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Grounding Cognitive Translation Studies: Goals, commitments and challenges

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30.1 Introduction

With this chapter, we come to the end of The Routledge handbook of translation and cognition. In the Introduction and the preceding 29 chapters, we have attempted to develop the three main goals we had for the volume: to help lay the epistemological, paradigmatic and interdisciplinary foundations for a sub-discipline still in the making. As we wrote in the Introduction, we aimed at openly acknowledging the lack of unity we presently see in the study of translation and cognition and have therefore striven to create a space in which a variety of conceptualizations, approaches and topics could be reflected that would collectively represent the current state of the art in Cognitive Translation Studies (CTS). Although the Handbook does not offer a perfectly integrated theory of how CTS could be finally grounded, we hope that it nevertheless provides a state-of-the-art basis for taking the last steps towards a more unified theory of this exciting new sub-discipline within Translation Studies.

As we come to a close, we see three main issues that remain to be discussed: namely the question of how we refer to the sub-discipline, its main commitments and the paradigmatic ground(s) on which it stands. In the following section, we will draw on thoughts raised by some of the authors who have contributed to this volume and use some of their voices to consubstantiate some of our own thinking. We end with a reflection on some challenges ahead for CTS.

30.2 Core issues

30.2.1 The name

As we have seen throughout the previous chapters, the historical development of the study of translation and cognition has always drawn on disparate disciplinary affiliations. If one looks back at the seminal work of Seleskovich (1968), one can identify the prominence given to meaning construction and representation, which was of paramount importance in her vision of how translation unfolds as a cognitive activity. However, there has also been a parallel tendency to look at translation and cognition from the perspective of problem solving and verbalization. In
the mid-1980s, researchers began an attempt to tap into the black box of translation (see Königs, 1987; Krings, 1986) by drawing on the information processing paradigm to provide an account of how the translation process unfolded in real time.

Within that tradition, the work of the TRAP Group at the Copenhagen Business School (CBS) in the 1990s, and the development of the Translog software (Jakobsen & Schou, 1999) in particular, led to a line of research that has been widely recognized as translation process research (TPR) (see Jakobsen, 2011). With the growth of TPR, first drawing on keylogged data and later on a combination of keylogging and eye-tracking data, the discussion about the translation unit, aspects of segmentation in translation, phases of the translation process and instances of peak performance, among other topics, gained prominence in research. With the creation of the Centre for Research in Translation and Translation Technology (CRITT) at CBS, TPR established itself as a widely used methodological paradigm for empirical research in translation and cognition at several university centres around the world.

Around 2010, this unifying, technology-based paradigm for studying translation from a cognitive perspective began to be questioned. Instead, a different approach suggested that translation as a cognitive activity should be regarded as situated action rather than cognition in the head. The term cognitive translatology (Muñoz, 2010) appeared as an alternative term to translation process research, claiming a clear differentiation between an approach which drew on the information processing paradigm and an approach which promoted a vision of translation in terms of embodied, enacted, embedded, extended and affective, so-called 4EA, cognition.

As we wrote in the introduction, cognitive translatology aimed at recontextualizing, or “reembedding”, translation process research (Muñoz, 2016), thus broadening the scope of research to include considerations which were not taken onboard by the information processing paradigm implied in the TPR approach. By drifting away from an analogy with computational modelling, cognitive translatology rejected the dualism separating mind and body and proposed grounding mind in matter (see Maturana & Varela, 1987; Varela et al., 1991). Several chapters in the Routledge handbook of translation and cognition have contributed to taking this discussion to a higher level (see Section 30.2.3), addressing methodological consequences that follow from this disciplinary recontextualization.

Around the same time as cognitive translatology was presented as an alternative to TPR, Halverson (2010) proposed the term Cognitive Translation Studies (CTS) as a terminological alternative in view of the broad engagement of cognitive translation scholars with cognitive theories. For Halverson (2010, p. 353), “a cognitive theory of translation must build on cognitive theories of language”. In our opinion, CTS is a broad enough term to accommodate both the computational information processing and the situated-action paradigms, whether supported methodologically by experiments, introspection, concept analysis, think-aloud, corpus analysis or field studies. We believe that these paradigmatic and methodological differences are best addressed from a complementary, integrative approach. This is in line with recent views voiced e.g. by Garcia (2019, p. 26) and Kotze (2019, p. 333). Therefore, while acknowledging the relevance of translation process research and cognitive translatology for the historical development of the study of translation as a cognitive activity, CTS is our preferred terminological label for the sub-discipline described in the present Handbook.

The discussion about the name of the sub-discipline would not be complete without some considerations concerning interpreting as a cognitive activity. Throughout the previous 29 chapters, although several references have been made to interpreting, the main focus of the volume has fallen on translation. However, there is no doubt that translation and interpreting have enough in common, cognitively, to be brought under a single disciplinary framework. Defrancq et al. (2020) speak of “reuniting the sister disciplines of translation and interpreting
Goals, commitments and challenges

30.2.2 Commitment(s)

The primary commitment of CTS, in our view, is specifically to how meaning is communicated across languages. Meaning is the sense we make of reality with all our senses, emotions and intellect. Meaning is therefore inherently multimodal, and increasingly we see multimodal representation of meaning being used in everyday communication as well as in translation. The verisimilitude and situatedness achievable with multimodal, technology-supported representation of meaning may explain its astounding popularity, but spoken and written forms of language remain very important communicative components of multimodal communication for their ability to allow people to align and share thoughts. Language is so integrated with our perception of reality that it co-shapes our sense of reality and co-socializes us to a specific culture. Video images and audio sounds (even if technically digital) are analogical media and therefore travel the world more easily than language communications, although video and audio communications also need to be interpreted. Language communications are symbolic representations of meaning and therefore coded. This means that languages build boundaries around communities of language users, excluding speakers of other languages. That is why translation and interpreting are necessary and why the primary commitment of CTS is to explain how meaning travels across language boundaries. The ancient metaphor of translation as a bridge across a divide between two languages and cultures reflects this fundamental commitment.

A second commitment, therefore, is to a theory of how language mediates or helps mediate multimodal meaning: How language users use language to represent their meaning, and how they create meaning from other persons’ language representations. Halverson (Chapter 2) argues that a theory of translation must build on a clearly articulated commitment to a view of language and language processing in translation to provide a solid and coherent account of CTS. Her commitment is to cognitive linguistics. Carl (Chapter 28) attempts to integrate connectionist and 4EA ideas of embeddedness and extended cognition in his computational modelling of translation, but such modelling still relies heavily on the physical symbol systems hypothesis, i.e. on linguistic representations of meaning.

Kotze (Chapter 6) shows how language contact may have similar effects to those of translation on language use. Researchers working from large language corpora, including Hansen-Schirra (2011) and Neumann (2013, 2014), have shown how sets of linguistic features demonstrate complex patterns of over- and under-representation in translations compared with original texts, reflecting both cross-linguistic influence on cognition and (over)adjustment to target-language norms. In parallel, researchers working on translation process data have examined links between cross-linguistic units in source and target texts and have found patterns that show how different types of transfer can point to a default strategy for reducing cognitive load (see Tirkkonen-Condit, 2005) or to more complex strategies when meaning has to be unpacked and repacked in distinct cross-linguistic units in source and target texts (see Alves et al, 2010; Carl & Dragsted, 2012; Schaeffer & Carl, 2013). Shreve & Lacruz (2017) present an overview of research from psycholinguistics and cognitive science showing how factors like task schemas interact with bilingual language production in the context of translation. The approaches represented in Chapters 9, 10, 11, 19, 20 and 23 also clearly prioritize linguistically represented meaning. Finally, Matthiessen’s
commitment (Chapter 29), which is to a semiotic-based meaning approach to translation rooted in systemic functional grammar, is also rooted in language.

Muñoz Martín and Martín de León’s commitment (Chapter 3) is to a 4EA view of meaning as articulated in cognitive science. This commitment is not necessarily language bound, or bound to processes in the brain only, but extends into the body and the environment. Their prioritized commitment is most clearly to cognition. The same can be said of Chapters 7, 14, 15, 16, 17 and 18, all of which explore cognitive effects of translation either from linguistic representations or from behaviour associated with translation (and interpreting). Matthiessen (Chapter 29) considers that his commitment is complementary to what he considers to be a fundamentally knowledge-based cognitive approach. In our view, the various commitments listed here are indeed complementary, for whether or not one takes meaning or cognition or language to be primary, CTS is necessarily committed to all three. Regardless of priority, there is no escape from the inseparableness of meaning, language and cognition or, in the words of Macdonald (Chapter 5), from the “inextricable tripartite of thought, language and culture”.

This means that the questions we asked in the introduction about translation and cognition remain open: Is language, translated or non-translated, a way to understanding the mind? Do we construe experience through linguistic meaning? Or do we construe experience as meaning, pre-linguistically, from interaction with our environment? Can we know about the mind from studying behaviour? From studying the brain? From studying culture? We believe the oscillation between the primary focus being on meaning, language or cognition as a means of discovery about translation is of benefit for CTS. They constitute a creative and productive trinity.

Chesterman (Chapter 1) raises concern about the scope of CTS with the situated-action approach. “If everything is connected to everything else, and the agent is seen as embedded in a complex environment, it will not be easy to isolate elements for close study; and if one has to study the whole network, where does the network end?”, he asks. This suggests a final commitment of an ethical kind for CTS researchers to always explicate, to the extent possible, the scope of their inquiries.

30.2.3 The ground

The epistemological and ontological ground on which CTS is based is thoroughly explained in the Introduction and the four chapters in Part I. Corresponding to the triple commitment, CTS will be grounded in theories of semiosis (meaning making) and linguistics (language use) and on cognitive science (neurocognition and situated-action cognition).

Methodologically, we believe there is virtue in both inductive and deductive approaches and that empirical studies should go hand in hand with conceptual development, theory building and computational modelling. This appears to be generally acknowledged by all contributors to the present Handbook. Therefore, there are multiple ways of methodologically grounding CTS. CTS is already a large, some might say sprawling, construct with great methodological diversity. Empirical, experimental, corpus, ethnographic, computational and neurophysiological methods are all being used, and it is not surprising that many chapters advocate a multi-method approach. CTS even welcomes explorative approaches based on intuition or curiosity. They can sometimes lead the way to new discoveries.

In the Introduction, we made it clear that the Handbook would focus on exchanges with disciplines CTS has interacted with most vigorously, such as anthropology, psychology and cognitive science. This interdisciplinary dialogue has most often focused on conceptual aspects. As O’Brien (2013) rightly put it, within CTS, borrowing has been much more common than lending. Alves (2015) also explored interfaces of CTS with neighbouring disciplines. Alves and
Hurtado (forthcoming) differentiate between disciplines with direct and indirect impact on the study of translation as a cognitive activity. Muñoz Martín and Martín de León (Chapter 3) raise considerations about the implications of drawing on cognitive science for the growth of CTS. All these authors agree that interaction with cognitive science is currently highly profitable and productive and offers CTS a firm cognitive grounding. This means that although CTS is its own sub-discipline, its key tenets should be consistent with key tenets in cognitive science. Inconsistencies arising from new findings in one of the disciplines will have repercussions in the other, leading eventually to adjustment and growth. This applies more broadly to tenets in the family of disciplines CTS relates to. Being interdisciplinary, CTS is bound to operate in a multi-relational conceptual and methodological research environment, in which emerging inconsistency may well be a sign of disciplinary growth resulting from interdisciplinary dialogue.

Shreve (Chapter 4) defines CTS as “a cover term referring to a research tradition within Translation Studies that focuses on explaining the cognitive foundations of translating and other language mediation tasks like interpreting”. He places CTS within the boundaries of cognitive science and points out that cognitive science is eminently interdisciplinary. Like CTS, it has also struggled to integrate disparate constructs stemming from multiple disciplinary frameworks. “In our understanding, as Shreve further suggests, many of the most pressing issues of Cognitive Translation Studies today are reflections of issues facing cognitive science broadly”. For him, both CTS and cognitive science face the challenge of “how to integrate more traditional computationalist (information processing) models of cognition with both connectionist and extended cognition frameworks such as distributed and situated cognition”.

If CTS was driven mainly by the information processing paradigm in the early phases, the most recent development has been more clearly driven by theories of mind, cognition and meaning developed by cognitive scientists who have insisted that cognition is situated and distributed as well as embodied, embedded, enacted, extended and affective. In Chapter 27, Risku and Rogl offer an overview of recent, situated approaches to cognitive science—namely situated, embodied, distributed, embedded and extended cognition. They argue that “there is no agreement in Translation Studies on whether classical cognitive science theories and more recent frameworks could be used in a complementary way”. They also suggest that the differences between computational, connectionist and situated approaches to cognition occur more on the level of abstraction rather than on the level of irreconcilable theoretical positions. For Risku and Rogl, this potentially makes a combination of views from different frameworks possible, with an impact on levels of explanation. We agree that recent developments in cognitive science require reformulation of previously used concepts and paradigms in CTS. This, however, does not necessarily invalidate the findings of previously undertaken studies drawing on the information-processing paradigm, but earlier findings may need to be put to the test and reformulated in the light of more recent cognitive approaches to language and translation.

In their account of situated, embodied, distributed, embedded and extended approaches to cognition, Risku and Rogl (Chapter 27) argue that “embodied cognition is tightly knit with the situated, embedded, distributed and extended approaches to cognition”. For them, the distributed cognition approach has expanded the boundaries of the cognitive unit of analysis. While in the situated approach to cognition, context and social situation are fundamental factors that influence cognitive processes, the distributed approach to cognition focuses on the distributedness of cognition and action, including all forms of complex systems, structures or frameworks. To this we would add that the distributed approach to cognition can also accommodate aspects of computational modelling and artificial intelligence that have already changed the way humans and machines now interact in translation-related matters. Neural machine translation, for instance, works on the basis of a distributed complex systems network based on tenets postulated by
connectionism. In their account of approaches to cognition, Risku and Rogl point out that “situatedness, embodiment and embeddedness of cognition have fuzzy boundaries and slightly different foci”. They add that these three approaches also overlap greatly. There may be fine-grained aspects that differentiate them, such as the rejection of internal, mental representations in the embedded approach to cognition. Nevertheless, for the purposes of CTS, we would like to suggest that situatedness can also accommodate both embodiment and embeddedness.

Shreve (Chapter 4, this volume) proposes to include CTS under the umbrella of complex adaptive systems (CAS) theory. For Shreve, CTS is “multi-scale”, and, as a complex adaptive system, it can be studied at all levels, from the level of cell activity or below to the social and cultural level or beyond. For this reason, Shreve adds, it is important that the scope of research within CTS is always specified. Shreve notes that Marais (2014) already detailed the implications of complexity thinking for Translation Studies in general and focused on translation as an emergent phenomenon. Shreve’s proposal, however, is primarily targeted at providing CTS with a theoretical ground. As Shreve makes a case for CAS, he includes situated, distributed and extended aspects of cognition into the boundaries of the complex adaptive system pertaining to translational action. There are concrete implications of such an approach for applied aspects of CTS, including the acquisition of translation competence (Chapter 22), the path to translation expertise (Chapter 26) and the traits of risk management (Chapter 25), as well as the allocation of cognitive resources to translation such as effort, attention, emotion and creativity (Chapters 14, 15, 16, 17 and 18).

Finally, the extended approach to cognition, according to Risku and Rogl, refers to the “extended mind” approach proposed by Clark and Chalmers (1998), considering the brain, the body and the environment as a “coupled system”. In the extended approach to cognition, neural and non-neural elements constitute potentially proper parts of the mind. Cognition is extended, “as it offloads tasks onto the external environment to free up limited cognitive resources (e.g. using a notepad as external memory storage)” (Carl, Chapter 28).

In closing the handbook, we would like to take the discussion a step further by proposing what we are tentatively calling a SDE (situated, distributed and extended) approach to cognition within CTS. We suggest that several of the labels used to describe 4EA cognition (embodied, embedded, extended, enacted and affective) as well as situated and distributed cognition are somewhat redundant for CTS. To avoid the many terminological overlaps among these various construals and approaches, we propose an account in terms of only situated, distributed and extended (SDE) approaches to translation and cognition. The situated approach brings specific context and social factors into focus, the distributed approach can add a systemic view of interconnectedness at different levels, and the extended approach, embracing information theory (Chapter 20), artificial intelligence (Chapter 28), cognitive ergonomics (Chapter 8) and human–computer interaction (Chapter 21), among other relevant factors, accounts for intricate and complex affordances in the relationship of human beings with physical, virtual or digital artefacts. In line with Shreve (see Chapter 4), situated, distributed and extended aspects of cognition pertain to translational action and constitute fundamentally important pillars for CTS. We would like to argue that a SDE approach to cognition can provide a cognitive science ground for CTS and offer the field an opportunity to improve the balance between—and the internal coherence within—the cognitive translatological approach and its computational information processing counterpart.

Computers have inspired our thinking about human cognition for a long time, as is clear from the metaphors we have used and are still using. Some have humanized computers, e.g. into electronic brains with artificial intelligence, and some have computerized humans, e.g. into robots or cyborgs. Information processing and problem-solving activity was frequently modelled in the 1980s and 1990s.
in dehumanized flowcharts with binary options and loops. A more recent metaphor frequently used both in reference to computational and more human-oriented views is the network, often a hugely intricate, global network enabling everything to connect to everything. It is used both in reference to humans and machines to illustrate the connectivity of the brain or a computer, especially a processor, and also to illustrate people’s social connectivity, including their virtual, technology-enabled connectivity. With its broad and suggestive application, the network metaphor often tends to underprivilege humans, often viewing them as “network agents” on a par with artefacts and ideas. In Latour’s actor-network theory (ANT) (Latour, 1987), anything in existence can be an agent (or “actant”), with no particular importance given to human agents. ANT, incidentally, has borrowed the concept of translation and appropriated it for its own purposes to describe a network process, which reminds us that CTS is concerned with human meaning making.

Our hope and prediction are that metaphors more suggestive of a living, creative and interactive human activity will soon emerge. The jungle metaphor cited by Chesterman (Chapter 1) nicely suggests life and complexity and also danger and risk like other complex bio- or ecosystems one may think of. We will leave it as one of the challenges for the future to find an appropriate metaphor for capturing the living, adaptable, human complexity from which meaning, language, cognition and translation all emerge.

30.3 Challenges ahead
As we have seen throughout the volume, CTS is now in a position to claim the status of a sub-discipline within Translation Studies with challenging ideas for an epistemological, paradigmatic and methodological framework, from which CTS can grow and establish itself as a reference for scientific work on translation as a cognitive activity. We envisage a general need for research to continue in many of the areas covered in this Handbook but also several challenges:

- There is still a need to strengthen the epistemological grounding of CTS, which will enable the sub-discipline to establish itself in its own right (see Chesterman, Chapter 1).
- There is a need to reinforce the commitment to mind, meaning and language within the sub-discipline, bringing together language and knowledge-oriented cognitive approaches and a meaning-oriented semiotic approach to CTS (Halverson, Chapter 2, and Matthiessen, Chapter 29).
- There is also a need to further strengthen an already productive dialogue with cognitive science so that CTS becomes a discipline that can both benefit from and contribute to the development of multilingual aspects of cognitive science (Muñoz Martín & Martín de León, Chapter 3; Shreve, Chapter 4; García & Muñoz, Chapter 13, Risku & Rogl, Chapter 27).
- There is a need to maintain and strengthen an interdisciplinary dialogue around cognition, meaning and language with disciplines and research fields such as anthropology (Macdonald, Chapter 5); contact linguistics (Kotze, Chapter 6); pragmatics (Alves, Chapter 7); ontology (Pagano, Chapter 9); corpus linguistics (Neumann & Serbina, Chapter 10); linguistics (Malmkjær, Chapter 11); psycholinguistics (Chmiel, Chapter 12); and neuroscience (García & Muñoz, Chapter 13).
- A remaining particular challenge is theorizing the cognitive comparability of cross-linguistic, cross-cultural meaning, perhaps in the kind of ethnolinguistics envisaged by Franz Boas (Macdonald, Chapter 5), perhaps by updating our construal of the troubled concept of equivalence (Steiner, Chapter 19). Kotze (Chapter 6) reminds us that, as far as intercultural communication is concerned, cognitive processes and personal language usage are both affected by exposure to and processing of linguistic features, subject to language contact and sufficient
cognitive entrenchment. In the end, she writes, “the cognitive representations of the two languages syncretize and converge, becoming less representationally distinct.”

• Technological developments, e.g. in biometrics, scanning and wearables, create a need to further investigate translation-specific phenomena in relation to CTS, addressing topics such as effort (Gile & Lei, Chapter 14); attention (Hvelplund, Chapter 15); emotions (Lehr, Chapter 16); creativity (Bayer-Hohenwarter & Kußmaul, Chapter 17); metaphor (Schäffner & Chilton, Chapter 18); and the product–process interface (Hansen-Schirra & Nitzke, Chapter 23).

• Multimodality (Kruger, Chapter 24) is an increasingly important field of study in CTS. As stated in the Introduction, it has already expanded the concept and scope of translation to include description of action represented in moving pictures, as in audio description. In a wider perspective, this expansion highlights the element of translation and subjective interpretation both, for instance, in news reporting and, more fundamentally and epistemologically, in our entire perception of reality. The huge power of the concepts of translation and interpreting constitutes a challenge to all CTS research, making it important to define how translation is construed in a given study.

• The accelerating use of translation technology continues to change the nature of translational activity. This affects the ways in which translators interact with technology and with their working environment. It also affects translators and their products. All of this needs to be continuously reassessed, as in ergonomics (Ehrensberger-Dow, Chapter 8) and human–computer interaction (O’Brien, Chapter 21). Technology’s contribution to more and more effectively modelling human translation computationally, as in information theory (Teich et al, Chapter 20) and artificial intelligence (Carl, Chapter 28), is another continuing challenge.

• A final challenge is to continue to demonstrate the practical relevance of CTS for learning/teaching translation and for doing it competently and expertly with professional risk assessment; see Translation competence and its acquisition (Hurtado, Chapter 22), Risk management (Pym, Chapter 25), and Expert performance (da Silva, Chapter 26). The exact construal of competence and expertise is still under scrutiny (Marín García, 2017) and remains a challenge for the future.

Jääskeläinen and Lacruz (2018, p. 1) state: “Cognitive research in translation and interpreting has reached a critical threshold of maturity that is triggering rapid expansion along several innovative paths.” This threshold of maturity is witnessed by the rapidly growing number of publications of various kinds, including handbooks of the present type, as well as dedicated journals, conferences and competitively funded projects. An interesting parallel to this growth is the slow emergence of clearer lines of demarcation between major approaches to the study of cognition in general and to the study of translational cognition in particular.

If the general framework suggested in this volume is accepted and adopted by the research community in CTS at large, the challenges ahead will be responded to under better-aligned paradigmatic frameworks or even a unified umbrella. If the SDE approach we have outlined here is widely adopted, this might allow CTS to consolidate the view of translation as an ontologically situated, distributed and extended cognitive activity. And if discussions with the cognitive interpreting studies community prove fruitful, we may envisage the development of a unified framework for the whole field of Cognitive Translation and Interpreting Studies (CTIS).

Further reading
The best general recommendation we can give is to read the chapters in the present handbook.

This is the fullest presentation of systemic functional grammar. A rich and demanding book, which presents language as a fourth-order social-semiotic system by means of which we construe our experience of the world as meaning. Matthiessen (Chapter 29 this volume) is a perfect introduction.


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