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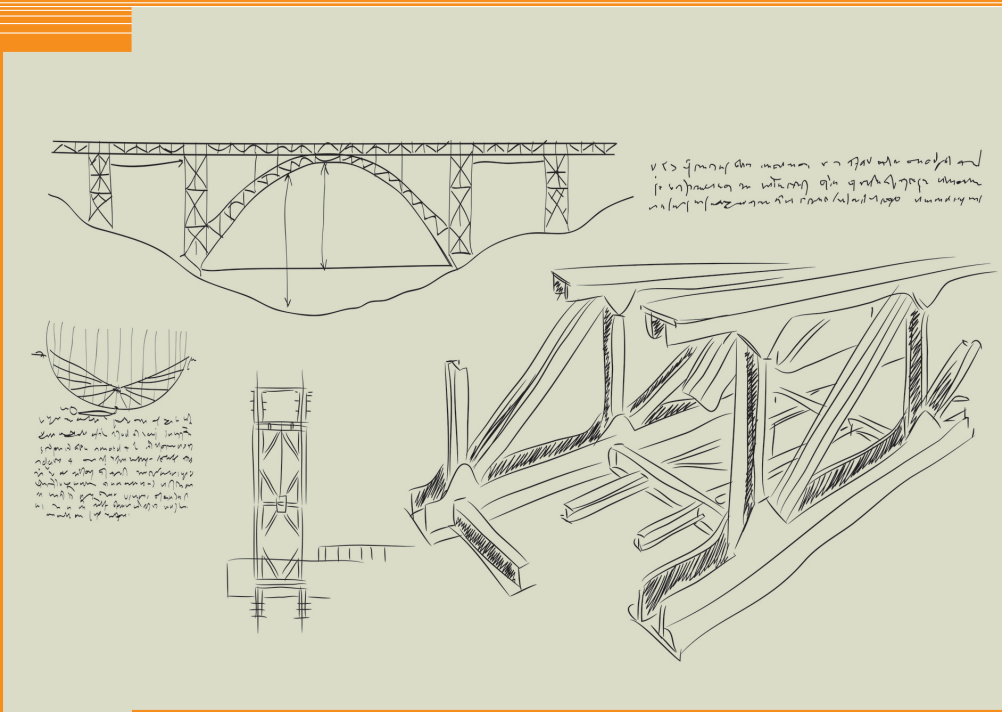

The Interface between Scientific and Technical Translation Studies and Cognitive Linguistics

With Particular Emphasis on Explicitation and Implicitation as Indicators of Translational Text-Context Interaction

Ralph Krüger

Frank & Timme

Verlag für wissenschaftliche Literatur

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Klaus-Dieter Baumann/Hartwig Kalverkämper/Klaus Schubert (Hg.)
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Cologne, March 2015 *Ralph Krüger*

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List of abbreviations and acronyms

CCS	Carbon dioxide capture and storage
CDS	Current discourse space
CG	Common ground
CL	Cognitive linguistics
COORETEC	CO_2 reduction technologies for fossil-fuelled power plants
CSTC	Cologne Specialized Translation Corpus
DE	German
DIN	Deutsches Institut für Normung
EN	English
IPCC	Intergovernmental Panel on Climate Change
ISO	International Organization for Standardization
LA	Langue d'arrivée
LD	Langue de départ
lm	Landmark
LSP	Language for special purposes
SAE	Society of Automotive Engineers
SL	Source language
ST	Source text
STT	Scientific and technical translation
TL	Target language
tr	Trajector
TT	Target text

1 Introduction

"*Scientific and technical translation is part of the process of disseminating information on an international scale, which is indispensable for the functioning of our modern society*."

(Pinchuck 1977:13)

"*Given the general goals of Cognitive Linguistics, one would […] assume that of the linguistic frameworks currently in the limelight, Cognitive Linguistics would have the most to say about translation.*"

(Faber/Ureña Gómez-Moreno 2012:74)

"*We can only understand language if we understand more than language.*"

(Hörmann 1976:210, my translation)

The three introductory quotes above serve to illustrate the three principal areas of investigation of this study. The main area, in whose name the theoretical and empirical work in this book is primarily carried out, is the field of scientific and technical translation studies, i.e. the subfield of the discipline of translation studies which is specifically concerned with the theoretical investigation of scientific and technical translation (STT). The designation *scientific and technical translation studies* is not intended to imply that we are dealing here with an established research paradigm such as descriptive translation studies (Toury 1995) or corpus-based translation studies (Baker 1996) – quite the contrary is true. Despite the high societal relevance of this field of translation, as illustrated by Pinchuck's quote above, a brief survey of current translation studies shows that STT is far from an obvious choice of topic since, as an object of investigation, it is often considered to lack the multidimensionality and general appeal of other types of translation. However, having been trained in this field and having worked as a scientific and technical translator and as a lecturer in STT for several years, I have experienced the highly complex nature of scientific and technical translation on many occasions and eventually came to the conclusion – as Jumpelt (1961:186) did quite a while ago – that this high complexity of STT and the considerable demands placed on scientific and

technical translators warrant an in-depth theoretical exploration of this field in its own right.

An aspect which I was particularly interested in and which may be of high relevance to study of the knowledge-intensive field of scientific and technical translation was the fundamental *underdeterminacy of language* (Carston 2002:19), which is the theoretical label for the trivial but nevertheless important fact that, for human communication to be successful, we have to understand more than the actual words uttered or written; to quote Hörmann's (1976:210) original German words, "man kann Sprache nur verstehen, wenn man mehr als Sprache versteht". For translators, this means that the overtly or explicitly encoded textual structures they operate on are merely the 'tip of the iceberg' (cf. Linke/Nussbaumer 2000:435; Prunč 2007:21), while most of the information required in verbal communication (and hence in translation) is hidden under the water and has to be provided by the context surrounding a given communicative event. This linguistic underdeterminacy may be a particularly pressing concern in scientific and technical translation and in scientific and technical discourse in general, which is usually concerned with highly complex subject matters and – in line with the *postulate of economy* (Fijas 1998) applying to specialised discourse – at the same time linguistically highly condensed in order to ensure efficient and economic communication within expert communities. Two concepts which seem particularly suited to illustrate both the linguistic underdeterminacy and the resulting text-context interaction in scientific and technical translation and which have already been firmly established in translation studies are the phenomena of explicitation and implicitation, which are the second area of investigation of this study.

However, when I reviewed the literature on explicitation and implicitation, it soon became obvious that, in order for these concepts to be meaningful and applicable in empirical analyses, a proper theoretical notion of the more fundamental concepts of explicitness and implicitness was required – particularly if we want to avoid circular definitions claiming that, for example, explicitation is "the technique of making explicit in the target text information that is implicit in the source text" (Klaudy ^{2}2009:104). Unfortunately, such a theoretical basis is often missing in the existing accounts of explicitation and implicitation, which

tend to handle the notions of explicitness and implicitness rather intuitively. However, for any large-scale investigation of explicitation and implicitation in translation, intuitiveness is certainly not enough. If we go back to the iceberg metaphor of human communication, it becomes clear that studies evoking the huge body of information hidden under water require a sound theoretical foundation if they hope to achieve the much desired comparability and repeatability of their findings or any form of intersubjective consensus among fellow researchers. After all, when talking about things under water, we are talking about things which, in the words of Pym (2005:34), are "paradoxically held to be at once hidden and obviously available to all".

Let me briefly illustrate the epistemic aims of this book as perceivable at this juncture with the following example from the scientific/technical corpus to be analysed in this study:

Depending on the process or power plant application in question, there are three main approaches to *capturing the CO_2 generated from a primary fossil fuel* [...]:

Abhängig vom jeweiligen Verfahren oder Kraftwerkstyp gibt es drei Hauptansätze zur *Abtrennung des* ***bei der Verbrennung*** *eines fossilen Primärenergieträgers* [...] entstandenen CO_2:

This example, which will be taken up again at a later point in this book, can be considered as a prototypical instance of scientific and technical discourse. The source text information that CO_2 is generated from a primary fossil fuel is rendered more explicitly in the target text, which specifies that CO_2 is generated *from the combustion* of a primary fossil fuel. This gain in information in the target text can in turn be considered a prototypical instance of explicitation since, even though the information is not overly encoded in the source text, we would certainly be inclined to say that is implicit in it or can be inferred from it. From the perspective of linguistic underdeterminacy, we can say that the source text is more underdetermined with regard to the genesis of the CO_2 than the target text. Questions that immediately come to mind in this context are, for example: What is the locus of this information that is 'hidden' in the source text? Is it part of the word meaning of *CO_2* or part of our general world knowledge about *CO_2*? How is this information organised? How is it made 'prominent' in a given communicative context and how can it be captured in theoretical terms? When can a piece of information be claimed to be implicit in

the source text and when not? Can any informational gain in the target text as compared to the source text be considered as explicitation? And so on.

The highly complex nature of these questions should make it clear that, in order to obtain a coherent picture of explicitation and implicitation in translation, we need a proper theory for modelling aspects such as knowledge organisation, knowledge representation, explicitness and (particularly) implicitness in verbal communication. A theoretical framework which – in my opinion – promises some convincing answers to the questions above is the rich and dynamic field of cognitive linguistics (CL) (see, for example, Langacker 1987; Croft/Cruse 2004; Evans/Green 2006). However, upon closer investigation of the topic I was soon struck by the enormous potential that cognitive linguistics seems to hold not only for modelling and investigating specific translational phenomena such as explicitation and implicitation but for the field of scientific and technical translation studies as a whole. At the most general level, there is the epistemological basis of cognitive linguistics, which may provide a coherent account of the perceived success of the scientific enterprise and the relative stability of scientific knowledge and which may therefore also serve as a solid – and, in my opinion, much needed – epistemological grounding for scientific and technical translation studies. Furthermore, the cognitive linguistic framework and particularly the subfield of cognitive semantics offers various means for modelling the specialised knowledge which underlies scientific and technical discourse and which is generally acknowledged to be of prime importance for successful scientific and technical translation (see Krein-Kühle 2003:11; Byrne 2006:1; Faber Benítez 2009:108). Also, cognitive linguistics provides models for capturing the different degrees of technicality of scientific and technical texts as posited in languages for special purposes (LSP) and STT research and for describing, at a more microscopic level, important linguistic aspects of scientific and technical translation – explicitation and implicitation among them – in cognitively plausible terms. In summary, cognitive linguistics seems to provide a coherent set of theoretical concepts that can capture relevant aspects of various important dimensions of scientific and technical translation studies. In light of these benefits, it is quite surprising that, apart from isolated attempts to apply the framework to literary translation studies (Tabakowska 1993) and to the general

field of specialised translation studies (e.g. Faber/Ureña Gómez-Moreno 2012), there seems to exist no large-scale and systematic study exploring the potential interface between cognitive linguistics and translation studies, let alone scientific and technical translation studies.[1] This seemingly enormous potential of the cognitive linguistic framework for answering questions with relevance to (scientific and technical) translation studies and the lack of previous detailed work on the interface between CL and STT studies brought about a shift of focus away from the initially conceived exclusive consideration of scientific and technical translation studies and the phenomena of explicitation and implicitation as indicators of text-context interaction – with a linguistic framework as a necessary theoretical adjunct – to considering cognitive linguistics as a third theoretical area of investigation in its own right. This book will therefore also attempt to answer the question whether, of all the linguistic frameworks currently on stage, cognitive linguistics does indeed "have the most to say about translation" – as Faber and Ureña Gómez-Moreno claim in their quote above.

The epistemic aims of this book can therefore be described as follows: Firstly, the study aims to explore the interface between scientific and technical translation studies and cognitive linguistics by identifying relevant dimensions of STT and modelling them in cognitive linguistic terms. Secondly, the – corpus-based – investigation of explicitation and implicitation in scientific and technical translation is intended to illustrate the interface between text and context in this form of translation. This investigation is intended to illustrate *how* and – to a lesser degree – *why* translators perform this text-context interaction in scientific and technical translation. The analysis should yield insightful patterns of text-context interaction (as realised by explicitation and implicitation) which can then be correlated with parameters such as the translation direction or the degree

[1] But see the various articles by Halverson on the interface between cognitive linguistics and translation studies in general (for example Halverson 2003, 2007, 2010a, 2010b and 2013). Also, in his work on *creative translation*, Kußmaul ([2]2007) draws on various components from the cognitive linguistic framework, such as prototype semantics and scenes-and-frames semantics, and employs them in a translational context. However, his use of these components is rather eclectic and not derived from any systematic exploration of the field of cognitive linguistics from a translational perspective.

of technicality of the corpus texts, hopefully yielding a fine-grained picture of the frequency and occurrence of explicitation and implicitation in scientific and technical translation. Thirdly, the study aims to show that explicitation and implicitation, although being firmly established and widely studied concepts in translation studies, can also profit from a cognitive linguistic perspective. This perspective may provide better answers to some pertinent issues in explicitation and implicitation research and it should also ensure a coherent integration of the two concepts into the overall framework of the book. Finally, the empirical analysis is intended to illustrate the overall validity of the proposed framework by discussing the identified explicitation and implicitation phenomena in translational and cognitive linguistic terms. This is intended to bring the different theoretical strands of the study together.

The three main areas of investigation of the book and its epistemic aims translate into the following overall structure. Chapter 2 is intended to set the overall scene, focusing on scientific and technical translation studies, the societal relevance of its object of study, its theoretical status, etc. This chapter will also consider various textual and extratextual dimensions of scientific and technical discourse that will be combined in a three-dimensional classification of scientific and technical texts serving as a point of reference for relevant discussions over the course of the study. This chapter discusses scientific and technical translation primarily from the general perspective of translation studies but it already highlights several aspects of STT studies that may benefit from a cognitive linguistic perspective. Chapter 3 is an epistemological interlude and may, at first glance, seem somewhat oddly placed. However, besides dealing with some rather abstract questions of epistemology, it is intended to serve as a bridge between scientific and technical translation studies and the cognitive linguistic framework. The chapter raises some fundamental epistemological issues facing scientific and technical translation studies and goes on to describe an alternative to the fundamental objectivist-subjectivist dichotomy between the poles of which STT studies (and translation studies as a whole) is situated. This alternative account simultaneously serves as the epistemological basis of cognitive linguistics and hence lays the groundwork for the detailed illustration of this framework in the following chapter. Chapter 4 then discusses the basic

tenets of cognitive linguistics and critically compares this framework with other approaches to meaning, while keeping the translational perspective in focus. It is also concerned with the stability of the account of linguistic meaning adopted by cognitive linguistics and with the possible influence of linguistic relativism in cross-linguistic communication. These issues are of central importance to both the overall field of STT studies and the more specific phenomena of explicitation and implicitation. The chapter goes on to discuss several theoretical components of the cognitive linguistic framework with special relevance to scientific and technical translation studies and to the overall epistemic aims of the study. Here, particular emphasis will be placed on cognitive semantics and its tools for modelling knowledge organisation and representation in verbal communication. Chapter 5 brings together the discussions from the previous three chapters and aims to give a coherent account of the epistemological, textual, contextual and cross-linguistic dimensions of scientific and technical translation studies from a cognitive linguistic perspective, also paving the way for the empirical application of the framework in the corpus-based investigation of explicitation and implicitation. The chapter is also concerned with the inherently difficult notion of *invariance of meaning* in STT and it will illustrate the explanatory tools that cognitive linguistics offers in this context. Chapter 6 is specifically concerned with the two phenomena of explicitation and implicitation which, as mentioned before, are understood as possible indicators of text-context interaction in scientific and technical translation. Again, explicitation and implicitation will first be discussed from the point of view of translation studies and will then be modelled from a cognitive linguistic perspective, drawing on various concepts discussed in the previous chapters. Chapter 7 outlines the design of the scientific/technical corpus to be investigated for explicitation and implicitation as well as the methodology of this investigation. While the corpus design is primarily based on various translational aspects discussed in the previous chapters, the methodology – and here especially the difficult notion of the *tertium comparationis* of the translation comparison and the proposed linguistic classification of explicitation and implicitation – draws heavily on the cognitive linguistic framework. In chapter 8, the theoretical strands of the book will then be brought together in an exhaustive discussion of the results of the corpus analysis from a translational and a cognitive linguistic perspective.