tools to edit a text with the goal of producing a well-written online article fit for publication. The editors were told that the text had been translated by a professional, and that the client wanted the style to be clear, natural and to the point and would pay for one hour of work, but was not currently available for direct queries. No instructions on specific working methods were given, which is usual in the CST context (Korhonen 2021), and the editors were not told who would process the text after them. The editors worked on their own computers and in a familiar working environment, and were asked to verbalize all thought processes, including emotions. A short warm-up text was used before the actual editing simulation to familiarize the editors with working while thinking aloud. The three TAP recordings varied in length between 28 and 52 minutes; the amount of verbalizations produced also varied greatly, with one research subject verbalizing considerably less than the others. The interview ques-

2. The teamwork style of audio description is typical in Austria, Germany, and Finland. Teams have two or more members of whom one is blind.

tions focused on the type of work that the research subjects do, their different editing tasks, which procedures they prefer, and who they cooperate or collaborate with and how.

Table 2. The CST dataset

Identifier	Language	TAP data length	Interviews
RS1	Finnish	00:27:32	1 participant
RS2	Finnish	00:51:17	1 participant
RS3	English/Finnish	00:39:44	1 participant

Our use of think-aloud protocol (TAP) when gathering the CST data was somewhat novel. In translation studies, TAP has traditionally been used to learn about translators' internal cognitive processes; in the present study, we used it to learn about the research subjects' use of external cognitive resources and socially distributed cognition. When obtained as part of a simulated situation instead of authentic work, the TAP data is somewhat similar to interview data; the researcher must rely on what the research subject tells them. As the research subjects in this case were experienced professionals whose working methods were highly developed and established, the data thus achieved can be considered a sufficiently reliable source of information on the social aspects of the work as well as other working practices.

The recorded materials were transcribed, and they were analyzed by repeated observation of the video material (AD data) as well as by coding in Atlas.ti software (CST data and part of AD data). The analysis was characterized by increasingly narrowing focus. As the current body of empirical research on distributed cognition in translation is so scarce, our original aim was rather broad, and we began the analysis by looking for theory-informed indications of distributed cognition in general (see 4.1). Gradually, our focus was directed toward two main themes: the composition of the system of SDC in terms of communication channels and participants – which we later set aside in favor of a narrower scope – and the distributed process of collaborative creation (co-creation) that became observable as different types of externalized representations (see 4.2). We saw that our findings resonated well with the view of Perry (1999: 87–89), who emphasizes the importance of studying communication as evidence of a system of SDC.

4. Results: Socially distributed cognition in translation editing

A system of socially distributed cognition (SDC) is essentially a network of communication (see Perry 1999: 88), which is also amply demonstrated in our data. Furthermore, communication is an essential basic element of collaborative creativity; co-creation can only take place when there is communication between the participants. In this section, we first examine the practices and channels of communication that can be identified in the two translation contexts, identifying similarities and differences that will help us understand translation as SDC in general. We then describe the process of co-creation and how divergent and convergent thinking, the two main phases of the creative process, materialize in the external representations that make up the observable communication in the system of SDC.

4.1 A system of socially distributed cognition: Channels and participants

In the two types of workflow that we analyzed, the core translation production takes place as follows:

A. CST: A translator has prepared a draft translation, and a reviser later edits the text to produce a final translation. The two do not work in a face-to-face situation. The workflow around the translator and reviser or editor usually follows fairly standardized paths.
B. AD: A sighted audio describer has prepared a draft audio description and meets a blind co-author/AD consultant. The two work face to face to test the audio description and discuss (and solve) any translation problems.

The most striking difference between the CST and AD environments is that in CST, the translator who has produced the raw translation is usually not present when the editor carries out the editing task, while in AD, the translator and the editor work side by side (see Images 1–4 in Section 4.2). This leads to many differences in how the participants communicate with each other. The rich natural interaction of the AD team is replaced in CST predominantly with written communication, some of which takes the form of comments added to the translation file. This is not, however, the only way in which the draft translation is used as a communication channel between the translator and the editor. As was previously mentioned, physical artifacts included in a system of socially distributed cognition may act as both cognitive resources and intermediaries of communication (Perry 1999: 87). The draft translation clearly holds a crucial position as such an artifact in the CST system observed in our data: the editor receives information of the translator's solutions in it and then uses it to formulate their own

proposed translation solutions and to communicate them back to the translator. The system is not perfect: in Example (1), the editor expresses the wish that the translators communicated more.

Example 1.

(RS1): *enhän mä voi tietää kuinka paljon kääntäjä on (.) ellei kääntäjä oo sellanen että se (.) niinku kommentoi siinä (.) tekstissään että tutkin tätä ja löysin tämän termin täältä olen aika varma tästä (.) niin sillon siit on hyötyä sillon se tieto menee (.) sillon ei tehdä tarpeetonta työtä mut jos ei tuu mitään (.) mitään tulee pelkkä (.) review-tiedosto jossa ei oo mitään kommentin kommenttia niin (.) sillonhan se menee (.) väkisinkin siihen että on varmuuden vuoks (-) nnh tutkittava asioita*

I can't know how much the translator has (.) unless the translator is one who (.) like comments in (.) their text that I have looked into this and found this term here I'm fairly certain of this (.) then that is useful that information is conveyed (.) then needless work is avoided but if there's nothing (.) nothing just the (.) review file that has nothing not a single comment so (.) then it (.) must be so that to be sure (-) nnh I need to look into things

In some cases, the text may be sent directly to the end client after the editor has worked on it. It is important for the editor to know which will be the case: If the text goes back to the translator, the editor sometimes just indicates a problematic passage or gives a tentative solution for the translator to consider. Without knowing who will receive the corrections and comments, the editor will find it very difficult to do the work properly. In Example (2), the CST editor first makes a tentative solution, then finds that they are not certain who will receive the text next, and considers changing the working method accordingly.

Example 2.

(RS1): *siis tässä (.) pistäisin huomautuksen kääntäjälle ja kysyisin että (.) että (.) mitä mieltä se tästä on (-) no mä voisin sen nyt pistää sitte tähän "korvaavat" (-) voin olla aivan väärässä mutta ei haittaa (-) ai niin mutta tässähän ei puhuta kääntäjästä vaan siis (-) jos tää menee sitten korjattuna suoraan asiakkaalle niin sitten mun pitäisi tätä miettiä vähän enemmän*

so here (.) I would add a comment for the translator and ask (.) that (.) what do they think about this (-) well I could use the word "replace" here (-) I could be quite wrong here but that's okay (-) oh but we are not talking about the translator but (-) if this will go directly to the client when I have corrected it I should consider this more carefully

This is indicative of the extreme closeness of collaboration between the participants and the great flexibility of the distribution of the work effort.

In the AD context, the participants have no similar need to rely on an artifact as the primary communication device, as the participants are directly available to each other. However, they do use the target text (the draft AD) in a somewhat similar fashion to test the AD in context. The AD draft is an important part of the decision-making process: The problem is either solved definitively as the solution is typed into the text document and thereby 'stored,' or it is solved tentatively, adding a note to the draft about the need of revising or finding a solution later. Example (3) illustrates a decision-making sequence in which a problem is solved jointly, and the solution recorded into the AD script (the relevant transcript part is bolded; TR = translator, ED = editor).

Example 3.

01 TR: ((looking at tablet and tapping on it)) *joo Saa- Saaran isä*
yeah Saa- Saara's father
02 ED: *joo Saaran*
yes Saara's
03 TR: ((turns face to ED)) *mä mä laitan tänne että yritä ahtaa*
Saaran isä tähän ((laughs))
I, I just put here that try to stuff Saara's father here
04 ED: ((laughs)) *joo*
yeah
05 TR: ((turns back to tablet, laughing)) *jotenki näin* **((taps on tablet))**
like this somehow
06 ED: ((smiling)) *joo ja…*
yep and
07 ED: *joo eiku sano vaa sitte ku sä oot laittanu sen*
oh well just tell when you've put it there
08 TR: *joo (.) meni*
yep done
09 ED: *no sit ku se äiti ajaa siellä* (…)
okay then that when the mother drives there

(CFAD3_S1370006)

Having agreed on a translation solution (lines 01–02), the translator announces humorously to the editor that she writes a note in the AD script (03). Then she does that (tapping on tablet, 05–08). The editor waits until the translator is finished (06–07), who again verbally indicates when the note has been recorded into the script (08). Only then does the editor continue to the next problem (09).

Many tools and artifacts in the socially distributed cognitive system can be seen not only as information sources but also as intermediaries that relay information from the people who have prepared them. By using these tools and artifacts, editors become part of a wider system of socially distributed cognition (and creativity) in a somewhat similar sense as the folk artists described by Glăveanu (2014). In CST, these tools and artifacts include instructions and style guides, search engines and end client websites, terminology services, dictionaries, the editor's own word lists and client-specific termbases. In AD, knowledge tools like the Internet were used to verify verbal-visual correspondences that were first found by the team.

4.2 Co-creation: Distributed divergence and convergence in action

When the task at hand is one of responsive creativity and thus has a pre-defined problem (a piece of communication for which a translation must be produced), a suitable solution for that problem is found through a process of divergence and convergence. Co-creation can thus be described as a process that comprises, firstly, the communication of proposals (divergence), and, secondly, the exploration of these proposals as discussion leading to the final resolution (convergence). We are interested in the *joint* process of divergence and convergence that spans both the translation and editing phases and takes place in a socially distributed cognitive system. This joint process, which becomes most intense in the part illustrated by circular arrows in Figure 1, can be defined by observing the communication practices, i.e., the externalization of representations.

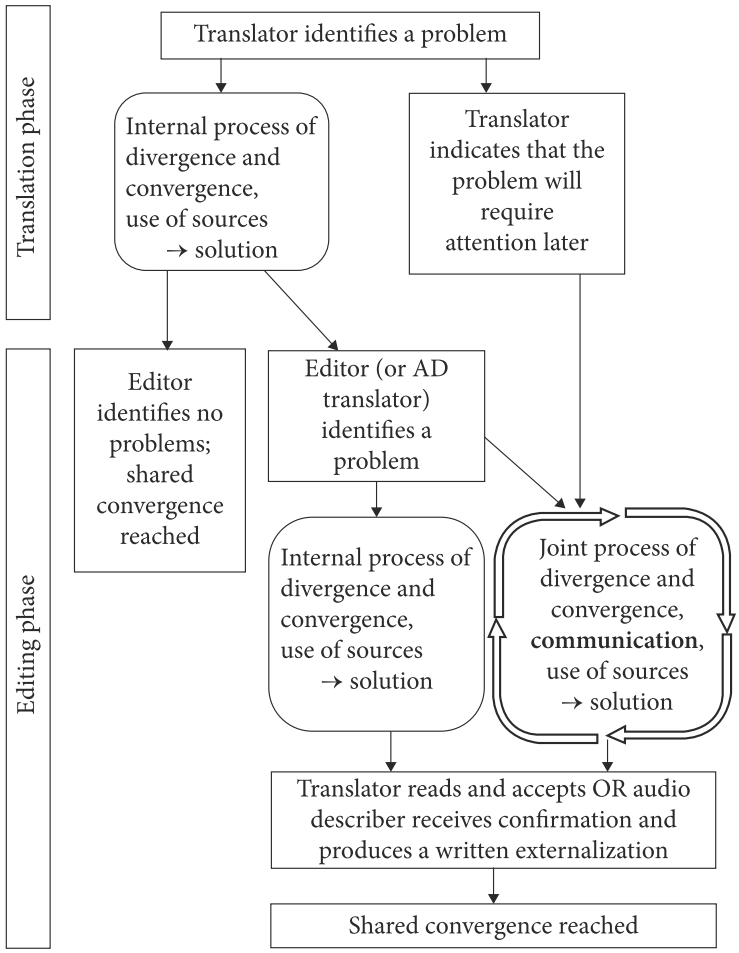

Figure 1. A joint process of divergent and convergent thinking in the translation workflow

In the first stage of the co-creation process, which has taken place before the stages observable in our data, the translator has engaged in an individual creative process without the presence of other human agents; external components may include various technical and human information sources and intermediaries.

Next, in the *distributed* creative process, the translator submits the results of their idea generation for evaluation by the editor. The editor may then add their ideas to the joint mix of idea generation (divergent thinking). If the editor does not indicate a problem, this means that a shared convergence has been reached, and the process of co-creation has ended for that part of the text. In the following CST example, the editor finds the translator's version nice and perhaps a little funny, guesses the source text expression, and accepts the solution:

Example 4.

(RS2): *oi ihanaa (nauraa) (-) joo oliko se "ilo" (.) suomeksi oli (.) "heidän iloksi" joo (.) joo (-) en keksinyt parempaa (.)*

oh wonderful (laughs) (-) yes was it "joy" (-) in Finnish yes (.) "for their joy" yes (.) yes (-) I couldn't think of anything better for that (.)

Example (5) represents a typical acceptance sequence in the Austrian AD data when no problem has been indicated. The editor simply acknowledges the candidate description of the translator with a response token *mhm* with a slightly rising intonation (marked with '¿'). The translator interprets this as an agreement and immediately proceeds in the script.[3]

Example 5.

01 TR: *Entschlossen fährt er den Convoy in die Siedlung.*
determined, he drives the convoy into the settlement
02 ED: **mhm¿**
03 TR: Caesar hebt eine Panzerfaust.
Caesar hoists a rocket launcher
04 ED: **mhm¿**

(CFAD8_S1460003)

If, however, the editor notices a problem, two possible paths for the process can be identified once again: the editor may launch an internal creative process of idea generation and selection or initiate discussion with the translator. In Example (6) on CST, the editor engages in an internal process, building on the translator's solution to achieve the final translation "Wind power is a relatively recent industrial energy generation method in Finland".

3. That even the smallest communicative expressions are resources for sense-making in interaction becomes evident with the use of varied intonation of the editor's feedback tokens: When they express the feedback with a different vocal contour, such as with continuing intonation, the translator is more likely to interpret this as an indication of a problem.

Example 6.

(RS3): "From an industrial point of view, wind power is a relatively young energy production" (-) "wind power is a relatively recent energy p-" mm "industrial energy production (-) generation (.) method in Finland" (-) cut out that whole (-) fluff at the start of the sentence

The same two options – internal process or launch of discussion – exist if the translator has been the one who initiated the discussion by indicating a problematic item in the draft translation.

Since the translator is readily available in the AD context, a discussion will naturally follow more frequently than in the CST context – although the amount of internal processing may be higher in AD than the recordings seem to indicate. Interviews revealed that in CST, the editor's internal processing is influenced by the ultimate reader of the text as a "simulated participant" (see Risku 2014: 347). The communication channels that are used differ considerably, with multimodal communication used in AD, and written communication dominating in CST. Let us first examine the AD context.

Once a problem has been raised, the discussion between the AD translator and editor is characterized by their need to come to a shared understanding, a solution that they both approve of, as illustrated by Example (7).

Example 7.

((the film plays in the background: violin music is audible))
01 TR: ((reading out loud)) *Betroffen blicken die* [name] *auf ihren toten Gefährten. Gunnar…"*
shocked, the [name] look at their dead comrades. Gunnar…
02 ((the film is stopped))
03 TR: **((rubbing his forehead, eyes closed))** *ähm wie sagt man da… nicht verschämt sonder- also heimlich*
uhm how does one say… not bashfully bu- I mean secretly
04 ED: *verstohlen*
surreptitiously
05 TR: **((raises head and points up with forefinger, looks at screen))**
VERSTOHLEN danke das habe ich gesucht.
SURREPTITIOUSLY thank you that I was looking for
((types text to the AD script))
06 *Verstohlen wischt sich Gunnar…*
Surreptitiously, Gunnar wipes…

(CFAD8_S1460013)

As the translator is testing his draft AD, he verbalizes a problem with a wording and displays this also bodily (line 03). His utterance makes the problem a collective one – accessible to the editor – whose immediate response with a candidate solution (04) indicates that she has been monitoring the translator's work. The translator readily accepts the editor's proposal and displays agreement again both verbally and bodily (05).

The problem-solving does not always occur this rapidly in the AD data but requires extensive meaning negotiations and clarifications. The co-participants

express their individual views in a process of rich multimodal interaction, such as by using gestures to display their ideas about the meanings of the verbalizations. In Example (8), the blind editor informs the translator about how he perceives a certain concept, and this leads to a lengthy exchange of ideas between them.

Example 8.

01 TR: ((looking at AD script)) *genau Margarete formt Teiglinge*
right margarete molds **dough pieces**
(…)
02 ED: **((folds hands together to a ball form))**
Teiglinge stelle ich mir so faustgroß und rund vor irgendwie
dough pieces I imagine as fist-sized and round or so
TR: ((looks at Lars))
03 TR: ((looks at TV screen)) *ja in dem Fall sind die größer aber auch rund*
yes **in this case they are bigger but also round**
04 ED: *hmm?*
05 TR: ((turns to Lars and depicts size with palms)) *das soll schon so Brotlaibegroße draus werden… so*
that should actually **become the size of bread loaves…** like this/that
06 ED: *ja*
yep
07 TR: ((glances at TV screen)) *was würd' ich sagen*
what (would) I say
ein halber Handball also schon oder ein Handball groß so
half of a handball really **or a handball size** like this
08 ED: **((depicting roundness with palms))** *mm?*
09 TR: **((looking at ED's hands))** *ja ja ja ja oh ja kommen wir hin*
yes yes yes yes oh yes that's about right
(2.0)
10 TR: **((depicting with palms and fingers))** *also jetzt nicht für für Brötchen also Semmeln oder so sondern für Brotlaibe schon aber*
so **not for for bread rolls that is bread rolls or so but for loaves of bread** yes indeed
11 ED: *okay*

(CFAD7_S1450004)

In reviewing one part of the AD script (01), the blind editor seeks for confirmation that his mental image of certain item is correct (02). He even visualizes this with a hand gesture. An exchange of verbal and embodied descriptions follows (03–11; the blind editor's gesture in line 08 is visible in Image 3 below). Finally, the team arrives to a shared understanding.

While the communication channels in CST require that the editors always formulate their questions and comments in clear terms, in AD the practices are often subtle. The editor does not always need to verbalize the problem explicitly but may simply think aloud (such as feelings or thoughts during the AD) or display hesitation in order to initiate a problem-solving sequence, as in Example (9):

Example 9.

01 ED: **((browsing her notes))**
no sit oli vaan missä kohtaa oli "kultainen kissa vilkuttaa baaritiskillä" mutta jossain oli
ok then there was only where was it **"a golden cat waves on a bar counter"** it was somewhere
02 TR: **((browsing the AD script, looking at tablet))**
se on se… joo semmonen japanilainen koristekissa
that's the… yeah kind of Japanese decorative cat
03 ED: *joo niin siis e-*
yeah so I mean -
04 TR: *tarvitaanko me sitä?*
do we need it?
05 ED: *ei varmaan koska mä en ymmärtäny ollenkaan mikä se… niinku on*
no I guess not because I didn't understand at all what it… is
06 TR: *joo*
yeah

(CFAD4_S1390008)

The editor introduces a topic for discussion by a recall of the AD (line 01). The translator explains the description verbally (02). As the editor displays hesitance (03), the translator proposes discarding the description (04). The editor agrees, again with hesitance (05).

The data excerpts from AD show how seamlessly the teams work together, anticipating and interpreting each other's actions as relevant steps in the translation process. Let us look in more detail at the embodied and material representations that participants in the AD teamwork used for divergent thinking, that is, to discuss verbalization problems and to share their ideas for solutions. Image 1 is an example of joint, embodied idea generation (red arrows represent gaze direction). To understand a concept and with the aim of finding an appropriate word, the translator (on the left) and editor (on the right) engage in embodied action in which they *both* use *similar* hand gestures to display their understanding of the concept's properties.

Image 1. (CFAD2_S1390007)

Images 2 and 3 are examples of joint, embodied idea evaluation. In (2), the blind editor (on the right) performs a body posture to support the sighted translator's (on the left) search for a word that would correspond to the film image. In (3), the blind editor (on the left) uses his hands to indicate his understanding of an object, to which the sighted translator attends to visually and confirms its accuracy (see also Example (8)).

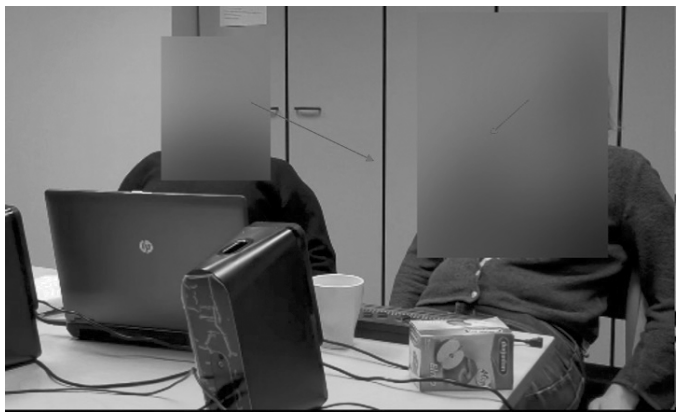

Image 2. (CFAD2_S1330006)

Image 3. (CFAD7_S1450004)

In Image 4, the AD team uses an artifact (here: paper) for clarifying a concept. The blind editor (on the left) does not know the meaning of a term even after multiple verbal explanations, so the translator folds a piece of paper to replicate the object and hands it to the editor to feel.

Next, let us consider the CST context. As was mentioned above, comments in the text file are an important medium of communication in the CST context. Based on the current data, the comments that the CST editor adds to the transla-

Image 4. (CFAD8_S1460003)

tion file for the translator are often questions or statements concerning meanings, such as "I think this is what is meant, not sure why the word 'references' was used." or "Is this what you mean?", see Example (10):

Example 10.

(RS2): *tämä on taas siis* "is this what you mean" *kysymys että ajattelen että se tarkoittaa että se järjestelmä kestää kakskyt vuotta (.) jos (.) mitään ei mene niinku (.) ei käy huonoksi (.) mutta (-) en ole varma*

this is another "is this what you mean" question that I think that it means that the system will last for twenty years (.) if (.) nothing goes like (.) doesn't go bad (.) but (-) I'm not sure

The comments may also be stylistic suggestions ("Or if you want a question: How can we secure…. ? ") or explanations ("This makes the sentence stronger, before it was not clear how "carbon-neutral" fits into the increased electric productions") that anticipate any questions that the translator may have. Similar questions and suggestions are also found in AD: the questions often illustrate the difficulty of making sense of the draft description ("so what does he have there as a tool for the hay?" (CFAD7). The AD editor may, although less often, also propose a change to the script directly ("there you could say 'the boy' because one can't tell" (CFAD3) or object to the draft ("no, that's not appropriate at all" (CFAD3). In CST, the communication at least begins in a much more formal manner. One of the editors described a two-phase practice for writing comments (our translation from Finnish): "I may write that this is not really, this is really like bad and then I edit it like, is this actually correct do we want to say it like this […] but the first time I just sort of let it all out." The first version of the comment is later edited and reframed in a polite business communication style. Such a two-phase procedure is possible in written communication. It may also be necessary in many cases, as

written language that is too direct may be understood as being more impolite than intended.

In addition to using comments in the translated file, further discussion may also take place; while our data give no direct evidence of the nature of these discussions, the practice of carrying out such discussions was frequently mentioned during the interviews. Email is a typical channel of communication. When successful, these discussions seem to greatly increase the work satisfaction of the editors.

Finally, if an appropriate solution has been found, the overall co-creation process typically ends with the implementation of the solution: the CST translator reads and accepts the solution,[4] or the AD translator receives confirmation from the editor and produces a written externalization of the solution into the text. The solution may be identical to the translator's original solution, but more often it is a new one.

5. Discussion

Our case analyses of two translation contexts revealed striking similarities, notwithstanding their very different translation modalities (interlingual vs. intersemiotic) and work setups (individually or face to face). The analysis showed that, in both contexts, translations are products of socially distributed creativity where divergent and convergent thinking take place both as individual and distributed idea generation and evaluation; we found these concepts well suited for describing collaborative problem-solving in translation processes. The team AD is characterized by multimodal interaction that both structures the collaboration (e.g., question-answering) and helps in achieving shared understanding and appropriate solutions. Although the translator and editor work separately in CST, they position themselves in a joint process, even when not seeking to communicate with the other directly; our analysis demonstrates in practical terms that even editors who seem to work alone do not work in actual cognitive isolation. In this workflow setting, an important part of the back-and-forth discussion of co-creation takes place on the pages of the draft translation. The differences between the two translation contexts are thus particularly bound to channels of communication. Individual representations are externalized in different material forms (as text or multimodal action). These differences lead to recognizing the translation file ('text') as an artifact that acts as both a cognitive resource and a channel of communication (see Perry 1999; Risku 2014). Understanding the role of such arti-

4. It is also possible that the translator initiates another discussion about the editor's solutions.

facts adds a new angle to descriptions of translation as a task greatly impacted by technical tools.

Overall, the application of the theory of distributed cognition helps us pinpoint that communication within the workflow is the cornerstone of distributed creativity. In the above, we saw that the working setup and the available channels of communication have a great impact on the joint translation process. In CST, co-creation takes place in the text that is sent from the client to translator to editor and back to the translator and client; the participants interpret the previous participants' input and produce their own work based on it. In team AD, on the other hand, interaction and discussion are central 'places' for co-creation, and participants have an equal opportunity to provide solutions. The distribution of work seems to be almost seamless, and the participants interpret each other's views based on rich interaction. Observation of both translation contexts thus also demonstrates how not only the production of the translation but also the act of understanding is shared in a joint process – much like the understanding of machine translated patent texts in Nurminen's (2020) study.

In CST, the lack of immediate communication between the participants seems to lead to an unclear distribution of the work effort. The resulting process is flexible but contains a lot of uncertainty, as the editor must interpret the translator's ideas based on the text alone and does not know how well researched the solutions are. In contrast, AD teams often review justifications for the proposed translation solutions on the spot. It can thus be stated that, in a collaborative workflow, problem solving would be easier if the participants worked side by side. On the other hand, direct interaction can be time-consuming, as the acceptance of solutions must be sought from each participant, and social interaction involves activities beyond work-related tasks (e.g., small talk). The requirement of financial feasibility, leading to fast working procedures and outsourcing, prevents adoption of this practice in many translation contexts, so other means of securing adequate communication should be sought.

The paradigm of socially distributed cognition offers valuable viewpoints for studying social aspects of translating, such as the translator's role in production systems. It might even offer a new argument in the debate over agency versus structure in translation (see Koskinen and Kinnunen 2010: 7), helping us understand the collective nature of agency, the way agency is formed in continuous negotiation with others, and the manner in which it becomes a complementary and shared feature of individuals. Similarly, socially distributed cognition could prove helpful for translator training as an approach to translating as a collaborative effort and distributed creativity. Explaining how the thinking and, therefore, translation processes are distributed among various information sources and actors could strengthen the notion of agency: The translator is not alone respon-

sible for the end product and gets help from others, just not always in a direct manner. Such meta-skills essential for translators, like interpersonal communication and collaboration, are deemed important in translator training (e.g., Li et al. 2015), but what if we considered these to be the 'core skills' of translating (see Kiraly 2003)?

With our analysis, we have only touched upon the "micro level" of collaborative translation processes (see Jiménez-Crespo 2017: 106) and the potential of empirically (in our case, in real work contexts instead of experimental settings) informed research on socially distributed cognition in translation. More research is required for different translation contexts and cases, with different text types, team compositions, and so forth. An interesting next step would be to study the distribution of cognition in AD that is not realized in teams – which is the more typical practice – and, vice versa, the teamwork or meetings in CST. It is also relevant to track distributed cognition to where it emerges and analyze the interactive encounters of participants in collaborative translation processes – how interaction shapes problem solving and decision making (Jiménez-Crespo 2017: 106) – as those are the sites in which intersubjectively valid meanings are created (Hirvonen & Tiittula 2018) and the responsibility for a final translation shared (Mellinger 2018). Power relationships in systems of SDC would also present a rich subject of study. The more detailed characteristics of creativity in different translation contexts also require more attention; for example, the impact of translation memories that accumulate the creativity of previous translators, resembling the impact of creative tradition on the folk artists described by Glăveanu (2014), would be an interesting area of investigation.

With the theory of socially distributed cognition, we have sought to provide a valid framework for bringing together the cognitive and social aspects of translation. It is not about deciding which is the correct way of conceptualizing cognition – inside one person's brain or distributed among several people, artifacts, and technical systems. The real question is this: how will our understanding of the translation process benefit from these approaches to cognition? When aiming to understand and develop real-world translation processes and workflows that are essentially collaborative, we believe that the distributed cognition framework offers valuable insights that might never arise without it.

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Revision Files as Cognitive Ethnographic Data: Artefact Analysis of File and Software Features Combined with Systemic Functional Discourse Analysis

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