

**EXPLICITNESS AND EXPLICITATION THROUGH THE USE OF CONNECTIVES
IN TRANSLATION: A CORPUS-BASED STUDY OF ENGLISH-CHINESE
SCIENTIFIC RESEARCH ARTICLES**

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Abstract

This doctoral dissertation explores connective explicitness and the phenomena of explicitation and implicitation, as well as their counterparts implicitness and implicitation, in the translation of scientific research articles from English to Chinese. The study addresses four central research questions. Firstly, it examines whether English texts demonstrate a higher degree of connective explicitness than Chinese texts, attributed to the more frequent usage of connectives. Secondly, it investigates whether Chinese translated texts exhibit greater connective explicitness compared to their non-translated counterparts in Chinese. Thirdly, the focus shifts to the identification of connective shifts in Chinese target texts in comparison to their English source texts. Lastly, the research delves into the nature of these connective shifts, determining whether they qualify as explicitations or implicitations, and to what extent Becher's five triggers elucidate these phenomena.

Methodologically, the study employs a meticulous examination of composite corpora, including bilingual comparable, monolingual comparable, and bilingual parallel corpora. The analysis follows a three-phase model, assessing explicitness and implicitness across different sub-corpora, identifying connective-based shifts, and discerning the status of these shifts concerning semantic relations vis-à-vis the source text.

Empirical findings indicate that translations exhibit a heightened degree of connective explicitness compared to both source texts and non-translated texts in the same target language. This is primarily driven by a preference for additions over omissions during the translation process. It is crucial, however, to differentiate connective shifts from explicitations or implicitations. The study underscores that translators often introduce, substitute, or omit semantically weak connectives to rephrase the original message in the target language without altering the semantic relation. Furthermore, these shifts find explanations in source language interference and translators' conservatism, aligning with Becher's proposed triggers.

In conclusion, this research significantly advances theoretical and methodological frameworks related to explicitation phenomena, shedding light on the intricacies of translating scientific research articles. It offers a nuanced understanding of the complexities inherent in connective usage during the translation process, thereby contributing substantially to the broader academic discourse.

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Declaration

I, Shuyin Chen, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

List of Abbreviations and Acronyms

Arg	Argument
BNC	British National Corpus
C	Chinese
C-E	Chinese-to-English
CCTC	Chinese Comparable Text Corpus
CCT(s)	Chinese comparable text(s)
CDM	Candidate Discourse Markers
CLAWS	Constituent Likelihood Automatic Word-tagging System
CDT	Chinese Discourse Treebank
CKIP	Chinese Knowledge and Information Processing
CL	Corpus Linguistics
CTTC	Chinese Target Texts Corpus
CTT(s)	Chinese target text(s)
DTS	Descriptive Translation Studies
DTBC	Discourse Treebank for Chinese
ECCC	English-Chinese Comparable Corpus
E	English
ECPC	English-Chinese Parallel Corpus
EDU	element discourse unit
EST-CTT	English source text to Chinese target text
ESTC	English Source Texts Corpus
EST(s)	English source text(s)
GCEPC	General Chinese-English Parallel Corpus
LCMC	Lancaster Corpus of Mandarin Chinese
MCCC	Monolingual Chinese Comparable Corpus

MEU	minimal elementary unit
OCR	Optical Character Recognition
PDTB	Penn Discourse Treebank
POS	part-of-speech
RDM	Real Discourse Markers
RST	Rhetorical Structure Theory
SFL	Systemic Functional Linguistics
SL	source language
ST(s)	source text(s)
ST-TT	source text to target text
TAP(s)	think-aloud protocol(s)
TDC(s)	translationally distinctive connective(s)
TEC	Translational English Corpus
TL	target language
TT(s)	target text(s)
TS	Translation Studies
UCREL	University Centre for Computer Corpus Research on Language
ZCTC	Zhejiang University Corpus of Translational Chinese

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1. Chapter 1 Introduction

This study seeks to elucidate the complex dynamics of explicitation phenomena in translation, transcending mere pattern analysis to address critical theoretical challenges within the field. By comparing explicitation phenomena—including degrees of explicitness and shifts towards explicitation or implicitation—in translated Chinese texts against English source texts and non-translated Chinese counterparts, this research aims to uncover deeper insights into the decision-making processes of translators. The ultimate goal is to refine the understanding and definitions of explicitation and explicitness (as well as implicitation and implicitness) in translation studies, thereby making a significant theoretical contribution to the discipline. Chapter 1 initiates this exploration by delineating the motivations and justifications for the study's objectives in Section 1.1, followed by an introduction to the research questions and the linguistic framework underpinning the analysis in Section 1.2. Section 1.3 then outlines the thesis's overall structure and organization, setting the stage for a comprehensive investigation into the nuances of translation explicitation.

1.1. The Rationale

Since Vinay and Darbelnet first introduced the concept of explicitation in 1958, it has become a focal point of research within Translation Studies (TS), with significant contributions from scholars such as Pym (2005), Becher (2011a, 2011b), and Krüger (2015). Numerous studies have employed case studies (e.g., Othman 2019) or corpus-based approaches (e.g., Chen 2006; Shang 2020) to investigate explicitation as a pervasive feature in translated texts. Nevertheless, this study aims to redirect the traditional focus from science writing or the linguistic differences between English and Chinese. Instead, its core contribution and significance emerge from tackling the nuanced challenge of relating the increased use of connectives to explicitation and delineating the distinction between explicitation and explicitness. This foundational perspective is crucial for understanding the project's objectives and sets the groundwork for the engaging debates and in-depth analyses to be presented in subsequent chapters.

Connectives, crucial linguistic elements that serve to link sentences or clauses to enhance coherence and logical flow within texts, stand as a prime indicator of explicitation in translation. Their role has been extensively examined, showing that explicitation through connectives is not only common in translations but is also a strategic choice made by translators (Becher

2011a, 2011b; Vahedi Kia and Ouliaeinia 2016; Shang 2020). Focused investigations into Chinese translations of English texts (e.g., Chen 2006; Huang 2007; Xiao and Yue 2009) have confirmed that connective-based explicitation often occurs in English-to-Chinese (E-C) translations, as evidenced by both the addition of connectives in the translated text compared to the source text (ST) and a higher frequency of connectives in the target text (TT) relative to texts originally produced in the target language (TL). This phenomenon also showcases genre-specific differences, with variations in the frequency of connectives across different text types (Huang 2007; Xiao and Hu 2015).

Before delving deeper into Chapter 2, it's crucial for readers to grasp foundational concepts that will be explored in more depth as we progress. Explicitation involves making implicit information in the ST more explicit in the TT, often through additions like connectives. Explicitness refers to how explicitly information is stated within a text, which contrasts with implicitation—making explicit ST information more implicit in the TT. These processes are vital for navigating the complexities of translation and understanding the nuanced interplay between the ST and TT. It's important to note that more comprehensive working definitions of these key terms and their application within translation studies will be provided in Chapters 2 and 3, laying the groundwork for a deeper exploration of their significance and impact on translation practices.

Chapter 2's discussion will demonstrate the need to increase the accuracy of explicitation investigations, as highly accurate studies can mitigate the risk of making false conclusions (see Becher 2011a, pp.73-76). This need arises due to the vague definition of explicitation (as well as implicitation), the disregard for implicitation during the translation process, and the unclear distinction between explicitation and other terms (such as explicitness, expansion, specialization, addition, among others). Additionally, it is insufficient to rely purely on the frequency count of specific linguistic features to examine explicitation without considering the influence of the SL or “the way the TL and the TL respective register manifest a division of labor between or among alternative realizations of the same meaning” (Othman 2019, p.41).

Explicitation and explicitness (as well as implicitation and implicitness) in the E-C translation of the scientific research article (RA) textual genre through the use of connectives are selected as the enquiry objective in the present thesis due to two main reasons. Firstly, prior to the investigation of the present study, only a few corpus-based studies (e.g. Qian et al. 2016) had explored these features in Chinese translations of this text genre. This is due to the scarcity of

Chinese translations of English scientific research articles since English has been occupying a central and important position in scientific academic communities. The publication of *An English–Chinese bilingual edition of Nature: The Living Record of Science, published in China*, provides material to investigate explicitation within the given genre. Therefore, the present study utilizes texts from this bilingual edition to investigate explicitation and explicitness (as well as implicitation and implicitness).

Secondly, corpus-based studies exploring explicitation, especially the ones investigating the use of connectives as indicators of explicitation, have mainly relied on frequency testing to determine whether explicitation is a pervasive feature of the translated language. This reflects the recent “disregard for the contrastive-linguistic approach to translation in translation studies” (Becher 2011a, p.14). Chinese, as a Sino-Tibetan language, is characterised by its “systemic implicitness in relation to many linguistic features” (Chen 2006, p.21) compared to English. The features of the language pair provide the best testing grounds for the hypothesised language-pair specific or pragmatic triggers of explicitation/implicitation in the present corpus. If the explicatory or implicatory phenomenon observed in the Chinese translations can be regularly explained by the hypothesised language-pair specific or pragmatic triggers, it can provide a stronger claim about the phenomenon being affected by concrete linguistic or extra-linguistic reasons instead of quickly turning to the translation-specific principles assumption (see Becher 2011a, p.122).

The present study attempts to fill this research gap by conducting a systematic investigation of explicitation and explicitness (as well as implicitation and implicitness) in the E-C translations of scientific research articles, specifically through the use of connectives. This thesis not only aims to test whether explicitations (as well as implicitation) appear within the genre but also aims to determine to what extent a higher or lower degree of explicitness in Chinese translation is influenced by the language-pair-specific factors between the SL or the TL. Furthermore, this thesis also aims to establish what types of triggers may be regarded as explanations underlying the explicitations/implicitations that occur in the translations in the corpus.

1.2. Research Questions and Approach

Before delving into the specific research questions that guide this study, it is crucial to articulate a foundational theoretical assumption that underpins our investigative framework: the association between the frequency of connective use and the degree of explicitness in texts. In the realm of translation studies, connectives serve as pivotal linguistic elements that bridge ideas, ensuring coherence and clarity. The prevailing hypothesis posits that a more frequent employment of such connectives in a text correlates with a higher level of explicitness, thereby facilitating a more accessible and comprehensible transfer of information. This assumption is not without its complexities and warrants careful examination. In the preceding section, I have discussed the significance and contribution of this project, particularly its focus on challenging the straightforward equation of increased connective usage with explicitation and making a clear distinction between explicitation and mere explicitness. This critical perspective is essential as we formulate our research questions, ensuring that our inquiry not only explores the patterns of connective usage but also interrogates the nuances that distinguish explicitation as a deliberate translational strategy from the broader concept of textual explicitness.

Guided by the discussions on rationale and objectives, the following research questions have been formulated:

Research Question 1: *Given the theoretical assumption that a higher frequency of connectives is indicative of greater connective explicitness, do English scientific research articles exhibit a greater degree of connective explicitness compared to their Chinese counterparts?*

Research Question 2: *Within the context of this theoretical framework, do translated Chinese texts demonstrate a greater degree of connective explicitness, as indicated by the frequency of connectives, compared to non-translated Chinese texts?*

Research Question 3: *In cases where there is a discernible difference in connective explicitness between Chinese target texts and non-translations in the corpora, to what extent are the connectives in the Chinese target texts retained from the English source texts, and to what extent are connectives added, omitted, or substituted during the translation process?*

Research Question 4: *To what extent can the shifts, namely connective additions, omissions, and substitutions during the translation process, be characterized as*

explicitations or implicitations, and are these shifts explainable by Becher's (2011a, 2011b) five triggers?

The logical framework underpinning this study is meticulously designed to uncover the nuances of connective explicitness in scientific discourse across English and Chinese texts, as well as in translation practices between these languages. Initially, the investigation sets out to identify inherent differences in the use of connectives in English and Chinese scientific articles (Research Question 1), establishing a foundational understanding of linguistic explicitness within each language. Building on this premise, the analysis then progresses to assess the influence of translation on the degree of connective explicitness in Chinese texts, comparing translated with non-translated texts to discern the effect of the translation process on linguistic features (Research Question 2). This comparison paves the way for a more granular examination of how connectives are treated in the translation process—whether they are retained, added, omitted, or substituted in Chinese translations of English texts (Research Question 3). This detailed inquiry into the mechanics of translation sets the stage for the final phase of the study, which seeks to contextualize the observed translational shifts within the theoretical framework provided by Becher's triggers of explicitation and implicitation (Research Question 4). By sequentially addressing these questions, the study embarks on a comprehensive exploration from empirical observations of linguistic patterns to theoretical explanations of translational phenomena, shedding light on the intricate dynamics of connective usage in academic translation and cross-linguistic communication.

To address the research questions, a composite corpus, comprising the sub-corpus of English source texts (ESTC), the sub-corpus of the Chinese target texts (CTTC), and the sub-corpus of the comparable texts originally produced in Chinese (CCTC), was compiled.

The first research question aims to test whether English scientific RAs rely more heavily on connectives to realize logic-semantic relations, demonstrating a higher degree of connective-based explicitness than Chinese scientific RAs. This research question is examined using a product-oriented analysis of connectives in the comparable bilingual corpus (viz. ESTC and CCTC). The quantitative investigation will be conducted in terms of four fundamental aspects: global statistics, the distribution of connectives for different semantic relations, the distribution of inter-sentential and intra-sentential connectives, and the range of connectives. Aside from establishing the quantitative profiles of the two sub-corpora, the data from the four aspects can

be used to identify and develop the language-specific patterns of the given genre and the conventions of both the non-translated Chinese texts and the English non-translated texts. Additionally, this can also provide support for the qualitative analysis of Research Question 4.

The second research question aims to determine whether a higher or lower degree of connective explicitness that emerges from the English source texts is retained in their Chinese target texts compared to the texts originally produced in Chinese. Research Question 2 is answered using a product-oriented analysis to examine the quantitative realisation of the four aspects in the comparable Chinese corpus (viz. the corpus of CTTC and CCTC) with a view to identifying the potential patterns peculiar to the translated texts.

The third research question aims to investigate to what extent a higher or lower degree of connective-based explicitness in Chinese translations is related to each type of translational operations concerning connectives (i.e. connective preservation, addition, substitution, and omission) during the English-Chinese translation process. Research Question 3 is answered using a process-oriented analysis to investigate the E-C parallel corpus (ESTC and CTTC), focusing on the number of each type of connective translational operation.

The final research question seeks to determine the extent to which shifts lead to explicitations or implicitations and to explore whether these shifts can be attributed to more concrete linguistic or extra-linguistic factors, such as Becher's (2011a, 2011b) five triggers for explicitation and implicitation. These triggers encompass complying with communicative norms, exploiting features of the target language system, addressing restrictions of the target language system, avoiding stylistically marked expressions, and optimizing the cohesion of the target text—all discussed in-depth in Chapter 4. This research question is addressed through both qualitative and quantitative analyses of the shifts identified by preceding research questions, with the aim of determining whether they can be considered manifestations of explicitation or implicitation. Furthermore, the explicating and implicating shifts¹ undergo

¹ In this thesis, the terms *explicitational shifts* and *explicating shifts* are used interchangeably and refer to the same concept, as do the terms *implicitating shifts* and *implicitational shifts*. Both sets of terms denote translation shifts that lead to changes in the explicitness or implicitness of the TT compared to the ST. Explicitational and explicating shifts result in explicitation, a process whereby the TT becomes more explicit or overt than the ST through the addition of information, clarification of implicit content, or the use of more specific language. Conversely, implicitating and implicitational shifts involve implicitation, where the TT becomes more implicit than the ST, perhaps by omitting explicit information present in the ST, using less specific language, or relying more heavily on the context for understanding.

a detailed qualitative analysis, comparing these shifts to the features and patterns emerging from the ESTC and the CCTC, as analyzed in Research Question 1. Such comparisons are instrumental in generalizing the triggers of these shifts.

1.3. Content and Structure of the Thesis

This thesis consists of eight chapters. The first chapter introduces the research background and rationale, the research questions, and the organization of the thesis.

The second chapter reviews the development and debates on the notion of explicitation and other related concepts (including explicitness, implicitness, and implicitation) in translation studies. The review provides a basic introduction to the definitions and typologies of explicitation, which provides the theoretical background for the rest of the thesis and further studies. Furthermore, Chapter 2 discusses the concepts of connectives and connective-based explicitation/implicitation, exemplifying the various manifestations of connectives in different languages and different text genres. The concepts discussed are relevant to the present study, and the insights gained from the discussion can provide a theoretical and grammatical foundation for the present study's definition and classification of connectives. Lastly, the chapter also discusses the studies that have relied on the methodological advantages of corpus-based methods to explore explicitation-related phenomena. Additionally, the discussion illustrates that compared to parallel corpora and comparable corpora, composite corpora allow for a “cross-examination” (Chen 2006, p.100) of the influence of SL and TL norms on translations.

Chapter 3 reviews the theoretical frameworks and working definitions relevant to the quantitative and qualitative analysis of the present study. The chapter begins by defining the notions of explicitness and explicitation (as well as implicitness and implicitation) to provide a distinction between the two terms, as the former is a text-specific feature, and the latter is a

The choice to use these terms reflects their established presence in translation studies literature. For the purposes of this research, they are considered synonymous within their respective pairs and are employed to describe the translational phenomena leading to an increase or decrease in explicitness in the target language text compared to the original. This nuanced understanding allows for a comprehensive examination of how translations can either clarify or obscure information, depending on the direction of the shift and the strategies employed by the translator.

translation-specific shift. The chapter also explains Tang's (2018) typology framework used to identify explicating shifts in the present study. Tang's (2018) typology of explicating shifts is based on the concepts of experiential, interpersonal and textual metafunctions (Halliday and Matthiessen 2004). The typology further categorises explicitations into three levels: experiential explicitation, interpersonal explicitation and textual explicitation. Furthermore, different lexicogrammatical features which explain the manifestation of different levels of explicitation are briefly discussed and exemplified using the typology. This explanation can clarify the approach used to identify the explicitations in the present corpus and to investigate the explicitations for the empirical analysis. Following this, the chapter provides an introductory account of the notion of connectives and the grammatical class types and semantic functions of connectives. The introductory account serves as the grammatical backdrop to the study of connective-based explicitness and explicitations in the investigated texts.

Chapter 4 discusses the data and methodology used in the present study. A composite corpus, including the bilingual comparable corpus, the monolingual comparable corpus, and the bilingual parallel corpus, produced by compiling and documenting a mixture of texts, is used as data for the present study. The texts are processed using different techniques, including conversions of the paper-based texts into machine-readable formats, segmentation and pre-annotation using software tools, to conduct an interoperable investigation across languages and corpora. As discussed in Section 1.2, quantitative and qualitative analyses are conducted using different sub-corpora to examine the present study's research questions, either using the product-oriented or process-oriented method.

Chapters 5 to 7 discuss the present study's research results. Chapter 5 reports the results of research questions 1 and 2 and establishes the quantitative profile in terms of connective explicitness in the different sets of sub-corpora (viz. bilingual comparable corpus and monolingual comparable corpus, respectively). Chapter 6 reviews the results of Research Question 3 and examines the distribution of each type of connective-based translation pattern (connective preservations, additions, substitutions, and omissions) and the contribution of the additions during the translation process to the total occurrences of connectives in the TTs. Chapter 7 addresses Research Question 4 by assessing the extent to which the connective shifts emerging from the parallel investigation in the previous chapter are associated with the explicitation or implicitation of semantic relations. Additionally, Chapter 7 summarizes the triggers of the connective-based explicating/implicitating shifts by taking the conventions

(discussed in Chapter 5) from both the non-translated Chinese texts and English source texts of the corpus into account.

Lastly, Chapter 8 summarises the main findings and limitations of the present study and concludes by providing suggestions for future research.

Chapter 2 Literature Review

The chapter initiates with an exploration of the main concepts and ongoing debates related to the phenomenon (Section 2.1). In translation studies, many scholars consider connectives as indicators of explicitation, and translation studies have drawn extensively on Corpus Linguistics (CL) to investigate explicitation. Thus, this chapter then reviews connective-related research (Section 2.2) and corpus-based studies investigating explicitation (Section 2.3), respectively.

2.1 Explicitation/Explicitness in Translation Studies

Section 2.1 delves into the key concepts of explicitation and explicitness within Translation Studies, starting with reviewing the definitions of these terms and their associated notions, including the Explicitation hypothesis, increased/decreased informativeness, expansions and reductions, specialization, and generalization in 2.1.1. It then moves to explore the diverse typologies of explicitation crafted by scholars in 2.1.2. This approach aims to provide a solid theoretical grounding and a clear understanding of how explicitation functions across different translation contexts.

2.1.1 Definition of Explicitation/Explicitness and Other Relevant Terms

The term *explicitation*, first introduced by Vinay and Darbelnet (1958/1995, p.8), was referred to as “the process of introducing information into the target language which is present only implicitly in the source language, but which can be derived from the context or the situation”. However, concerns have raised about the vagueness of this definition by scholars such as Becher (2011a, p.17), who suggests that the term of “explicit” and “implicit” lack clarity. To address these concerns, scholars have interpreted explicitation in various ways, leading to potential divergences in research outcomes concept of addition, akin to explicitation, includes techniques like the addition of classifiers and connectives, aiming to make explicit what is implicit in the source language text. For example, according to Othman (2019, p.22), explicitation has been viewed as universals, features, techniques, strategies, shifts, processes, and activities, among others. However, it is crucial to exclude instances where the translation adds information already explicit in the source text. The different interpretations of explicitation can have serious consequences. Some scholars who claim to follow the same

definition may understand explicitation differently, thus, resulting in differing explicitation investigations (Becher 2011a, pp.17-18).

Nida's seminal work (1964, pp. 227-231) introduces a nuanced perspective on the translation process, focusing particularly on the addition of elements that may not directly contribute to the semantic content but serve to make what is implicit in the source-language text explicit. This process involves incorporating elements such as classifiers and connectives to enhance the clarity of the translated text without altering the core information of the original message. However, Nida cautions that not every instance of addition qualifies as enhancing explicitness; some additions may simply reiterate what is already clear in the ST, thereby not contributing to the translation in the manner that explicitation implies. Reflecting on Nida's nuanced view, it becomes evident that a more comprehensive understanding of what constitutes a meaningful addition in translation is necessary. In this light, the present study adopts a careful approach to distinguish between additions that truly serve to make implicit information explicit and those that do not add significant value to the understanding of the TT. Specifically, the definition aligns with Nida's argument by excluding from the analysis instances where the added elements in the TT merely echo explicit content from the ST. This decision underscores the commitment to a refined examination of explicitation, focusing only on additions that contribute to bridging inferential gaps and enhancing comprehension without introducing redundancy. This approach will be discussed in detail later, especially in the context of inconsistent interpretations of redundancy.

Blum-Kulka's (1986) explicitation hypothesis posits a universal strategy where translations may exhibit cohesive explicitness from source to target texts. While Blum-Kulka's original definition focuses on discourse or text shifts, scholars like Kamenická (2007, p.46) extend this to encompass ideational and interpersonal explicitations. Part of Blum-Kulka's original claim is based on cohesion, as the original hypothesis stated that there is "an observed cohesive explicitness from SL to TL texts regardless of the increase traceable to differences between the two linguistic and textual systems involved" (Blum-Kulka 1986, p. 19). Therefore, translations may be more redundant than their source texts (Blum-Kulka 1986, p.19). According to Blum-Kulka (1986, pp.19-21), such a shift is a "universal strategy" and is "inherent in the process of translation". Although Blum-Kulka's original definition of explicitation only focuses on the shifts at the textual level, Kamenická (2007, p.46) emphasised that explicitation can be regarded as a more general concept, and Blum-Kulka's definition can be extended. Linguists

largely shared this view as multiple studies (e.g. Pápai 2004; Becher 2011a; Tang 2018) found that there are not only cohesive explicitations but also other types of explicitation. Linguists, including House (2004) and Becher (2011a), have expanded the scope of explicitation typologies beyond mere cohesion-related changes. Their frameworks encompass ideational explicitations, which clarify the content or conceptual aspects of a text, and interpersonal explicitations, which enhance the expressive or evaluative elements of the interaction between the writer and the reader. This broader perspective on explicitation underscores the multifaceted nature of the concept, illustrating that it is not confined solely to shifts related to cohesion. Similarly, while the present study primarily focuses on analyzing connective-based explicitations, as will be discussed in the working definitions in the following chapter, it is crucial to acknowledge that the notion of explicitation extends beyond cohesion-related shifts. This expanded understanding allows for a more comprehensive analysis of translation strategies and their impact on the target text.

The concept of explicitation, as understood by various scholars, encompasses definitions ranging from “a rewording” (Othman 2019, p.27) to a refinement of Vinay and Darbelnet’s definition (1958/1995), as well as the “explicitation hypothesis” proposed by Blum-Kulka (1986). Becher (2010, pp.2-3), for instance, describes explicitation as “the verbalization of information that the addressee might be able to infer were it not verbalized,” contrasting it with implicitness, defined as the “non-verbalization of information that the addressee might be able to infer.” This raises the question: what constitutes the inferential source of explicitation? In their study on consecutive interpreting, Tang and Li (2017, p.375) define explicitation as “translation shifts used as strategies by interpreters to provide additional information that can be inferred from the context (including co-text, the situation, and culture).” Thus, the inferential source of explicitation encompasses context, which, according to Halliday (1999, pp.3-4), includes co-text, culture, or situation (Tang 2018, p.7). Moreover, Becher’s (2010) perspective aligns more closely with explicitation rather than explicitness, leading to the first subsection:

i) Confusion between Explicitation and Explicitness

Kamenická (2007, p.7) highlighted that Blum Kulka did not clearly distinguish between explicitness and explicitation, and scholars may question whether the former refers to a feature of the TT or the latter refers to a rise in the degree of explicitness. Multiple scholars (e.g. Pápai

2004; Puurtinen 2004; Huang 2008) recognised the potential confusion between the terms and thus investigated them differently. For example, Puurtinen (2004) distinguished the terms and analysed explicitation as a shift that makes implicit ST information explicit in translation and explicitness as a property of TT evaluated relevant to non-translations in the same TL. Pápai (2004) examined explicitation using the process-oriented and product-oriented methods, respectively. Based on the process of translating the ST into the TT, explicitation was defined as “a technique of resolving ambiguity, improving and increasing cohesiveness of the ST and also of adding linguistic and extralinguistic information” (Pápai 2004, p.145). Based on the product-orientated method, explicitation was defined as a text feature or property that results in “a higher level of explicitness in comparison with non-translated texts” (Pápai 2004, p.145). Huang (2008) distinguished between intralingual explicitation and interlingual explicitation. He defined intralingual explicitation as the process of adding linguistic elements or specifying implicit ST linguistic elements to convey more clearly certain information in the ST. By contrast, he defined interlingual explicitation as a feature of a higher degree of explicitness in translations compared with non-translations in the same TL. Additionally, many researchers in China, including Fang (2017) and Shang (2020), used the distinction between intralingual explicitation and interlingual explicitation in their studies.

Overall, the concepts of making the content more detailed (explicitation) and less detailed (implication) are fundamentally rooted in the relationship between the ST and the TT. These concepts often denote a transformation, process, or method that results in the TT conveying information with greater or lesser detail than the ST. Additionally, the degree of detail (or the lack thereof) is a characteristic of a text, which may pertain to original texts, their translations, and texts not subjected to translation. This characteristic can manifest through the presence of additional descriptions, explanations, or clarifications in a text, making its content more accessible or comprehensible to the reader. Conversely, it can also involve the omission of such details, which may rely on the reader's inference or prior knowledge for full comprehension. Following prior research, this study distinguishes between explicitation and explicitness, as well as between implication and implicitness, to analyze them as separate phenomena (refer to Chapter 3 for a more detailed discussion).

The question of what is classified as explicit or implicit and what kind of lexicogrammatical elements or features demonstrate a higher degree of explicitness is debatable, especially when comparing two languages. Klaudy (1993, p.168) highlighted that a language may not be

qualified as intrinsically explicit or implicit. Nonetheless, House (2004) argued that the overt encoding of certain content in the TL can be covert in the SL, which may reflect the TL's communicative preference of presenting the information more explicitly than the SL. Here *overt encoding* refers to the explicit representation of certain content in the TL, while being covert or implicit in the SL. This reflects the TL's preference for presenting information more explicitly than the SL. The communicative preference for overt encoding is considered relevant to the notion of explicitness. The degree of explicitness in a language is determined by its preference for overt encoding compared to another language, considering grammatical or communicative preferences. For example, English discourse is noted for its frequent use of connectives in various text genres, such as literary and political works, indicating a relatively higher degree of cohesive explicitness compared to Chinese in these genres. Similarly, Becher (2011a, p.220) claimed that it is possible to determine whether a language favours a more implicit or explicit mode of expression when compared to another language with regard to grammatical or communicative preferences². If such communicative preference of overt encoding is relevant to the notion of explicitness, a language can be described as demonstrating a higher degree of explicitness than another. One example of a communicative preference for overt encoding in the use of cohesive linking can be seen in English discourse, which is known to use connectives more frequently in different types of texts, such as literary works and political works, compared to Chinese discourse³. This indicates that English features a relatively higher degree of cohesive explicitness than Chinese in these text genres (cf. Huang 2007).

² Here *mode of expression* refers to the way in which information is conveyed or articulated, encompassing various aspects such as grammatical structures, linguistic choices, and communicative strategies. It can involve choices related to the level of explicitness, coherence, or other linguistic features in the expression of meaning. Besides, *communicative preference* implies a tendency or inclination toward certain choices in communication, reflecting the preferences of a language community or linguistic system. In the given context, it specifically refers to the inclination of a language or language community to favour certain modes of expression, particularly in terms of explicitness or overt encoding of information.

³ The term *discourse* refers to a broader concept than simply text. Discourse encompasses not only written texts but also spoken language and the larger communicative context in which language is used. It involves the study of language in use, considering both linguistic and extralinguistic elements, such as the social, cultural, and situational factors influencing communication. Here, when referring to *English discourse* and *Chinese discourse*, it implies an examination of how language is employed in the text or written material within the broader communicative context of English and Chinese. Besides, regarding the terms *types of texts* and *text genres*, they are related but have subtle distinction. Both terms refer to categories or classifications of written or spoken communication, but there are subtle distinctions. *Types of Texts* generally refers to broader categories based on the form and purpose of the communication. *Text Genres* is often used to describe more specific categories within types of texts, emphasizing common characteristics or conventions found in certain kinds of communication. In light of research aims, there is no need to distinguish them but use interchangeably in the essay.

The distinction between explicitness and explicitation is crucial, and it appears that there might be some confusion in the use of these terms in the discussion. Becher's (2010) view, as presented, defines explicitness as "the verbalization of information that the addressee might be able to infer if it were not verbalized." This definition aligns more with the concept of explicitation rather than explicitness. Explicitation, in the context of translation studies, involves making information more explicit or overt in the translation compared to the source text. It refers to the translator's choice to verbalize or make explicit certain information that might be implicit or inferable in the source text. Therefore, Becher's definition appears to be addressing explicitation rather than explicitness. Explicitness, on the other hand, generally refers to the degree to which information is clearly and overtly expressed. It is a broader concept that can encompass both explicitation and the inherent explicit nature of language. The present study follows a similar approach, differentiating between explicitation and explicitness, as well as between implicitation and implicitness which will be discussed in-depth in Chapter 3.

ii) Inconsistent Interpretations of Redundancy

As discussed previously, Blum-Kulka (1986, p.19) viewed that a TL text is often more redundant than the SL text, and this redundancy can be manifested in a rise in the level of cohesive explicitness in translations. In the context of translation studies, the term *redundant* refers to the presence of additional or unnecessary information in the TL text compared to the source language (SL) text. Redundancy in translation can manifest in various forms, including the use of extra words, phrases, or explicit expressions that may not be present or as prominent in the source text. The concept of redundancy is often discussed in relation to explicitation and explicitness. Séguinot (1988, p.106) suggested that explicitation in translations "does not necessarily mean redundancy". For example, in English-Chinese or Chinese-English translations, there are often cases whereby the original meaning (meaning of non-translated texts) of a sentence is expressed by adding more words. Nonetheless, it is not reasonable to validate the existence of explicitation through an increase in lexical resources as it might be the case that an element is optional in the TT but not in the ST or vice versa, or there may be other more complicated cases. For example, an English relative clause introduced by the pronouns *which* or *that* does not have an equivalent syntactic pattern in Chinese. Possible translation strategies from English to Chinese can vary, such as using a clause introduced by connectives, a clause without connectives, or a nominalization. Like the above-mentioned

Nida's (1964) explicitation-like concept of *addition*, the explicitation in the present study only refers to legitimate redundancy (Nida and Taber 1969, pp.164-165) that makes the original implicit meaning more explicit. This illustrates why a qualitative investigation of the TT and the ST is critical in the present study, particularly when examining the semantic relations encoded by connectives (see Chapter 3 for more details).

Explicitation, as discussed previously, involves making information more explicit or overt in the translation compared to the source text. This explicitation may lead to an increase in redundancy in the target language, as additional details are introduced to ensure clarity or provide a more comprehensive representation of the original content. Therefore, redundancy is closely linked to explicitation in the sense that making information more explicit can result in redundant elements in the translated text. On the other hand, explicitness refers to the degree to which information is clearly and overtly expressed. While explicitation contributes to increased explicitness, it is essential to distinguish between legitimate redundancy and excessive redundancy. Legitimate redundancy involves the inclusion of additional information that enhances clarity, aids understanding, or aligns with the conventions of the target language. Excessive redundancy, however, may introduce unnecessary elements that do not contribute significantly to the overall meaning and may be considered superfluous.

The reference to *increased/decreased legitimate redundancy* suggests an awareness of the balance needed in translation. It implies that while some redundancy may be necessary for effective communication and adherence to linguistic norms in the target language, an excessive or inappropriate use of redundancy should be avoided.

Relevant to *increased/decreased legitimate redundancy*, other concepts have also been coupled with explicitation and implicitation in previous research, and they are discussed in the following:

Increased/Decreased Informativeness. Increased/decreased informativeness is often confused with explicitation or implicitation (see Othman 2019, pp.30-33). According to Saldanha (2008, p.21), explicitation is not a synonym for increased informativeness and implicitation is not a synonym for decreased informativeness. In the case that the information added, substituted or omitted cannot be retrieved from the context, the shifts should be excluded from the scope of explicitation/implicitation. Additionally, Schreiber (1993 cited in Krüger 2014, p.162) emphasised that not every instance of additions can be qualified as explicitations. Instead,

additions are only regarded as explicating shifts when they can be traced back to or inferred from the respective context. In translation increased informativeness refers to the situation where the TT conveys more information than the ST. This can result from additions, substitutions, or modifications in the translation process. However, it is crucial that the added information is traceable or inferable from the context of the ST or TT. If the increased informativeness in the TT cannot be linked back to the ST or its context, it should not be considered explication. On the other hand, decreased informativeness in translation occurs when the ST contains more information than the translated text. This reduction in informativeness may involve omissions or modifications in the translation process. Similar to increased informativeness, it is necessary for the omitted information from the ST to be inferable or traceable from the context or co-text in the TT. If the missed information cannot be inferred from the context, it should not be labelled as implicitation.

The view taken in this thesis towards this matter is similar to Saldanha and Schreiber's views. That is to say, additions/omissions are not the same as explications/implicitations, given that the former are more widely defined than the latter. In other words, increased informativeness in the TT but cannot be traceable to the ST cannot be qualified as explication. Similarly, the decreased ST informativeness from the TT cannot lead to implicitation when the missed ST information cannot be inferred from the context/co-text in the TT. Example 2-1 is extracted from the present study's corpus and illustrates that when the English rendering into Chinese, an instance of addition *也称东方站冰芯* [*also known as the East Station ice Core*] can be found in the brackets. Nonetheless, if the added unit in the brackets cannot be traced back to the context of the ST, it is considered an addition that renders the TT more informative than the ST, instead of an explicational shift that can be retrieved from the ST/TT and its context. With the added unit, the translation in the TT conveys more information than can be retrieved from the ST and the context.

Example 2-1

EST: The Vostok core from central Antarctica was the first to [...].

CTT: 从南极洲中部获得的沃斯托克冰芯（*也称东方站冰芯*）是第一个 [...]。

Back-translation: The Vostok ice core (also known as the East Station ice Core) from central Antarctica was the first [...].

Expansions and Reduction. Another debated issue concerns associating explication with expansions and implicitation with reduction. Similar to the above-mentioned redundancy, expansion is associated with an increase in the amount of text, which often manifests as

distributing the semantic meaning of the ST linguistic unit over more linguistic units in the TT (cf. Krüger 2014, p.159; Klaudy 2001). On the other hand, reduction refers to a decrease in the amount of text and is evidenced by repacking the ST semantic meaning over fewer TT linguistic units (cf. Krüger 2014, p.165; Pápai 2004, p.159). Furthermore, Krüger (2014, pp.159-160) stated that the distribution of linguistic units cannot be ranked as an explicitation in that the expansion makes no qualitative contribution to the original information.

Explicitation involves articulating in the TT information that is not explicitly stated or is only implied in the ST, thus making the implicit content more accessible to the reader. 'ST missing information' refers to content that is either implied, inferred, or understood from context in the ST but not directly articulated. This may include cultural nuances, assumptions common to the source language speakers, or contextually derived meanings. Conversely, the process opposite to explicitation, known as implicitation, involves omitting in the TT details that are explicitly stated in the ST. This could lead to a more concise TT where the reader is expected to infer or deduce certain elements from the context, mirroring the process of deriving meaning in the ST. Implicitation might involve not articulating in the TT certain information that is explicit in the ST, relying instead on the TT reader's ability to understand these elements from the surrounding text or their own cultural or contextual knowledge.

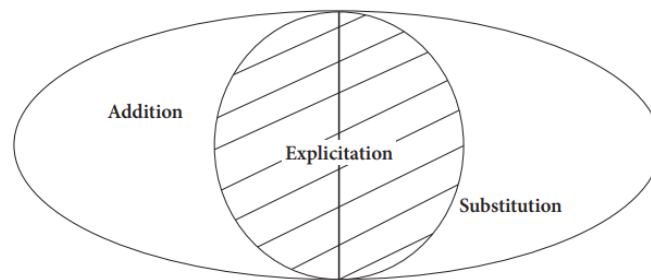
Specialization and Generalization. Klaudy and Károly (2005, p.15) viewed that explicitation/implicitation is also linked with specialization/generalization. According to them, the case of a SL unit with a more general meaning replaced by a TL unit with a more specific meaning can lead to explicitation. They also believed the opposite holds true for implicitation. The definitions imply that specialization adds information and generalization reduces information to the TL unit compared to the SL unit. However, Kamenická (2007, p.48) argued that it is unreasonable to associate explicitation with specification and implicitation with generalization, because generalization may be explicatory. In an example proposed by Kamenická (2007, pp.48-49), the ST unit *The job of a check-in clerk at Heathrow, or any other airport, is ...* is rendered in Czech as *Checking in passengers at an airport counter, whether in London or anywhere else, is* According to Kamenická, this generalizing shift from the rendering of *Heathrow* to *an airport in London* is explicitation, because it results in less reading for Czech readers, especially for readers with insufficient common knowledge about air travel. The reasoning behind this interpretation is that by using a more general term ("an airport in London"), the translator or author aims to make the information more accessible or easily

understandable for the target audience (Czech readers). This adjustment could lead to a quicker and more straightforward comprehension of the content, reducing the cognitive load on readers. Implicit in this argument is the assumption that the more general reference is expected to be more familiar or easier for Czech readers to grasp, enhancing overall readability and comprehension.

As illustrations, the pragmatic and cultural considerations proposed by Kamenická increase the complication of the matter. The extra-linguistic context, such as the common knowledge of readers, is difficult to operationalize, and it is subjective to assume that readers are more familiar with certain information than other information at the time of producing the translation. The present connective-based investigation of explicitation only relies on the linguistic context to determine whether a connective shift leads to an explicitation or implicitation. Here *pragmatic considerations* involve factors related to the practical use of language in real-life situations, considering the context in which communication takes place. And *cultural considerations* refer to aspects tied to cultural nuances, differences, or specificities that influence translation decisions. Specifically, inspired by Becher (2011a, 2011b) and Huang (2007), replacing a SL connective with a more general meaning with a TL connective with a more specific meaning can result in an explicitation as it can reduce the processing effort of TL readers in terms of decoding the logical-semantic relations (see Chapter 3 for more details).

Overall, by making clear distinctions between explicitation/implicitation and the above-mentioned terms, it can be concluded that the definition of explicitation (as well as implicitation) is quite restrictive. Additions or substitutions (which may have been through for example, specialization, generalization, and expansion) are more generic than the notion of explicitation or implicitation, and only when they meet specific conditions can they lead to explicitations/implications. The following figure taken from Tang (2018, p.11) illustrates the view the present study takes regarding the relationship between additions, substitutions and explicitations. Explicitation occurs when the added information in the TT can be recoverable from the context to make the TT more explicit in comparison with the ST. By analogy, in the case of implicitation, it occurs when the omitted or un verbalized information in the TT can be recoverable from the context to make the TT more implicit in comparison with the ST.

Figure 0-1 The relationship between addition, substitution and explicitation



The respective context includes the co-text and extra-linguistic assumptions about the world and the readers (cf. Saldanha 2008; Tang 2018; Othman 2019). However, as discussed previously, it is challenging to trace back the context. This is because extra-linguistic contexts, such as common knowledge or the author's/translator's assumption, are "inherently subjective variables" (Othman 2019, p.33) and, therefore, difficult to identify. Following Othman's (2019) study, the present study only relies on the linguistic context to determine whether a shift is traceable.

Connectives are fundamental to my exploration of explicitation, serving as one of the key indicators of the phenomenon. In this study, connectives are defined as linking devices that encode semantic relations and connect different text units. This category includes conjunctions (both coordinating and subordinating), linking adverbials, and conjunctive adjuncts. Chapter 3 will later provide an in-depth examination of each type of connective, accompanied by relevant definitions and examples, to clarify their application within my analysis.

The term *logical-semantic relation(s)* is used interchangeably with *semantic relation(s)* in this study. Defined as the connections between ideas, statements, or propositions within a text based on logic and meaning, these relations are essential for understanding how different parts of a text interconnect and contribute to the text's overall coherence and comprehensibility. They cover various types of relationships, including, for example, contrast, addition, and causality. These relations, whether marked with an overt clue (e.g., discourse markers and connectives) or not, are encoded between different text spans and can always be inferred from the linguistic context (refer to Section 2.2.1 for more details). Moreover, the use of connectives is often optional, especially in Chinese (refer to Klaudy 2008; Huang 2007), meaning the shift is not "imposed" on the translator by specific lexicogrammatical contrasts (unlike, for instance, the addition of a quantifier necessitated by Chinese grammar, as discussed in Section 2.2.1).

Imposed shifts do not elucidate the reasons behind translators' decisions to explicitate or implicate.

Lastly, connectives in texts are relatively easy to tag, facilitating analysis within the framework of Corpus Linguistics (see Section 2.3 for further discussion). These considerations underscore the rationale for the connective-based focus of the present study.

iii) Difference between the Hypothesis “Explicitation is a Translation Universal” and Blum-Kulka’s Explicitation Hypothesis

In Descriptive Translation Studies (DTS), explicitation has been posited as a universal phenomenon, observed recurrently across diverse language pairs and text genres (Blum-Kulka 1986; Olohan 2004). It is considered alongside other potential universals such as simplification and normalization, where texts are adapted to better align with the target language and cultural norms (Pym 2005, p.35). Nevertheless, the universality of explicitation has been questioned by some scholars (Weissbrod 1992; Saldanha 2008), who highlight the lack of conclusive evidence and suggest that its occurrence may be significantly influenced by factors like language pairs, translation directions, text genres, and translators' individual strategies.

The processes of explicitation and implicitation are shaped by a complex array of factors, which can be grouped into translator variables, situational factors, and translation-task variables, each exerting a unique influence on translation decisions:

- **Translator Variables (Who)** encompass the personal attributes and skills of translators, including linguistic proficiency, expertise in the subject matter, and individual stylistic preferences, all of which impact translation choices (Englund-Dimitrova 2005; Saldanha 2008).
- **Situational Factors (Where, When)** refer to the broader socio-cultural and situational context in which the translation occurs, influencing how texts are adapted for specific purposes or to resonate with particular audiences (Weissbrod 1992; Chen 2006).
- **Translation-Task Variables (Why, Who For)** consider the intended purpose and target audience of the translation, dictating the degree of explicitness or implicitness

necessary to fulfill the text's communicative goals or meet the audience's expectations (Weissbrod 1992; Chen 2006).

These insights into the multifaceted nature of translation highlight that decisions are not solely based on linguistic differences but also deeply interwoven with individual, contextual, and purpose-related considerations.

The concept of explicitation in translation has been a subject of considerable debate among scholars. At the heart of this discussion is Blum-Kulka's Explicitation Hypothesis, which posits that the process of translating tends to make the implicit content of the source text more explicit in the target text. This phenomenon is thought to be a universal feature of translation, reflecting a natural tendency to clarify or elaborate on information that might be only implicitly communicated in the original text. "Translation-inherent explicitation," a term central to this hypothesis, suggests that explicitation is an inherent characteristic of the translation process itself. That is, the act of translating naturally inclines towards making implicit information explicit, irrespective of the specific language pair or text involved. However, this hypothesis, particularly the notion of translation-inherent explicitation, has faced criticism for several reasons. Scholars like Pym (2005), House (2008), and Becher (2010, 2011a, 2011b) have raised concerns about its validity. Becher (2010), for instance, criticized the hypothesis for being "unmotivated, un-parsimonious, and vaguely formulated":

- **Unmotivated:** The hypothesis doesn't account for all potential factors that could lead to explicitation, such as the interplay of simplification and normalisation.
- **Un-parsimonious:** It violates the principle of Occam's razor, which suggests that hypotheses should not make more assumptions than necessary.
- **Vaguely Formulated:** The hypothesis lacks a clear definition and fails to precisely articulate what constitutes translation-inherent explicitation.

In response to critiques, Becher (2010, 2011a, 2011b) recommended moving away from the concept of translation-inherent explicitation towards a more detailed examination of explicitation phenomena. Becher introduced the Asymmetry Hypothesis as an alternative, contesting the notion of translation-inherent explicitation by suggesting that explicitations in translations from one language to another frequently surpass implicitations in the reverse

direction. This hypothesis challenges the idea that explicitation is an innate aspect of the translation process.

Tang (2018) distinguishes between proving "explicitation as a Translation Universal" and substantiating Blum-Kulka's Explicitation Hypothesis, noting some areas of overlap between the two. The concept of Explicitation as a Universal Phenomenon refers to the observed general tendency in translations across diverse languages and texts to render implicit information from the source text explicitly in the target text. Meanwhile, Blum-Kulka's Explicitation Hypothesis characterizes explicitation as a fundamental feature of translation, implying its universality and inherent nature in the translation process. However, Tang posits that while it's feasible to justify explicitation as a universal phenomenon without confirming the presence of translation-inherent explicitation, asserting its universality across all text genres and language pairs is challenging. Nonetheless, identifying instances of explicitation in varied translation contexts can support the notion of explicitation as a Translation Universal. Conversely, studies that claim to support Blum-Kulka's Explicitation Hypothesis offer only partial proof or supporting evidence, without conclusively verifying the existence of translation-inherent explicitation.

The view this thesis has taken regarding the two hypotheses is summarised as follows:

While explicitation may not be present in every translation, it cannot be completely ruled out as a universal phenomenon. However, proving its universality in every translation genre and language pair is a difficult task. Instead of attempting to do so, instances of explicitation in different translation contexts can contribute to the understanding of explicitation as a broader phenomenon in translation.

Similarly, although the translation-inherent explicitation in Blum-Kulka's sense is difficult to identify or justify, it might be theoretically plausible because it *may* or *may not* exist. Nonetheless, instead of assuming the existence of this 'controversial' type in advance, I prefer to focus on making a careful comparison between SL and TL to determine if more concrete reasons can be provided to explain the lexicogrammatical elements or features which provide evidence for the explicitation-related phenomenon. Therefore, I do not support the use of the translation process *per se* to explain the explicitation-related phenomenon. It is at least somehow "lazy" to attribute the appearance of certain explicational lexicogrammatical elements or features in the target texts to the translation-inherent, which is "a pseudo-explanation that does not explain anything" (Becher 2011b, p. 43). Moreover, this links to one

of the present study's objectives to determine whether Becher's (2011a, 2011b) five triggers can be used to explain explicitation/implication for the language pair English-Chinese. The triggers include explanations concerning language-specific discourse norms ("Comply with the communicative norms of the target language community"), lexico-grammar ("Exploit specific features of the target language system"; "Deal with specific restrictions of the target language system"), and the sociolinguistic parameters influencing translators' choices ("Avoid stylistically marked ways of expression"; "Optimize the cohesion of the target text") (Becher, 2011b, pp. 32-41). If the triggers cannot explain the explicitations (as well as implications) of the language pair, then more complex and elusive explanations, such as Blum-Kulka's Explicitation Hypothesis, can be used to explain the phenomena.

iv) Imbalance between Explicitation and Implication

Compared to explicitation, which has drawn much attention in translation studies and empirical studies, there are very few investigations on implication (cf. Klaudy 2009; Krüger 2014; Othman 2019). For example, according to search results from the Translation Studies Bibliography (benjamins.com)⁴, since 2015, there are 99 explicitation-related studies and only 22 implication-related studies. This difference reflects studies' lack of attention to implication. Out of the 22 implication-related studies, only one has included implication in the title, and 17 have also included explicitation in the title. This reflects the status of implication as a counterpart in the theoretical discussion of explicitation (cf. Krüger 2014). Such status of implication is also reflected in the definitions proposed by scholars. For example, in Vinay and Darbelnet's (1958/1995, p.344) definition, implication is a process or stylistic translation technique that involves "making what is explicit in the source language implicit in the target language", "relying on the context or the situation for conveying the meaning". Additionally, Nida (1964, p. 231) stated that implication can be linked to his technique of subtraction which is used less frequently than the addition technique.

According to Becher (2011a, p.41), explicitation, if defined as shifts, techniques or strategies based on an ST-TT relationship, can hardly be analysed in isolation, as there may be cases where implications occur more frequently than explicitations during the translation process,

⁴ Cf. [Translation Studies Bibliography \(benjamins.com\)](https://www.benjamins.com/)

and correspondingly implicitation should be investigated jointly with explicitation. Scholars have found that explicitational strategies are preferred over implicational strategies by translators in various text genres over the past decade. The preference for explicitation has been confirmed in legal texts (Hjort-Pedersen and Faber 2010; Faber and Hjort-Pedersen 2013), back-translation (Makkos and Robin 2014), scientific texts (Krüger 2015), children's literature (Erfieni 2017), and contrasting expert and students' literary translations (Maraeva 2017). Despite the numerous studies that support this preference, only a small number of studies have found contrasting evidence (Van Beveren et al. 2018 cited in Jiménez-Crespo and Sánchez 2021, p.84). The present study examines the implicitation-related phenomenon by clarifying the related notions (including implicitation and implicitness) and analyses it along with the explicitation-related phenomenon (see Chapter 3).

2.1.2 Types and Typologies of Explicitation

The analysis of translation shifts is crucial for investigating the transfer operations performed by translators, particularly when considering explicitations as specific translation shifts. When explicitations are regarded as specific translation shifts manifested by translators, the categorisation of the different types of such shifts has become a controversial topic in relevant studies. Vinay and Darbelnet's (1958/1995) study linked explicitation with the notions of obligatoriness or optionality. Vinay and Darbelnet (1958/1995, p.16) used the term *servitudes* to describe the obligatory changes caused by grammar and the term *options* to refer to the non-obligatory changes caused by stylistics. The parameters of obligatoriness or optionality have been refined more specifically in DTS as obligatory explicitations are dictated by the two linguistic and textual systems, and optional explicitations are not (Blum-Kulka 1986, p.300). According to Toury (1995), obligatory shifts are caused by syntactic and semantic differences, whereas translation norms cause non-obligatory shifts. Klaudy (2008) identified four types of explicitation in translations: obligatory explicitation, optional explicitation, pragmatic explicitation and translation-inherent explicitation. In contrast to the first three types of explicitation, which are motivated by language pair-specific parameters, translation-inherent explicitations are caused by the general tendency in the translation process itself. Nevertheless, such typology is still being questioned due to its difficult implementation because the categorisation is derived from different overlapping criteria and levels. For example, pragmatic explicitation is a sub-category of optional explicitation (Englund 2005, p.38). Additionally, the

typology is questioned because translation-inherent explicitations are often regarded as hypothetical explicitations due to their unclear nature (see Becher 2010, 2011a, 2011b). Moreover, Klaudy (2008) could not provide an example to illustrate this type of explicitation.

Scholars often have different opinions regarding whether the optional explicitation is conscious or not. Some scholars have claimed that explicitation is subconscious (e.g. Olohan and Baker 2000, p.141), whereas others have claimed that it is conscious (e.g. Øverås 1998). Englund (2003) performed an empirical investigation by collecting data on the translator's writing process through concurrent verbalization and computer logging. This study involved two groups of participants, including professionals and students. The findings illustrate that all professionals demonstrate certainty in the process of making implicit contrast relations explicit. In contrast to the professionals, three out of the five students revealed uncertainty, which indicates that both conscious and subconscious explicitations existed in the translations.

House's (2008, p.194) typology of Translation Universals distinguishes between obligatory and optional universals by expressing that obligatory universals tend to result from "the language-specific nature of syntactic and semantic structures". To further illustrate optional universals, House (2008) subdivided them into three categories using Halliday's three metafunctions. Apart from linguistic sources, she also identified non-linguistic features that call for translation universals. These include the translator, the situational and the translation-task variables. However, she did not exemplify nor elaborate on these factors, which renders the postulation of translation universals implausible. House's (2008, p.15) framework is important as it is at the levels of ideational, interpersonal, and textual metafunctions in which translation universals might be located and not at the other levels that are lower than the three metafunctions. The inherent advantage of Systemic Functional Linguistics (SFL) and metafunctions is evident in their ability to facilitate the construction of theoretically consistent models. These models are designed to establish cohesive linkages between "lexicogrammatical and linguistic features," systematically explicate "the diverse choices made in the translation process," and elucidate the correlation between "such choices and the contextual or register-specific variables." (Othman 2019, p.43). Therefore, numerous scholars, including Tang and Li (2017), Tang (2018), and Othman (2019), have used the SFL theory and the Hallidayan metafunctions of language as the theoretical classification basis for different types of explicitations. For example, Tang and Li (2017) and Tang (2018) applied metafunctions to their study of the explicitation typology to explore explicitation patterns between professional

and student interpreters in Chinese-English consecutive interpreting. Based on the metafunctions, they exemplified and discussed the lexicogrammatical and linguistic features of each type of explicitation in more detail. Tang's (2018) framework is based on Systemic Functional Linguistics and metafunctions. It applies these linguistic theories to the study of explicitation in Chinese-English conference interpreting. The framework utilizes metafunctions, such as ideational, interpersonal, and textual, to analyze explicitation patterns. Connectives play a crucial role in the analysis due to their association with logical-semantic relations, optional usage, and ease of tagging within Corpus Linguistics. Nonetheless, Becher (2011a, p.86) stated that no "objective criteria" can be adopted to keep the three categories separate in Halliday's framework. Therefore, Becher (2011a, pp86-87) modified and delimited the Hallidayan metafunctions of language to create his framework. According to him (2011a, p.86), his framework is more manageable as each category proposed is "more clearly delimited" by interactional shifts, cohesive shifts, and denotational shifts.

Arguably, due to the unclear delimitation between optional and pragmatic explicitations, the two can be subsumed under the optional category, which is more readily distinguishable from the obligatory one. The present study will not specifically define conscious or subconscious explicitations or implicitations as it is difficult to clearly distinguish them without conducting interviews with the translators (cf. Tang 2018) or a software-based investigation with think-aloud protocols (TAPs) (cf. Englund-Dimitrova 2005), which are outside the present study's focus. Although the focus of Tang's typology (Tang 2018) is on explicitation in consecutive interpreting, the typology can still be used to analyse written texts like the case in the present study. Firstly, this is because the typology is established for the language pair English-Chinese. Secondly, the framework, in essence, is similar to the other frameworks (e.g. House 2008; Becher 2011a) which have been proposed for written text analysis. For example, Halliday and Hasan's (1976) notions of *reference*, *substitution*, *conjunctions*, and *ellipsis* that are related to cohesion are subsumed at the textual level. Thirdly, by subsuming logical and textual functions into a single level in Tang's typology, the overlap between the categories in Hallidayan metafunctions can be avoided. Lastly, experiential, interpersonal and textual explicitations are retained to be consistent with most literature (e.g. Halliday 1994; Halliday and Hasan 2004; House 2008) within the framework of SFL.

The next chapter will provide a more detailed illustration of the typology mainly based on Tang's (2018) framework. It can be learned that pragmatic explicitation, a subset of optional

explicitation, involves translation choices influenced by contextual and pragmatic factors rather than linguistic necessity. Scholars use Systemic Functional Linguistics and Hallidayan metafunctions to categorize explicitation patterns into experiential, interpersonal, and textual types. Distinguishing between optional and pragmatic explicitations can be challenging, leading some to subsume them under the optional category. Tang's (2018) framework, which is initially used to analyze explicitation in Chinese-English conference interpreting, broadly aligns with the analysis of written texts as well. Despite its original application to spoken language, the emphasis on connectives for establishing logical-semantic relations, alongside their optional usage and ease of tractability within corpus linguistics, remains highly relevant for exploring explicitation in written data. There are, of course, minor differences to consider when adapting this framework from the context of spoken to written language. The nature of written communication inherently allows for more deliberation and refinement, which might influence the deployment and analysis of explicitation strategies differently than in the dynamic environment of conference interpreting. However, the foundational principles underlying Tang's approach, particularly the focus on the metafunctions, provide a robust lens through which to examine how explicitation functions across different modes of communication. While the interpersonal metafunction may manifest differently in written texts—given the absence of immediate interaction and feedback—this does not significantly detract from the framework's applicability. The ideational and textual metafunctions, with their focus on content representation and the organization of information, are equally pertinent to written language analysis. Additionally, the analytical focus on connectives as markers of explicitation can be seamlessly applied to written texts, where their role in structuring logical and semantic relations is just as critical. In essence, while acknowledging the nuances that distinguish spoken from written discourse, Tang's (2018) framework offers valuable insights into the mechanisms of explicitation that transcend the medium of communication. Its application to written data, with minor adaptations, not only is feasible but also enriches our understanding of explicitation by highlighting the versatility and depth of SFL's metafunctional analysis in exploring textual coherence and clarity.

Becher's framework, focused on interactional, cohesive, and denotational shifts, offers a more delimited perspective. While debates exist on the conscious/subconscious nature of explicitations, empirical studies show variations among professionals and students in making implicit relations explicit. The present study aligns with Tang's typology for analyzing English-Chinese written texts, retaining experiential, interpersonal, and textual explicitations. Before

that, the following sections of this chapter will review the relevant notions and studies in the domain of connective explicitation.

2.2 Connectives as Indicators of the Explicitation-Related Phenomenon

While the present study employs the term “connective” (refer to Chapter 3 for more details), the following sections delve into notions and studies relevant to conjunctive cohesive devices in translation studies and explicitation investigations. This is because scholars may use different terms when referring to conjunctive cohesive devices in their studies, no matter whether the term overlaps with the notion of connectives here.

2.2.1 Definition of Connectives

Halliday and Hasan’s (1976, pp.226-227) distinction between conjunctive adjuncts and structural conjunctions shows that conjunctions can function both structurally and cohesively in discourse. While structural conjunctions are indicated by coordinators or subordinators that connect linguistic units within a sentence, cohesive conjunctions are indicated by linking devices that typically serve as adjuncts to connect separate sentences. This early work by Halliday and Hasan suggests that cohesion is primarily concerned with relations between sentences, but later scholars have criticized this view for not considering intra-sentential cohesion (Herbst 2010, p.284). Nonetheless, Halliday and Hasan (1976, p.6) acknowledged that parts of a sentence or clause can cohere with each other to create texture, indicating that cohesive relations can exist within a sentence. In fact, Halliday and Matthiessen (2004) proposed the clause complex as the basic unit for studying cohesion.

Becher (2011a, p.104) stated that connectives form “a syntactically heterogeneous class comprising elements belonging to different lexical categories (conjunctions, adverbs, and particles) and even elements that do not belong to any lexical category at all but are syntactically composite items (linking constructions)” in his PhD thesis. Conjunctive cohesive devices are defined as linking devices that connect clauses or higher-level units in this thesis (Becher 2011a, p.104). As a result, coordinating conjunctions that link words or phrases (e.g. *and* in *boys and girls*) were excluded from his study when he discussed connectives. In grammatical terms, the term *connectives* in his study refers to subordinating conjunctions (e.g.

although), coordinating conjunctions (e.g. *but*), and certain adverbs that serve as markers of semantic relations (e.g. *therefore*) (Becher 2011a, p.83).

In addition to the grammatical function to link units, connectives also have a semantic function that signals specific logical-semantic relationships between the clauses or sentences they connect (cf. Becher 2011a, p.104). In the discussion of logical-semantic relations, according to Xue (2005), different text spans can be categorized into classes that share some semantic meaning (such as *cause or concession*). Such relations can be marked explicitly by different clues, such as lexical (e.g. connectives), or they can remain implicit when there are no clue appearances. A connective can often be included to help ease implicit relation recognition. For example, the Chinese connective 而 *er* [*while, whereas*] in Example 2-2 from the present study's corpus makes explicit a COMPARISON relation.

Example 2-2

[当 旋转 的 指向 被 认为 是 未知的,]1 [最小 范围 是 每年 0.15 度.]2
 When rotation DE direction BEI(Passive) consider be unknown minimum range be per year 0.15 °
 (而 *er*) [如果 我们 假设 内核的 差异性 旋转 是 围绕 南北轴 的,]3 [则 最小
 (While) if we assume core DE differential rotation be around north-south axis DE whereas minimum
 范围 将 增加.]4
 range will increase
 Gloss: When the direction of the rotation is considered unknown, the minimum range is 0.15° per year. (While) If we assume that the differential rotation of the core is about the north-south axis, the minimum range will increase.

As discussed in Section 2.1, connectives explicitly mark semantic relations, making them suitable for investigating explicitation. Xue (2005) conducted a rough count on randomly selected files from the Chinese Treebank and the Penn Discourse Treebank (PDTB) 2.0 and found that the ratio of implicit relations (without an overt clue) in Chinese (82%) is higher than that in English (54.5%). Despite the overwhelming ratio of implicit relations, the present study has decided to exclusively compare the relations marked explicitly by connectives. This decision was motivated by the fact that the more relations marked by connectives, the higher the degree of explicitness a text will have (see Chapter 3 for more details).

Traditional accounts of the meaning of connectives, such as the ones that are commonly found in major English and Chinese reference grammars, typically list a multitude of semantic relations that may be encoded by different means, such as *Cause, Result, Contrast, Concession, Restriction* and *Explication* (see e.g. Halliday and Hasan 1976; Quirk, et al. 1985; Lu and Ma 1999). Multiple scholars have proposed feature-based typologies of semantic relations to

classify connectives. For example, Halliday and Hasan (1976) classified the conjunctive cohesion devices into four types, *Additive*, *Adversative*, *Causal* and *Temporal*, according to the semantic relations that they indicated. Additionally, Trebits (2009) proposed a scheme of seven categories of conjunctions which include *Additive*, *Adversative*, *Causal*, *Temporal*, *Continuative*, *Hypothetical* and *Clarifying* conjunctions. Blühdorn (2010) also proposed a set of basic types of relations, including *Similarity*, *Situating*, *Conditional*, and *Causal* relations.

Several taxonomies of potential relations have been proposed based on Treebanks which refers to syntactically annotated corpora or datasets in the field of computational linguistics, providing a more detailed inventory of semantic relations. For instance, the Rhetorical Structure Theory (RST) Discourse Treebank, proposed by Carlson and Marcu (2001), includes a total of 53 mononuclear and 25 multinuclear rhetorical relations. However, the approach begins with “a predefined inventory of abstract discourse relations” (Xue 2005, p.24), and not all relations are considered to be marked by connectives. As a result, the complete listing is too extensive for an in-depth analysis in the present study. For example, in RST, the clause as expected indicates a *Comment* relation as it represents a subjective remark on the previous elements of the text from an outside perspective, usually from the writer or readers of the article. Another inventory is PDTB, whereby Prasad et al. (2008) provided a small core set of semantic relations that can be further divided into 16 types of relations. However, the semantic definitions of Arguments, defined as elementary discourse units in PDTB, can be problematic at times (Zhou et al. 2014, p.946). For instance, as shown in Table 2-1 borrowed from Zhou et al. (2014, p.946), the *Contingency* relation can be further divided into two subtypes: *Cause* (when Arg1 describes the result based on the cause of Arg2, as with the connective because) and *Result* (when Arg1 describes the cause and Arg2 ties the result, as with as a result). In contrast, the semantics in the Discourse Treebank for Chinese (DTBC) (Zhou et al. 2014) refers to the *nucleus/satellite* of each sense in RST, providing a consistent definition of Arg1 and Arg2 on the type level, rather than the subtype level. As a result, the annotation process is simplified without any loss of information, as compared to PDTB.

Table 0-1 The semantics of Arg1 and Arg2 for CONTINGENCY. Cause. reason and CONTINGENCY. Cause. result in PDTB 2.0

Semantic Relation	Argument 1	Argument 2
CONTINGENCY. Cause. reason	Result	Cause
CONTINGENCY. Cause. result	Cause	Result

With all of this in mind, the present study analyzes cohesion marked by connective using inter-sentential connectives, as well as intra-sentential connectives. The expansion of the realm of cohesion to include relations within a sentence has resulted in a wider choice of analysis devices that has enabled the present study to draw more precise conclusions regarding connectives used in the investigated corpus. In the present study, the term *connectives* encompass conjunctions, linking adverbials, and conjunctive adjuncts, inspired by Becher's study. Conjunctions are divided into two categories: coordinating conjunctions and subordinating conjunctions. Coordinating conjunctions link two clauses with equivalent status, while subordinating conjunctions connect a main clause to a dependent one. Linking adverbials differ from conjunctions in that they link text passages together at sentence boundaries (see Quirk et al. 1985; Bloor and Bloor 1995; Biber et al. 1999). Conjunctive adjuncts, which relate the clause in which they appear to the preceding text, refer to "adverbial groups or prepositional phrases" (Halliday and Matthiessen 2004, p.81).

The present study does not propose a new feature-based typology of semantic relations but investigates the use of conjunctions for four semantic relations: causal, adversative, conditional, and additive relations. The main reasons behind this choice are: (i) these relations frequently occur in both English and Chinese, and in most text genres, including academic prose (e.g., Biber et al. 2002; Gao 2016); (ii) traditional English and Chinese grammar handbooks (e.g., Quirk et al. 1985; Lu and Ma 1999) have made clear distinctions between the relations; (iii) the relations can be further divided into more detailed tagsets of the semantics in DTBC (Zhou et al. 2014), which are adopted in this research to clarify the relations indicated by the connectives due to their advantages (see Chapter 3 for further discussion).

2.2.2 The Form of Connective Explicitation and Explicitness

Becher's (2011a, 2011b) analysis of the forms of connective-based explicitation showed that for the language pair English-German, all the additions of connectives were identified as explicitations, and conversely, all omissions of connectives were identified as implicitations. Furthermore, Becher (2011a, p.110) stated that "a text can only be made cohesive when it is already coherent, translators can only add a connective if there is already an implicit coherence relation. Conversely, if a translator omits a connective, the underlying coherence relation is still

there, i.e. in principle inferable by the reader”. Similarly, Huang (2007) outlined four types of operations in English-Chinese connective translation: Corresponding (Preservation), Explicitating (Substitution), Adding (Addition), and Implicitating (Omission) (see Table 2-2).

Table 0-2 Transfer operations in English-Chinese connective translating

Type of operations	Explanation
Corresponding (Preservation)	The corresponding connective of that in the ST is expressed in the TT.
Explicitating (Substitution)	A connective in the ST is substituted in the TT by another connective which can make the logical-semantic relation more explicit.
Adding (Addition)	A conjunction or connective which does not occur in the ST is added in the TT to make a certain logical-semantic relation explicit in the translation.
Implicitating (Omission)	The omission of connectives in the TT with reference to the ST. In this case, the logical-semantic relation left implicit is often conveyed using other linguistic or syntactic means.

Huang’s (2007) classification, illustrated in Table 2-2, is used in the present study to refer to the connective-based operations in English-Chinese translations. Connective-based explicitations are analyzed using an ST-TT approach, assuming that a text’s explicitness is determined by the occurrences of linguistic forms in the thesis. Scholars have widely embraced this perspective, especially when comparing translations with texts originally written in the TL (e.g., Huang 2007; Shang 2020). Based on the above form of connective explicitness and explicitation, the present study views substitutions and additions as explicitations and treats omissions as implicitations, which also meet the specific conditions of explicitation and implicitation discussed in Section 2.1.1.

In addition, the notions of *parataxis* and *hypotaxis* (translations for *Yihe* and *Xinghe* in Chinese) are widely used in Chinese academia, especially in English-Chinese comparative study. there is an agreement that English has a hypotaxis feature, whereas Chinese has a parataxis feature. *Parataxis* involves linking words or clauses based on their inner meanings or logical connections, emphasizing fluency and integrity. *Hypotaxis*, on the other hand, emphasizes language forms, both lexical and morphological, for cohesion. Chinese is characterized by parataxis, with fewer conjunctions in complex sentences, while English is predominantly hypotactic, requiring more conjunctions. Connective usage in translations is influenced by systemic and genre constraints rather than being a universal strategy. The extensive use of connectives may vary based on language-pair differences and genre characteristics, impacting

English-Chinese translation strategies. The presence of connectives is closely connected with the constraints of the systemic and genre context.

2.2.3 Connective-Based Empirical Studies in Translation Studies and Explication Investigation

(i) Connectives as a Language-Specific Phenomenon in Translation Studies

Lonsdale (1996) emphasized that cohesive devices, including connectives, are used differently across languages. He argued that “different languages use cohesive devices (reference, substitution, conjunction, lexical and syntactic cohesion, chunking of information in sentences and paragraphs) differently” (Lonsdale 1996, p.215). Hence, connectives can be regarded as a language sensitive phenomenon.

Connectives are considered a language-sensitive phenomenon, and cross-linguistic differences are correlated not only with a language's grammatical system but also with its preference for certain language features. Translators need to navigate these differences to ensure natural-sounding translations. Zhu et al. (2011) stated that in a paratactic language like Chinese, the retrospection of presupposed items in textual ellipsis is mainly realized through semantic relations rather than grammatical or logical relations. In contrast, English tends to rely on grammatical relations, such as morphological markers, to signal ellipsis.

Without considering the linguistic specificity of cohesion, translations may not sound natural to target readers. For instance, Othman's (2005) study of subordination and coordination in Arabic into English translations concludes that Arabic often utilizes explicit linkers in coordinated sentences not only for grammatical requirements but also for stylistic purposes. Similarly, House (2006) found that German discourse tends to be more explicit than English discourse, leading German translators translating English texts to make additions that conform to the German norm of explicitness. Blum-Kulka (1986, p.21) introduced the term “shifts in cohesion” in her exploration of shifts in cohesion and coherence, defining it as the omission or substitution of a cohesive device in the source text with a device from a different grammatical category in various language pairs and translation directions. The variation in cohesive devices across languages presents a challenge for translators, who must decide whether to adhere to the

cohesive patterns of the source language or align them with those of the target language. Blum-Kulka (1986, p.55) proposed three possible scenarios for cohesive patterns in translated texts: 1) translations conform to the norms of the source language, 2) translations approximate the norms of the target language, or 3) translations deviate from both norms and establish their own system, often characterized by an increase in explicit instances compared to the source text.

(ii) Connective as a Genre-and Text- Specific Phenomenon in Translation Studies

Many studies (e.g., Johns 1980; Smith et al. 1983; Chen, 2006) have highlighted that the frequency of certain cohesive devices differs across genres and texts. The results indicate that genre-specificity influences the use of cohesive devices in translations, both in terms of wording and frequency, and is often associated with phenomena in Translation Studies, such as explicitation. This genre-specific feature is also found in connective-related studies. For example, Chen's (2006) study demonstrates that connective additions are common in the English-to-Chinese translation of popular science texts. Additionally, Xiao and Yue (2009) found that the frequency of connectives is significantly greater in translated Chinese fiction than in non-translated texts. Huang (2007) identified that connectives in his Chinese corpus⁵ are less common than in a comparable corpus of political discourse. Xiao and Hu (2015) observed that some connectives, including conjunctions, are more commonly used in formal text genres such as academic writing.

Pan (2014) explored the use of conjunctions in two subgenres of legal texts through the analysis of two small and specialized corpora, namely the parallel corpus consisting of English prospectuses and their Chinese translations and the parallel corpus of English legislative texts and their Chinese translations. The study found that the patterns of conjunctive cohesion in the two subgenres are different, both in terms of wording and frequency, with varied translation methods including amplification, omission, diction conversion, negation, and retention.

⁵ Huang's corpus refers to CECPC (China English-Chinese Parallel Corpus), short for 中国英汉平行语料库 in Chinese, is a research achievement of the major project *Establishment and Processing of Large-scale English-Chinese Parallel Corpus*. CECPC corpus encompasses five main categories and eighteen subcategories, including literature, news, political discourse, science and technology, and applied writing. Following the principle of a 2/3 English to 1/3 Chinese ratio, the corpus has been collected with an overall volume exceeding 100 million words.

Similarly, Vahedi Kia and Ouliaeinia (2016) investigated lexical explicitation in English translations of modern Persian literary works across different genres, including eight novels and short stories, six dramas, and 13 Persian poems. Their findings indicate that while different lexical explicitations commonly existed in most literary genres, an extension of proper nouns and filling of elliptical structures were not common in poetry. Additions of conjunctions occurred most frequently in drama translations.

Although the present study only examines one text type, scientific research articles, the specific discourse under investigation should also be taken into consideration because the genre and text specificities of cohesion may also influence the process and product of translation. For instance, to determine differences in cohesive patterns between the ST and TT of the English-Chinese language pair, Zhao et al. (2009) examined cohesive devices in terms of occurrence frequency in medical texts. The findings of the study demonstrate that there are more similarities than differences in the use of cohesive devices in the ST and the TT, with the only difference lying in "the employment of reference in terms of occurrence frequencies" (Zhao et al. 2009, p.313). Zhao et al. (2009, p.313) concluded that this inclination is due to the need to maintain precision, clarity, and logicity in translated medical texts. Bystrova-McIntyre (2012, p.69) stated that the analysis of more text types is required to "develop a broader model of cohesion in translation". Therefore, the present study aims to illustrate the connective shifts that E-C translators consider when translating natural science texts.

(iii) Empirical Studies of Connective Explicitation in Translational Chinese

Based on an exploratory search in CNKI (Chinese National Knowledge Internet)⁶ which is a comprehensive and authoritative database in China that provides access to a wide range of academic resources and a review of previous studies since 2009, as Chinese scholar started to focus on relatively recent research on translation, several trends have emerged in empirical studies that analyze the features of explicitation of logical-semantic relations (which can be marked by connectives) in translated Chinese. This section provides a review of these trends, while Section 2.3 discusses the corpus-based methodology and relevant studies in detail.

⁶ See <https://oversea.cnki.net/index/>

Many studies have relied on the parallel section, comparing source and target texts (e.g. Zhao et al. 2009; Luo 2017; Li et al. 2017). However, the accounts of these studies are “rooted in purely prescriptive approaches to translation, which model translation against the parameters of difference between languages” (Othman 2019, p.41). The statistics provided by the parallel comparison are not sufficient due to not taking into account the relationship between text and register in translation (cf. Matthiessen 2001; Huang and Wang 2006; Othman 2019). Other studies that consider non-translated works in the TL have relied on the comparable corpus, which allows for a comparison of translations with non-translations of the same TL (e.g. Ren 2014). Nevertheless, these studies are more likely to rely on frequency tests, which can be problematic as frequency tests only deal with translations as a product and fail to complement that with the process and the influence of the SL. In relation to the investigated logical-semantic relations, multiple studies (e.g. Luo 2017; Wen 2019) have only focused on certain types of conjunctive markers, and there is a lack of comparison in terms of the degree of explicitness of different kinds of logical connectives. Empirical studies of explicitation through connectives in translational Chinese have also found an imbalance between explicitation and implicitation. As discussed in the previous section, implicitation is a counterpart in the theoretical discussion of explicitation. Thus, the imbalance between explicitation and implicitation has motivated the present study to put more focus on implicitation than previous research.

A small number of studies have combined the parallel and comparable corpus (e.g. Fang 2017; Shang 2020; Song 2022). For example, Shang (2020) investigated intra-lingual and inter-lingual explicitation in a specially compiled E-C parallel corpus and comparable non-translated Chinese texts of academic writings. The study found that there is no obvious tendency for intra-lingual logical explicitation compared to the strong tendency for interlingual explicitation and provided reasoning and explanations for such findings. It is crucial to highlight that Shang’s (2020) research has inspired the present study’s analysis, as it examines the logical-semantic relations above and below the sentence level separately and gives the tendency of inter- and intra-lingual explicitation of different types of logical-semantic relations. However, as illustrated in the previous section, the definition of explicitation is rather limited. The output of connective shifts of the above-mentioned research may lack a close qualitative analysis determining whether more information is added compared to the source texts. Otherwise, the shifts may purely be due to the consistent or recurrent differences between the source and target texts and not explicitation. Furthermore, the study does not consider the matter of implicitation

during the translation process. Therefore, these perceived shortcomings will be analysed in the present study.

In the following section, I will review the phenomenon of explicitation within the framework of CL to underscore its methodological significance to the field of TS. The application of CL methodologies in this research is instrumental, serving as a robust toolset for the empirical investigation of explicitation and implicitation phenomena in translation. By employing a corpus-based approach, the present study leverages the quantitative rigor and analytical depth of CL to uncover patterns and tendencies in translated texts, offering insights that are both precise and scalable. It is crucial, however, to distinguish the methodological incorporation of CL from the disciplinary focus of our research. While CL provides the methodological underpinnings for data analysis, the core inquiries, theoretical framing, and contributions of this study are firmly situated within the discourse of TS. This distinction emphasizes that our utilization of CL techniques aims to enrich TS research by enhancing its empirical foundation, thereby facilitating a more nuanced understanding of translation processes and strategies without repositioning the study's primary disciplinary allegiance.

2.3 Explicitation in Corpus Linguistics

Blum-Kulka and Toury have relied heavily on case studies and impressionistic qualitative work, such as informed intuition and richly contextualised pen-and-paper analysis (House 2008, p. 10). Nevertheless, Translation Studies, a scholarly discipline concerned with “the complex of problems clustered around the phenomenon of translating and translations” (Holmes 2000, p. 9), have advanced and greatly benefited from corpus-based methodologies over the past decade. The following sections summarise the existing studies that have explored explicitation with three types of corpora: parallel, comparable, and composite. Although some of the research has been reviewed in the previous sections, the following sections will focus on analyzing the implications of using corpora in these studies and discussing my views concerning these issues.

2.3.1 Parallel Corpus-Based vs Comparable Corpus-Based

Two models of approach have often been used to challenge the hypothesised explicitation. The first model is the parallel corpus-based approach based on an ST-TT comparison to test whether

translators make implicit source text instances explicit in a translation. The other model is the comparable corpus-based approach, a comparison between a translated text and a comparable text that is originally written in the TL and identifies whether there is a higher degree of explicitness in the translational language⁷ than in the original language (cf. Pápai 2004, p.144; Puurtinen 2004, pp.165-166; Pym 2005, p.2).

As illustrated in Table 2-4, many researchers have adopted the parallel corpus-based approach to demonstrate that target texts tend to explicitate information that is implicit in source texts. Based on contrastive analyses, these studies usually involve a mapping of the target text onto the source text that “yields (ad hoc) coupled pairs of replacing + replaced segments” (Toury 1995, p.77). The selection of studies presented in Table 2-4 is due to the intention to showcase representative examples of parallel corpus-based translation studies investigating explicitation. These studies may have been chosen based on their significance, relevance, and pioneering nature within the field. Each study listed in the table contributes to the understanding of explicitation phenomena in translation, and they may have been influential in shaping the theoretical framework or methodologies adopted in the current research.

As illustrated in Table 2-4, many researchers have adopted the parallel corpus-based approach to demonstrate that target texts tend to explicitate information that is implicit in source texts. Based on contrastive analyses, these studies usually involve a mapping of the target text onto the source text that “yields (ad hoc) coupled pairs of replacing + replaced segments” (Toury 1995, p.77). The studies presented in Table 2-4 were selected with the aim of showcasing representative examples of parallel corpus-based translation studies focused on investigating explicitation. These studies were chosen for their significance, relevance, and pioneering contributions to the field. Each listed study enhances our understanding of the explicitation phenomenon in translation and has potentially played a role in shaping the theoretical framework or methodologies adopted in this research. Moreover, the studies in Table 2-4 were chosen for their diversity in language pairs and translation directions, offering a comprehensive overview of explicitation across different linguistic contexts. The intention is to provide readers

⁷ Here are similar but different phrases in *translated language* and *translational language* in the study, the use of *translated* and *translational* seems to reflect a nuanced distinction. *Translated* refers to the act of converting content from one language to another, while *translational* appears to be used as an adjective to describe aspects related to translation or the translation process. For example, the statement “translational language might tend to be more explicit than the original language of the same register” suggests that when content is translated, the resulting *translational language* (language produced through translation) might exhibit a tendency to be more explicit than the original language within the same register.

with a broad perspective on the manifestation of explicitation tendencies in translation between various languages.

Table 0-3 Examples of Parallel Corpus-based Translation Studies Investigating Explicitation

Language pair	Translation direction	Studies
Dutch and English	Dutch – English	Vanderauwera (1985)
English and French	English – French	Blum-Kulka (1986)
English and Hebrew	Hebrew – English	Weissbrod (1992)
English and Norwegian	English – Norwegian	Øverås (1998)
English and Chinese	English – Chinese	Qian et al. (2016)

The relationship between translations and non-translations has attracted more attention over the past three decades. Vehmas-Lehto’s (1989) study is regarded as “the first comparable corpus-based explicitation study” (Tang 2018, p.13). Vehmas-Lehto (1989) attempted to compare the frequency of cohesive devices in a Finnish newspaper, which was translated from Russian, with that of non-translated Finnish newspaper texts without reference to the Russian source texts. The findings illustrate that there is greater explicitness in Finnish translations compared to Finnish non-translations. Therefore, Vehmas-Lehto (1989, p.74) suggested that translational language might tend to be more explicit than the original language of the same register due to strategies such as adding connectives and emphasizees.

Since Vehmas-Lehto’s (1989) study, an increasing number of scholars have realised that translational language can be regarded as a special variation of TL. By comparing it with the original TL, certain linguistic features identified in the translational language might be viewed as proof of the existence of explicitation. For instance, Olohan and Baker (2000) analysed the patterns of inclusion and omission of the optional *that* with the reporting verbs *say* and *tell* within a comparable corpus, the sources of which are the TEC (Translational English Corpus) containing translated English and the BNC (British National Corpus) providing original English. Puurtinen (2004) used a one-million-word corpus of children’s books both originally written in Finnish and translated from English into Finnish to compare the relative frequencies of some connectives. Comparing a sub-corpus of translational Chinese (ZCTC⁸) with that of

⁸ Zhejiang University Corpus of Translational Chinese (ZCTC) was created by Zhejiang University to explore the

native Chinese (LCMC⁹), Xiao and Hu (2015) identified some properties of explicitation in translational Chinese. In the context of the study's definition and the comparison between translated and non-translated Chinese, *the term explicitness* might indeed be more appropriate, which can be a more neutral term that describes the observable difference in clarity or transparency between translated and non-translated language without implying a conscious translational strategy. It encompasses the idea that translations may exhibit a higher degree of explicitness compared to non-translations, regardless of whether this is a result of intentional explicitation strategies or other factors.

Although non-reference to the source text seems to be a prominent trend, it is not appropriate to analyse a comparable corpus in isolation, in that the interference of the source language might be ignored. More recently, combining the merits of parallel data and comparable data, a new model of the method using composite corpora has been applied to explicitation studies. Following this, the present study establishes a set of composite corpora and the representative studies which have applied this model will be introduced in the next section.

2.3.2 Composite Corpora (Comparable-Parallel Approach vs Parallel-Comparable Approach)

In the review of studies that used composite corpora to investigate explicitation, it was found that there are two sets of procedures working in opposite directions, namely the comparable-parallel approach and the parallel-comparable approach. Researchers adopting the comparable-parallel approach often use a comparable corpus to identify the potential explicitations in the translational language and compare these features in a parallel corpus to determine the extent to which the instance of explicitness in the target text is influenced by the source text. Researchers who adopt the parallel-comparable approach usually identify the explicitation in translations with reference to source texts and compare the translations with non-translations of the target language to determine whether applying the explicitation strategies in the translation process would result in explicitness in translations.

features of translational Chinese with reference to non-translated native Chinese (Xiao and Hu 2015, p.49).

⁹ Lancaster Corpus of Mandarin Chinese (LCMC) is a one-million-word balanced corpus of written non-translated native Chinese created by Tony McEnery and Richard Xiao of Lancaster University (Xiao and Hu 2015, p.40).

One of the representative studies that applies the comparable-parallel approach is the study conducted by Chen (2006), which investigates explicitation through the use of connectives in translated Chinese. The English-Chinese Parallel Corpus used in his study contains 13 non-literary published works in English in the genres of popular science and information technology, alongside their translations in traditional Chinese characters published in Taiwan and translations in simplified Chinese characters published in Mainland China. The reference corpus of original writing in Chinese contained 994 extracts from the science section of the Sinica Corpus, which is an online 10-million-word corpus of Mandarin Chinese used in Taiwan. In the first analysis of his study, Chen identified five translationally distinctive connectives (TDCs), which are significantly more common in translated Chinese than in non-translated Chinese texts, according to parameters such as frequency and type-token ratio. In the second analysis, he compared the use of the TDCs in the translated Chinese texts with that in the English source texts, aiming to determine the extent to which connectives are explicitated in translated Chinese. However, Xiao and Hu (2015, p.38) argued that the reference corpus sampled from the Sinica Corpus may not be comparable to a general corpus of Chinese, at least not to the language used in Mainland China. This is because Taiwan has been isolated from Mainland China for over five decades, and the Chinese language used in Taiwan of the given text genre may differ from the Chinese used in Mainland China.

A study that applied the parallel-comparable approach is Pápai's (2004) study, which created a 45,000-word corpus. The corpus includes three sub-corpora, namely original English source texts, Hungarian translations and original texts in Hungarian, and each sub-corpus contains literary and non-literary texts from a specific period. By comparing the parallel sections of the corpus, Pápai first identified the explicitations located on five levels such as logical-visual relations, syntactic level, and extra-linguistic level. For the level of *logical-visual relation*, it could encompass various aspects of how information is conveyed and organized in a text, considering both the logical coherence and the visual representation. Twenty linguistic items that can lend themselves to the frequency analysis were then selected to be compared in the comparable section of the corpus. Another research that adopted a parallel-comparable approach was Huang's (2007) study which established a Chinese-English/English-Chinese parallel corpus of literary and non-literary texts (political and economic texts) originated from the largest bidirectional parallel translation corpus in China, the *GCEPC* by Kefei Wang in 2004 (Huang 2007, p.54). The explicitations and implicitations of conjunctions and personal pronoun subjects between the language pair English and Chinese in two translation directions

were also identified. Following this, the sub-corpus of the Chinese TTs and that of the English TTs were respectively compared with that of the Chinese STs and English STs to determine the degree of explicitness in the two translational languages. However, Xiao and Hu (2015, p.34) have argued that the texts in Huang's (2007) corpus cover a long period, which means that language change may be an undesirable factor that could influence the study's analysis of translation universals in the synchronic contrastive analysis. Furthermore, there was limited focus on the causes of explicitation in Huang's (2007) study. For example, Huang (2008) argued that variation in formalization at the sentential composition level is the main contributor to most types of explicitation in translations. The argument that variation in formalization at the sentential composition level is the primary contributor to most types of explicitation in translations, as proposed by Huang (2008), may be deemed somewhat superficial due to its potential oversimplification of the diverse factors influencing explicitation. Explicitation in translations can result from a multitude of linguistic, pragmatic, and cultural considerations beyond mere formalization. Factors such as lexical and syntactic differences between source and target languages, discourse conventions, stylistic preferences, and translational norms play crucial roles. By focusing solely on formalization, the argument overlooks the intricate interplay of these factors and fails to provide a comprehensive understanding of why explicitation occurs. A more nuanced examination that considers the broader spectrum of linguistic and contextual elements is necessary to capture the complexity inherent in explicitation processes during translation. This motivates the present study to conduct an in-depth analysis to test whether Becher's triggers can classify and explain the causes of explicitation identified in research articles.

Overall, the above-mentioned studies that used composite corpora made it possible to benefit from a "cross-examination" (Chen 2006, p.100) between the parallel database and comparable database and bring the "translation process and product under a single framework of investigation" (Chen 2006, p.105) for explicitation studies. The discussion on the corpus design, such as in Chen's (2006) and Huang's (2007) studies, highlights the importance of accounting for as many variables as possible to ensure that a sub-corpus is operationally comparable or parallel to another.

According to an exploratory search in CNKI, explicitation features through connectives in translated Chinese have been widely investigated based on corpus-based methodologies. Furthermore, different text genres, including political texts (e.g. Ren 2014), legislative texts

(e.g. Wen 2019), financial news (e.g. Fang 2017), academic writing (e.g. Shang, 2020), financial texts (e.g. Liu 2020) and literary works (e.g. Song 2022), have been examined to analyse explicitation features. Some studies have also established and investigated the explicitation-related phenomenon with a composite corpus, viz. bilingual parallel corpus and reference corpora of non-translated Chinese texts (e.g. Fang 2017; Liu 2020; Shang 2020). For example, Shang (2020) used a bilingual parallel corpus composed of English Chapters of *the Handbook of Social Justice in Education academic* and their Chinese translations and a comparable reference corpus of Chinese original academic texts in the domain of education. Similarly, Fang (2017) self-built a parallel corpus composed of original English financial news and their Chinese translations and a comparable corpus of non-translated Chinese texts financial news. As discussed briefly in Section 2.2, with the help of a composite corpus, two analysis methods can be used in these studies, and they are parallel corpus-based inter-language comparison and comparable corpus-based intra-language comparison. Motivated by these studies, the present study will also analyse the connective-based explicitation-related phenomena inter-lingually (from the perspective of explicitness) and intra-lingually (from the perspective of explicitation).

According to an exploratory search in CNKI on explicitation in Chinese translation, science writing, particularly scientific research articles, is an underrepresented text genre, although there are some studies that have investigated the genre (e.g. Qian et al. 2016). The present study aims to investigate the strictly refined notion of explicitation and explicitness with a specialized composite corpus of scientific research articles by strictly controlling potential parameters such as text genre, topics, and publication dates. Chapter 4 provides more detailed information about the data used in the research investigation.

2.4 Summary

Chapter Summary. This chapter has discussed the different views of the explicitation-related phenomenon, which often go hand in hand with textual cohesion and the corpus-based methodology. Apart from providing important insights into the notions of explicitation-related phenomena, this chapter has also identified the potential gaps related to explicitation investigation in the literature.

Firstly, the validity of multiple studies' findings that claim to provide evidence for the explicitation hypothesis is questionable (see Pym 2005; Saldanha 2008; Becher 2011a; Murtisari 2013; Othman 2019). This is mainly due to the vagueness in the definition of explicitation and the explicitation hypothesis, resulting in different interpretations of the relevant concepts and correspondingly different theoretical frameworks of the explicitation-related phenomenon investigation. Specifically, explicitation and implicitation can be confused with other related concepts, such as explicitness/implicitness, increased/decreased redundancy and informativeness, addition and omission, and specification/generalisation, among others (cf. Othman 2019, pp.261). Therefore, more operationalised and refined definitions are required to explain the investigation subject in each explicitation or implicitation-based research.

Secondly, different models of identifying explicitations (e.g. Klaudy 2008; House 2008; Becher 2011; Tang 2018) have been developed based on an ST-TT relationship. In many models (e.g. House 2008; Klaudy 2008), the labels of obligatory and optional choices are proposed to distinguish between the shifts caused by language-pair differences and the shifts caused by stylistics. The stratified typologies of explicating shifts are based on the conceptions from SFL, particularly Halliday's three metafunctions (Halliday and Matthiessen 2014). The use of metafunctions to provide lexicogrammatical evidence of explicitation has been applied in investigations of translations from Latin-script languages, such as English-German translations (e.g. House 2008), as well as in investigations of translations or interpretations from non-Latin-script languages, such as English-Chinese translations (e.g. Tang 2018). Furthermore, explicitation cannot always be assumed, given that translators' explicating behaviour is highly sensitive to various factors: *translator variables (who)* (cf. Englund-Dimitrova 2005; Saldanha 2008), *situational variables (where, when)* (cf. Weissbrod 1992; Chen 2006), and *translation-task variables (why, who for)* (cf. Weissbrod 1992; Chen 2006). The process of *explicitating behavior* means translators deliberately making elements in the target text clearer or more detailed compared to the source text during the translation process. It involves intentional linguistic choices aimed at enhancing clarity and comprehensibility for the target audience. Overall, it is critical to have a framework that can be adopted as a guidepost during the analysis process to identify as many explicitation-related shifts in the data sample as possible.

Thirdly, as one of the cohesive devices, connectives can be syntactically heterogeneous by including devices from different grammatical classes. On the other hand, they could be

homogeneous in the sense that they can signal a specific logical-semantic relation. The way in which cohesive devices (including connectives) are realised in the texts differs across genres and languages. As a result, it is vital to clarify what is included in each study as connectives and how they are linked with explicitation/implication.

Lastly, although corpus-based methodology facilitates the investigation of explicitation, it is insufficient to only compare the parallel corpus or the comparable corpus. In the parallel-corpus approach, a translation is considered as a mapping between options from different language systems, without investigating how the texts are realized in the specific text genre. In the comparable-corpus approach, a translation is considered as a product without investigating the shining-through (interference) from the ST or the SL. Furthermore, comparing frequencies of a particular linguistic feature or a specific category is inadequate as the comparison might not reveal the manifestation of explicitation phenomena due to the complexity of its definition.

Discussion. Although most definitions define explicitation as the verbalisation in the TT of some ST missing information, explicitation can also be analysed from quantitative and qualitative angles.

Quantitative contributions to the ST information refer to changes in the frequency or quantity of linguistic elements, such as connectives, during the translation process. For example, if a translator adds or omits connectives without altering the underlying meaning or semantic features of the original text, such changes would be considered quantitative. Nevertheless, this study does not consider factors such as congruency and delicacy because, as illustrated by Othman's (2019) study, investigating them regarding explicitation is more suitable for case studies than corpus-based studies. On the other hand, *qualitative contributions* involve alterations in the nature or quality of the linguistic elements. In this study, it implies changes that impact the semantic features or meaning of the text. For instance, if a translator modifies a connective to convey a clearer logical-semantic relation between units, this would be regarded as a qualitative contribution, indicating a more profound change that affects the interpretative aspects of the text. The study focuses on qualitative contributions when assessing explicitation or implication, aiming to identify shifts that go beyond mere quantitative additions or omissions and substantially impact the meaning of the original text. This study relies on qualitative contributions to the ST information to determine explicitation or implication, which is similar to most of the definitions discussed in this chapter. Therefore, explicitation is viewed as the verbalization of semantic features, while implication is viewed

as their omission. The study follows a process of identifying the shifts, analyzing them, and determining whether to exclude or include them. In other words, connective shifts that are a quantitative addition or omission and do not contribute to the meaning of the original are excluded from the scope of explicitation/implication in this study.

3 Chapter 3 Theoretical Framework

Like many other complex concepts in linguistics and translation studies, the explicitation-related phenomenon is “not as easy to operationalise as we would like it to be” (Becher 2011a, p. 78). How to investigate the explicitation-related phenomenon may be questioned regarding the rationality as the investigation may rely on subjective or sometimes even arbitrary decisions. To compensate for the phenomenon’s subjectivity, it is crucial that the present study transparently clarifies what can be regarded as explicitation. This chapter reviews the theoretical framework used as a guidepost for this study. Section 3.1 defines the relevant terms, including explicitation/implication and explicitness/implicitness, and provides a detailed typology of explicitation. Section 3.2 discusses explicitation and explicitation through connectives by refining relevant notions and terms.

3.1 Framework of Explicitation and Explicitness

The present study uses the findings from Chapter 2’s discussion to provide a working theoretical framework for analyzing explicitation and explicitness, which helps draw conclusions from the corpus investigation. The different aspects of the framework are discussed in the following sections.

3.1.1 Working Definitions of Explicitation and Explicitness

A combination of Becher’s (2011a) and Tang and Li’s (2017) explicitation definitions (cf. Section 2.1) is used because the combined definition is more comprehensive and operational for the present study. It is vital to note that explicitation and implication here, referring to specific shifts, are defined within the context of translation studies, and they retain the ST-TT route of comparison.

In this study, the term *explicitation* is defined comprehensively as the translation strategy involving shifts that make information—which may be only implied or communicated indirectly in the ST, requiring the ST addressee to infer from contextual clues—clear, direct, and unequivocal in the TT. This facilitates immediate comprehension without the need for further inference or interpretation, emphasizing the explicit conveyance of messages to the target audience. In contrast, *implication* is defined as the translation strategy that involves

shifts leading to the reduction of explicit information in the TT compared to the ST. This process may result in information that was overtly stated in the ST becoming implied or indirectly communicated in the TT, thus necessitating the TT audience to engage in inference or rely on their contextual knowledge to grasp the full meaning. Implication underscores the strategic removal or reduction of details to achieve brevity, nuance, or adherence to the stylistic preferences of the target language, while still striving to convey the core messages of the ST.

Unlike explicitation and implication, which are confined to an ST-TT comparison, the terms *explicitness* and *implicitness* refer to a quality of the text or a textual feature that can be analyzed beyond the scope of translation studies. Explicitness refers to the degree to which a text or linguistic expression conveys information in a clear, unambiguous, and detailed manner. It involves the use of explicit or overt language, where information is presented directly and explicitly, leaving less room for interpretation or ambiguity. This can manifest in various ways, such as the use of explanatory items, explicit lexical choices, and the spelling out of optional syntactic elements. Explicitness-related features encompass linguistic elements and strategies that contribute to enhancing the explicit nature of the text. Following the definition discussion, important considerations need to be made for this study:

- i) The above definitions can be used to distinguish between explicitation/implication (the translation process) and explicitness/implicitness (the translation product).
- ii) The distinction between explicitness and implicitness cannot be seen as a strict dichotomy. Instead, the distinction should be viewed as a spectrum with a relatively ‘explicit’ text on one extreme and a somewhat ‘implicit’ text on the other. Any text, including the ones used for the present study’s data, is located somewhere on the spectrum.

3.1.2 Typology of Explicitation

Based on the typologies proposed by multiple linguists (cf. Chen 2006; House 2008; Klaudy 2008; Tang 2018), the components of the explicitation typology for the present study are summarized in Table 3-1.

Table 3-1 Typology of Explicitation

Category	Trigger	Sub-category	Examples/Notes
Obligatory Explicitation	Determined by lexicogrammatical rules of the SL and the TL		- Asymmetric grammatical categories between SL and TL, e.g., Chinese classifiers, gender markings, ellipses, participial constructions.
	Determined by various language-pair specific factors, including Lexicogrammatical differences, communicative norms and conventions of the TL community, culture filters, risk-avoiding strategy	Experiential Explicitation	This type of explicitation involves adding or substituting elements that enhance the experiential layer of the text, making the described experiences clearer or more detailed. Including: Adding/substituting modifiers, processes, circumstantial adjuncts, participants
Interpersonal Explicitation (Appraisal)		Focuses on the addition or substitution of elements that alter the interpersonal relationship between the text and its reader, such as engagement and attitudinal markers, making the stance of the text towards its content more explicit. Including: Adding/substituting engagement content, attitudinal content, graduation content	
Optional Explicitation		Textual Explicitation (Cohesion)	Targets the textual cohesion and coherence directly, through strategies like filling in missing elements that are understood from context in the SL, or enhancing the logical connection between parts of the text with additional connectives. Including: Adding or lexicalising proforms; filling out elliptical processes or participants; adding/substituting connectives

As shown in the typology, the optional and obligatory explicitations are classified as a result of language-pair-specific parameters. The difference between them is that the label *obligatory explicitation* subsumes the explicating shifts that are determined by the lexicogrammatical rules of the SL and TL. Consequently, the translator must perform such shifts to write a grammatically correct TT. In comparison to obligatory explicitation, optional explicitations are not necessary. The translator can perform optional explicitation for numerous reasons, including to comply with the communicative norms of the TL community, stylistic preferences

between source and target language systems, differences in cultural and/or world knowledge shared by members of the source and target language communities and more.

The typology also includes the additional variations that may influence a translator's decision about whether to make an optional explicating shift. These variations are divided into three categories and summarised as follows:

- i) ***Translator Variation (Who)***: translators may demonstrate their preferred linguistic choices.
- ii) ***Institution Variation (Where, When)***: publishing houses may vary to a certain extent in their application of explicating strategies.
- iii) ***Translation-Task Variation (Why, Who For)***: translators may expand the TT to achieve greater translation transparency and make the TT clearer and easier to read by specific target readers.

In *Translation-task variation*, *translation transparency* refers to the degree to which the translation allows the reader to perceive or understand the process of translation. When translators aim to achieve greater translation transparency, they are making intentional choices to ensure that the translated text is clear and comprehensible to the target audience. This may involve making explicating shifts, providing additional information, or clarifying expressions to enhance the overall clarity and accessibility of the translation. The goal is to minimize any potential difficulties or disruptions in understanding that may arise due to the translated nature of the text, thus making the translation more transparent to the reader.

The typology also lists the three categories of option explicitations that are identified and classified using Halliday's three language metafunctions (Halliday and Matthiessen 2004). These categories are summarised below:

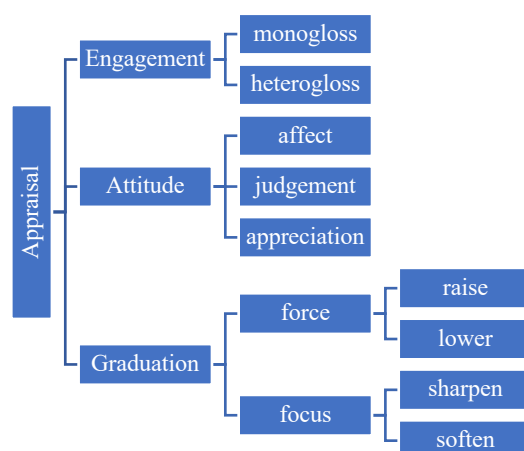
The first category is experiential explicitation and is the explicitations located at the experiential metafunction. The logical function, which is included in the ideational function as an experiential function, overlaps with the textual function to some extent; thus, is not discussed here. The first sub-category of experiential explicitation refers to the shifts of adding or substituting experiential modifiers, explicating certain qualities of the entity described. Specifically, experiential modifiers here are divided into three types and include epithet,

classifier, and qualifier. An epithet is the “properties of the thing represented by the nominal group along different qualitative dimensions such as age, size, value [...] Epithets serve as premodifiers [...] There are two kinds of epithets operating in the nominal group: experiential epithet and interpersonal epithets” (Halliday and Matthiessen 2004, p.90).

It is crucial to highlight that only shifts involving experiential epithets (e.g. *new* in *the new stage*) are discussed in the model as experiential explicitations. In contrast, interpersonal epithet shifts (e.g. *gorgeous* in *the gorgeous lady*) are excluded from the experiential classification as they are identified as interpersonal explicitations (see the following discussion on attitude). A classifier (e.g. *plastic* in *a plastic bag*) refers to “a particular subclass of the thing in question,” and unlike epithets, classifiers do not “accept degrees of comparison or intensity” (Halliday and Matthiessen 2004, pp.319–320). Furthermore, a qualifier (e.g. *in ways to solve the problems*, *to solve the problems* can be regarded as a qualifier to manifest the purpose of ways) refers to a nominal group that indicates an entity followed by a particular property of the entity (Halliday and Matthiessen 2004, p.323). Experiential explicitation can also be made by adding or substituting the three nuclear experiential structural elements, including processes, participants, and circumstantial adjuncts. According to Halliday and Matthiessen’s (2004, p.176) proposed definitions, the process is a verbal group in any clause; participants are identified as the subjects and objects in any clause; circumstantial adjuncts refer to adverbial groups or prepositional phrases that indicate time, place, manner, cause, and condition (Halliday and Matthiessen 2004, p.335).

The second category of explicitation is interpersonal explicitation. Martin and White’s (2005) Appraisal System facilitates a manageable and quantifiable investigation of explicitation and is used as the basis for interpersonal explicitation classification. Figure 3-1 (taken from Martin and White 2005, p.38) illustrates the three elements of the System.

Figure 3-1 Outline of the Appraisal System



The first element is *engagement*. According to Martin and White (2005, p.36):

Engagement refers to “the ways in which resources such as projection, modality, polarity, concession and various comment adverbials position the speaker/writer with respect to the value position being advanced and with respect to potential responses to that value position – by quoting or reporting, acknowledging a possibility, denying, countering, affirming and so on”.

When newly added information clearly conveys the translator’s attitude, such as an addition of the phrase *I think*, the information can be regarded as engagement-based explicitation.

The second element of the System is *attitude* and is about “our feelings, including emotional reactions, judgments of behaviour and evaluation of things” (Martin and White 2005, p.35). Attitude is used when the added or substituted information reflects an implied attitude that is not overtly expressed by the speaker. An example that uses attitude is the addition of *good* in the phrase *a very good point* as the addition overtly illustrates the speaker’s positive evaluation of *point*. Furthermore, these shifts can be described as attitude-based explicitations. The System’s third element is graduation and is related to the intensity of attitude (Martin and White 2005, p.37). Graduation is concerned with “the degree of an evaluation – how strong or weak the feeling is” or “the strength of boundaries between categories – constructing core and peripheral types of things” (Martin and White 2005, p.37). When the added or substituted

information can be inferred from the context and increases the intensity of the speaker's attitude, the information is defined as a graduation-based explicitation. An example of this explicitation is the addition of the intensifier *very* in the phrase *very good point*, as the addition increases the degree of the speaker's evaluation of *point*.

The third category in the present typology is textual explicitation. Textual explicitation can be investigated using three aspects relevant to the cohesion of the texts, including reference, ellipsis, and conjunction. The first sub-category is reference-based explicitation and refers to the addition or lexicalisation of a proform. A proform is "a word, substituting for other words, phrases, clauses, or sentences, whose meaning is recoverable from the linguistic or extralinguistic context" (Schachter 1985, pp.24–25). Referential explicitation is when a proform referring to the entities mentioned in the previous or following text is added. Furthermore, referential explicitation is also created by the lexicalisation of the proform. Proform lexicalisation occurs when a proform is substituted by specific words, phrases, clauses, or sentences that it refers to in the text. In the second sub-category of textual explicitation, the translator adds the elliptical processes or participants in the text and such shifts are classified as ellipsis-based explicitation. The third sub-category of textual explicitation is connective-based explicitations. This subcategory occurs when a connective is added or substituted to explicitate the relationship between different units (see Section 3.2).

Overall, the typology includes linguistic and pragmatic factors underlying explicitations which highlights the importance of conducting a more detailed and specialized investigation of explicitation and explicitness in future studies. Nevertheless, the present study focuses on examining the connective explicitation described in the model. The framework of examining connective-related explicitness or explicitation will be analyzed systematically in the following sections.

3.2 Framework for Analysing Connective-Based Explicitation and Explicitness

After establishing the theoretical foundations of the notion and typology of explicitation for this study, the focus now shifts to the practical aspects of the analysis. This section presents a framework for examining connective-based explicitation and explicitness in translation. First, a working definition of connectives is provided in 3.2.1, followed by some refinements that are

relevant to the analysis. Next, in 3.2.2, how connective-based explicitness is determined in translated texts is described. Finally, in 3.2.3, the approach for identifying instances of connective-based explicitation is introduced, which involves comparing the connectives used in the source text and target text.

3.2.1 The Working Definition and Refinements of Connectives

Connectives are defined as linking devices that encode semantic relations and connect different units of the text in the present study. The class of connectives, as the working definition delimits it, is perfectly homogeneous in the sense that it has a semantic characteristic. Furthermore, this semantic encoding function is predominant in the present study. The overriding concern before conducting the analysis is consistency in comparing the English texts with the Chinese texts in the corpus due to numerous differences (Xue 2005; Zhou and Xue 2012; Kong and Zhou 2017). Therefore, several compromises must be made before counting connectives in the two languages. Additionally, the following issues must be addressed to determine whether certain connectives should be included or excluded from the comparison between the English and Chinese texts.

i) Minimal Elementary Units to a Connective

The minimal elementary unit (MEU) (cf. element discourse unit (EDU) in RST, and Argument in PDTB) to a connective, namely the minimal text spans that can be semantically or rhetorically connected by a connective, must be defined in the present study. Because such delimitation, in turn, determines whether an expression is a connective. Furthermore, one of the main criteria of an expression being a connective is that the two fragments it connects are elementary units.

Many studies have determined the clause as minimal delimitation (e.g. Becher 2011a, 2011b). But in practice, not every example has a clear-cut clause boundary, and there are many exceptional cases, such as *VP* coordination and anaphoric expressions. Although subject is usually required in each English sentence, it is not required in Chinese sentences as zero subjects are grammatically acceptable in Chinese sentences (Zhao and Ng 2007). The extensive existence of a long-distance anaphor, which always occurs under ellipsis, makes coreferential

zero anaphora like zero subjects a common phenomenon in Chinese texts (Zhao and Ng 2007). Additionally, assigning the correct referent to a zero anaphoric subject is sometimes difficult, not only because the latter cannot be identified automatically by a Part-of-Speech (POS) tagger but also because it may be inferable from the context rather than co-referring to an antecedent. Although coreference-based explicitation and explicitness are not the present study's subjects, these characteristics make identifying a clause boundary challenging, particularly in Chinese. Below is an example of clauses with zero subjects; thus, the reader must decide which entity is being referred to in each clause:

Example 3-1

CCT: [为 获得 信噪比 较 高的 原始资料, Ø1 在数据采集中 除了 采用 48kg 的
 Gloss: To obtain signal-to-noise relatively high original data, in data collection in addition to use 48kg
 药量 进行 地震波 激发 外,]1 [Ø2 沿 剖面 每 隔 1800m 还 增加 了一个
 charge conduct seismic wave excitation, along profile every partition 1800m also add a
 药量 300kg 的 炮点,]2 [这样 单 由 300kg 炮点 的 共 炮点 数据 也 可
 charge 300kg shot point, this way only from 300kg spot point common spot point data also can
 使 目标层 反射 达到 15 次 的 CMP 叠加,]3 [从而 Ø3 保证 了 深层 界面
 make target layer reflect up to 15 times CMP stack therefore ensure deep interface
 反射波 的 信噪比.]4
 reflected wave signal-to-noise ratio

Back-translation: To obtain the original data with a high signal-to-noise ratio, in addition to using 48kg charge for seismic wave excitation, we also added a shot point with 300kg charge every 1800m, and in this way, the common shot point data of 300kg along can make the target layer reflect up to 15 times of CMP stack, to ensure the signal-to-noise ratio of the reflected wave at the deep interface.¹⁰

In Example 3-1, according to the context, the anaphoric zero subject Ø1 may be co-referring to *we* (referring to the authors and researchers of the paper). In this case, is the text unit in the square brackets 2 a simple clause with a coreferential zero subject Ø2 or a *VP* coordination? To avoid such ambiguity and to reduce the missed logical-semantic information to the connectives, the minimal elementary unit is limited to the clauses, but it has a few refinements borrowed from the Chinese Discourse Treebank (CDT) (Kong and Zhou 2017). The refinements are discussed below from two perspectives:

- i) Syntactically, an elementary unit should contain at least one predicate and express at least one proposition.
- ii) Functionally, an elementary unit should be related to others with some propositional function - not acting as a grammatical element of others.

¹⁰ When translated into English, zero anaphoric subjects in Chinese can be recovered in different ways, including through “the use of proper nouns, pronouns, passive voice and existential subjects, coordination, subordination and even rearrangement of clauses” (Lee 1993, p.47). The glosses here just provide my own annotations. There is no rendition at the character-to-word level for some characters as they are auxiliaries.

This delimitation closely parallels the annotation scheme of the verbs in the English and Chinese Propbanks (Wu and Palmer 2015), whereby verbs are the anchors of predicate-argument structures. Following this scheme, the text span of anaphoric expression and *VP* coordination in Example 3-1 is not excluded from the analysis. As a result, the connectives bound to a *VP* coordination, such as the connectives in Example 3-1, are counted in the present study.

There is a common and frequent construction in Chinese, namely the “NP 的(DE) VP” structure, which is “a highly controversial issue in Chinese linguistics” (Zhou et al. 2014, p.946). In Examples 3-2a and 3-2b, the English connective *as* scopes over the two clauses coordinated by *and*, while the Chinese equivalent consists of two “NP 的(DE) VP” structures, viz. 记录的搜集 and 位置的获取. Almost every Chinese verb can appear in this structure, but can the nature of the VP be defined within this structure? Different Treebanks adopt different approaches to deal with this structure: PDTB (Xue 2005) ignores the structure which is employed to the present study, DTBC (Zhou et al. 2014) regards the structure as nominalisations and independent arguments which is not adopted for the reaserch. Although the parallel clauses in Examples 3-2a and 3-2b listed below may indicate that “NP 的(DE) VP” structures display some propositional function (cf. the difference in Examples 3-2c and 3-2d below), the structures are set as excluded units in the present analysis to simplify the problem of judging the structure and to avoid disputes. As a result of this, although 随着 *suizhe*[with] may represent a temporal relation, it is not regarded as connective, which is different from the English *as* in Example 3-2a.

Example 3-2

- a. EST: As more recordings of north—south PKP waves are gathered and better event locations are obtained,...
- b. CTT: 随着 更多 南北 路径的 PKP 地震波 记录 的 搜集 和 更 准确的时间
As more south north route DE PKP seismic wave recording DE gather and more precise time
位置 的 获取,
location DE obtain
- c. EST: The apparent continuation of deep deformation to large radial distances, and disruptions in the stratigraphy at ~120 km
radius on Chicx-A and Chicx-A1, hint perhaps at an additional ring outside 195 km diameter.
- d. CTT: 明显的 深层 变形 向外 大 范围 延伸, 以及 在 Chicx-A 和 Chicx-
apparent deep deformation outwards large range continuation and ZAI Chicx and Chicx-
AI 上 约 120km 处 地层 中的 扰动, 可能 暗示在 195 直径 外
AI on approximately 120km CHU stratigraphy in DE disruption perhaps hit at 195 diameter outside
有 另外 一个 环.
have another one ring.

Based on these refinements, the coordinating conjunctions such as *and*, 和_{he}[and], 及_{ji}[and] 及_{yiji}[and] are not counted when the fragments they link (e.g. *a clear gravitational and magnetic signature*, 中央隆起和峰环 [*Central uplift and peak ring*]) are not independent elementary units, although they are tagged as conjunctions by multiple POS taggers. Likewise, although *rather than*, *than*, *instead of*, *because of*, *according to*, etc., often express a strong semantic meaning, they are excluded when they are not followed by an adjunct verb clause. Furthermore, in Example 3-3, 然后(*then*) is not counted because the fragment in which 然后 [(*and*) *then*] is inserted acts as a grammatical element of other units and has no direct relationship with other units on the propositional function. Strictly speaking, the fragment and the connectives tied to it will be treated independently only when it meets all the double criteria of the elementary unit definition.

Example 3-3

CCT: [...], 都 会 造 成 [从 一个 重 复 震 源 发 出、穿 过 内 核、**然后** 在 同 一 固 定 台 站
Gloss: [...], all will cause from a repeat seismic source transmit through inner core **then** at same fixed station
观测 到 的 地 震 波 走 时] 产 生 系 统 性 的 变 化。
observe DAO DE seismic wave time generate systematic change
Back-translation: [...], will cause a systematic change in the times of waves that transmitted from a repeating seismic source, through the inner core, **then** observed at the same fixed station.

It is worth noting that an embedded clause, a complement of attribution verbs relating to speech acts and other cognitive acts, is treated as an MEU in the present study. Embedded clauses are analysed in this study because the simple clauses consisting of the whole complement clause often have a specific semantic relation with each other. This is illustrated in Example 3-4 as 而...则 *er...ze*[*whereas*] in the text unit in the square brackets 3, and 并且 *bingqie*[*and*] in the text unit in the square brackets 4 are counted as connectives because they respectively reveal *Contrast* and *Conjunction* shared by the adjacent clauses.

Example 3-4

CCT: [KONO 数据 的 方 差 减 小 值 并 不 明 显,] 1 [但 是 需 要 注 意 到 {这 些 数 据 仅 跨 越
Gloss: KONO data variance reduction BING not significant but need notice DAO these data only span
了 13 年,} 2 [而 Ø4 在 COL 则 是 28 年,] 3 [并 且 早 期 的 数 据 是 相 当 离 散 的,] 4 } 5
13 years While at COL be 28 years and early data be rather discrete

Back-translation: The variance reduction in the KONO data is insignificant, but it is important to note that these data span only 13 years as opposed to 28 years at COL and the early data are quite discrete.

ii) Distance and Location

A unit may be scoped over by different logical-semantic relations, depending on how the relations are hierarchically organised. This is illustrated in Example 3-5 as an adversative

relation is anchored by the coordinate conjunction *而*er [but] in unit 2, and a conditional relation is anchored by the subordinate conjunction *如果*ruguo[if] which has scoped over the unit since the latter is embedded within the conditional clause.

Example 3-5

CCT: 如果[我们 限制 对称轴 偏僻 南北轴 的 倾斜度 在 8度-11度之间]1
 Gloss :If we limit axis of symmetry skew north-south axis DE inclined angle ZAI 8°-11° between
 而[允许 经度 位置 发生变化]2, 那么[....]3
 But allow longitude position occur change, then...
 Back-translation: if we limit the skew of the axis of symmetry from the north-south axis to 8-11°, and allow the longitude position to change, then....

For the location distribution, the text units that share a particular semantic relation can be identified locally or at a distance. Typically, for subordinating conjunctions, since the subordinate clause is bound to the conjunctions, the two elementary units connected by the conjunction are located within the sentence. However, discourse adverbials and coordinate conjunctions can “take one or more sentences to be their arguments” (Prasad et al. 2008, p.2962), and their anaphoric argument can be in one or more previous sentences. For example, *also* in English and its Chinese equivalents can be regarded as “a presupposition carrier” (Prasad et al. 2008, p.2962), whose presupposition may be located in non-adjacent sentences. Therefore, based on the distance between the two units of connective links, a connective can indicate an INTER-Sentence or INTRA-Sentence relation.

For the positional distribution within the sentence, a connective may appear anywhere, i.e. sentence-initially, sentence-medially, or at the beginning of the first or second clause in a subordinate sentence (Webber et al. 2003; Forbes-Riley et al. 2006; Kong and Zhou, 2017). However, the syntactic position is unimportant to the present study as the relation encoded remains the same even when the position is changed. As illustrated in Examples 3-6a and 3-6b below, it is possible to use a paired construction of Chinese connectives such as one connective *尽管*jinguan[although], at the beginning of the first unit, and another *但却*¹¹danque[but], at the beginning of the second unit. This pair of connectives is equivalent to the English discourse marker ‘although’ used at the beginning of the first clause. The order of the two subordinated

¹¹ *但却* danque here is a combination of *但* dan (an abbreviation of *但是* danshi) and the adverb *却* que. Both *但* and *但是* can be used with *却*, and each of them can also be used independently. Whether they are used in pairs or independently, they express an adversative relation and are an equivalent of *but*.

clauses respectively introduced by *尽管* and *但却* cannot be changed in the Chinese passage because neither of the clauses would make syntactical or grammatical sense. However, Examples 3-6c and 3-6d¹² demonstrate that when *尽管* and *although* appear independently, the order of the two clauses in the English and Chinese passages can be changed because the clauses make syntactical sense, and there is no change of sense. If the translator moves the connective to a more prominent position in the sentence, such as sentence-initially, it can make the semantic relation more explicit. Placing the connective at the beginning signals its importance and helps the reader immediately grasp the relationship between the clauses or units. This can enhance clarity and readability in the target language. Conversely, moving the connective to a less prominent position, like sentence-medially, may make the semantic relation less explicit. This could lead to a delayed understanding of the connection between the units, potentially requiring readers to infer the relationship based on subsequent context. In some cases, this may introduce ambiguity or hinder the reader's comprehension. The reasons behind this decision lie in the principle of information flow and reader expectations. Readers often anticipate connectives at specific positions within a sentence, and deviating from these expectations can affect the perceived explicitness of the semantic relation. Translators may strategically choose the position of the connective based on their assessment of the target audience's reading habits and preferences, aiming to achieve optimal clarity and coherence in the translated text.

Example 3-6

- a. EST: The inner core's moment of inertia, **although** only 0.07% of the Earth's total moment of inertia, is about 500 times larger than the moment of inertia of the atmosphere...
- b. CTT: 内核的惯性力矩, **尽管**只有地球总的惯性力矩的0.07%, **但却**差不多是达七成的惯性力矩的500倍...
- c. The inner core's moment of inertia, is about 500 times larger than the moment of inertia of the atmosphere **although** only 0.07% of the Earth's total moment of inertia...
- d.: 内核的惯性力矩, 差不多是达七成的惯性力矩的500倍, **尽管**只有地球总的惯性力矩的0.07%, ...

iii) Poly-Semantic Meanings of a Connective

As the working definition shows, both English and Chinese connectives can encode a semantic meaning, indicating a semantic meaning between the units they connect. Nonetheless, almost every connective can be poly-semantic according to different contexts. For example, Table 3-

¹² Examples 3-6c and 3-6d are proposed by the author for illustrative purposes and do not appear in the corpus.

2 demonstrates that the Chinese connective *而* may be translated into different semantic meanings by corresponding connectives in the TL.

Table 3-2 Poly-semantic connective 而

The different semantic meanings of Chinese connective <i>而</i>		
Potential equivalents in English	Examples in CCTC and gloss	Back-translation
1. while	... 地壳内没有低速层存在, 而在贺兰山下方 ... Crust in no velocity layer being, while in Helan Moutian below 的中下地壳内, 则存有明显的低速 DE middle lower crust in, while being obvious low velocity 异常 anomaly	There is no low-velocity layer in the crust, while there is an apparent low-velocity anomaly in the middle and lower crust below Helan Mountain.
2. but	这不是高导现象而是 This be not high conductivity phenomenon but be 岩溶作用. karstification	This is not a high conductivity phenomenon but karstification.
3. instead, rather than	水优先进入辉石而不是橄榄石 Water preferentially enter pyroxene rather than olivine	Water enters pyroxene preferentially rather than olivine.
4. and	我们知道在电导率测量过程中样品 We know ZAI conductivity measurement process ZHONG sample 会脱水或水化, 而我们最终得到的样品水 will dehydrate or hydrate, and we finally obtain DE sample water 含量数据只是实验前和/或后的, 这造成 content data only be experiment before and/or after DE, this make 电导率数据处理上的不确定性增加 conductivity data process SHANG DE uncertainty increase	We know that the sample will be dehydrated or hydrated during the conductivity measurement process, and the water content of the sample we end up with is only before/or after the experiment, which increases the uncertainty in the conductivity data processing.
5. Ø	这种变化可能是在不同年代被 this tyle variation probably being at different ages BEI(PASSIVE) 用于地震定位的全球台网不同而 use for earthquakes locate DE global network differentce Ø 产生的人为假象 Generate DE artifact	This variation may be an artifact of the different global networks used to locate earthquakes at different times.

POS automatically tags *而* as a conjunction in (1)-(5) in Table 3-2. But cases like the ones in (5) are not counted as connectives in the present study as they do not provide semantic meanings to the units they connect and may be used to “satisfy some prosodic constraint” (Xue, 2005, p.90). Other prosodic lexical items such as *所* *suo* can substitute *而* here.

The semantics in DTBC (Zhou et al. 2014) are adopted in this research to elucidate the tagsets indicated by the connectives. DTBC utilizes semantic tagsets to establish a clear hierarchy of senses for logical-semantic relations triggered by connectives in Chinese. This semantic classification facilitates the straightforward identification of a connective's semantic type, thereby enhancing the analysis of semantic relations in Chinese texts. A notable advantage of using DTBC is that, for relations triggered by parallel connectives in Chinese, the semantic type can be easily discerned based on the provided tagsets. Regarding *parallel connectives*, the term typically refers to connectives that introduce parallel or analogous relationships between different parts of a discourse. These connectives signal connections between units, indicating relationships such as contrast, similarity, consequence, etc. Furthermore, the semantic characteristics of stand-alone connectives in English can also match the definition of *nucleus* and *satellite*¹³ well.

To ensure compatibility with PDTB (cf. Section 2.2.1), DTBC adopts tagsets that are organized hierarchically into four major semantic classes: Temporal, Contingency, Comparison, and Expansion. Each class is further refined with specific types¹⁴ that provide a more nuanced sense, and the semantic definition of each argument is provided on the subtype level. Although DTBC is originally designed for Chinese discourse, several refinements have been applied in this study to facilitate a comparison between English and Chinese texts using a shared hierarchy of senses. Firstly, Secondly, a simple rule is added because, in contrast to Argument 1 and Argument 2 (Arg 1 & 2) in DTBC which refer to the two elementary units or arguments that are connected by a specific connective in the discourse, the order of Units 1&2 is not fixed.

Table 3-3 (adapted from Zhou et al., 2014, p.947) summarizes the tagsets in DTBC. However, instead of analyzing all the types mentioned in the table, this study focuses on a specific set of semantic relations, which are detailed in Table 3-6 on Page 80. These relations were chosen and merged using Halliday's semantic relations (Halliday and Matthiessen, 2004), including adversative, additive, conditional, and causal relations. This approach allows for meaningful comparisons with other studies on explication that employed Halliday's classification, such as Chen (2006) and Becher (2011a, 2011b).

¹³ The nucleus acts as the core unit of meaning or the main proposition, and the satellite serves to provide additional information, elaboration, or contrast to the nucleus.

¹⁴ In this context, a *sense* refers to a particular meaning of a word, while a *type* denotes a category of senses that exhibit similar syntactic and semantic behaviours (Zhou et al. 2014, p.733).

Table 3-3 The semantics in DTBC

Semantic relations	Unit 1	Unit 2	Nucleus	Examples
Temporal. Asynchronous	Situation happens firstly	Situation happens secondly	Both ¹⁵	自从 zicong[since] After, since, before
Temporal. Synchronous	Temporal overlapping situation 1	Temporal overlapping situation 2	Unit 2	同时 tongshi[meanwhile] At the same time
Contingency. Cause	Reason	Result	Unit 2	因为...所以 yinwei...suoyi [because...so] Therefore, as a result
Contingency. Condition	Condition	Consequence	Unit 2	如果...那 ruguo...name[if...then] If, as long as
Contingency. Purpose	Purpose	Intended situation	Unit 2	以便 yibian[so that] so that
Contingency. Inference	Premise	Conclusion	Unit 2	既然...(那么) jiran...(name) [now that...(then)] now that, therefore
Comparison. Contrast	One alternate with shared property	The other alternate with shared property	Both	而 er[while], 但 dan[but], 却 que[but] but
Comparison. Concession	Inconsistent situation affirmed by author	Situation affirmed by author	Unit 2	尽管...但[although...but] Although
Expansion. conjunction	An item	Another item	Both	且 qie, 并 bing[and] and
Expansion. Instantiation	A situation	Instances to describe the situation	Unit 1	比如 biru[for example] for instance
Expansion. Restatement	A situation	A reexpression of the situation	Unit 1	也就是说 yejiushishuo[that is to say] Namely that
Expansion. Exception	A general situation	An exception of the situation	Unit 1	除非 chufei[unless] except that
Expansion. List	An item	A next item	Both	第一 diyi[first], 第二 dier[second] First, second, last
Expansion. Background	Text for facilitating understanding	Text whose understanding is being facilitated	Unit 2	随着 suizhe[as] as

iv) Variation of Connectives

Previous studies (e.g. Kong and Zhou 2017) have revealed difficulties in identifying equivalent connectives for the language pair English and Chinese. Thus, it is not easy to make quantitative comparisons between the connectives in the two languages. Nevertheless, Table 3-4 indicates that although there are differences between English and Chinese, the two languages still share some similarities.

¹⁵ *Both* means the sense is a *multinuclear* logical-semantic relation according to Mann and Thompson (1988).

Table 3-4 Grammatical classifications of explicit connectives

Variations			Chinese	English
Conjunctions	Subordinate conjunction	Simple	Y ¹⁶	Y
		Paired	Y	N
		Modified	Y	Y
		Conjoined	Y	N
	Coordinating conjunction	Simple	Y	Y
		Paired	Y	Y
		Modified	Y	Y
Linking adverbials		Simple	Y	Y
		Modified	Y	Y
		Conjoined	Y	Y
Conjunctive adjuncts		Prepositional phrase	Y	Y
		Parallel expressions	Y	Y

As illustrated in Table 3-4, connectives can be classified into different classes from the grammatical perspective, including conjunctions, linking adverbials and conjunctive adjuncts. The classes can be further refined as follows:

Subordinate Conjunctions. Both English and Chinese have many single subordinate conjunctions. As demonstrated previously in Examples 3-6c and 3-6d, Chinese is almost identical to English in this respect because the subordinate clause is introduced by a subordinate conjunction. However, paired subordinate conjunctions are only acceptable in Chinese and not in English. As shown in the previously illustrated Example 3-6b, the subordinate conjunction introduces the subordinate clause, while another connective drawn from different grammatical classes, such as coordinate conjunctions (e.g. 但 *dan*[*but*]), linking adverbials (e.g. 却 *que*[*but*]), or a combination of the two (e.g. 但却 *danque*[*but*]), introduces the main clause. In this case, the paired constituents jointly encode ONE logical-semantic relation. Both English and Chinese have modified subordinate conjunctions whereby an adverb modifies some subordinate conjunctions (e.g. 正因为 *zhengyinwei* [*precisely because, just because*]).

The term conjoined in the context of Table 3-4 refers to a grammatical relation involving subordinate conjunctions. Specifically, in Chinese, the conjoined relation occurs when two

¹⁶ Y means *Yes*, and N means *No*.

subordinate clauses are linked by instances of the exact subordinate conjunction. Here's an explanation with an example: In Chinese, you might have a sentence structure like this: Subordinate Clause 1, 虽然 (*suiran*) [*although*], Subordinate Clause 2, 虽然 (*suiran*) [*although*], Main Clause. In this example, the subordinate clauses both start with the same subordinate conjunction 虽然 (*suiran*), and they are conjoined by this conjunction. The conjoined subordinate clauses jointly contribute to the expression of ONE logical-semantic relation. Now, in comparison to English, the equivalent structure might look like this: Although Subordinate Clause 1, and Subordinate Clause 2, Main Clause. In English, the conjunction "although" is used to connect the two subordinate clauses. However, note that in English, the relation anchored by the subordinate conjunction in the first clause (i.e., *although*) can scope over the coordinate clause (*and...*) and extend to the main clause.

Coordinate Conjunctions. Like subordinate conjunctions, coordinating conjunctions can be simple (e.g. 但 *dan*, 但是 *danshi*[*but*], *but*) or paired (e.g. 既...又 *ji...you*, 不仅...而且 *bujin...erqie* [*not only...but also*]), both in English and in Chinese. Additionally, they can also be modified by a linking adverb, no matter whether the adverbial express the same relation (e.g. 但却 *danque* [*but*], *and also*) or a different relation (e.g. 但又 [*but also*], *and therefore, but also*).

Linking Adverbials. In both English and Chinese, some adverbials (e.g. 也 *ye*, 还 *hai*[*also*], 则 *ze*/却 *que*[*but*], *therefore*, *however*, *nevertheless*, *also*) can be used as connectives when they indicate a specific logical-semantic relation with an antecedent that is a proposition or a set of related propositions. The linking adverbials can appear independently in the sentence-initial (e.g. *also*) or sentence-medial position (e.g. *We also conduct another research...*) or appear jointly with other linking adverbials (却也 *queye* [*but also*]) or as a coordinate conjunction (而 *er*...也 *ye*[*and...also*], 而 *er*...却 *que*[*but...also*]). When there is a modified coordinate conjunction, viz. a coordinate plus a linking adverbial, the unit can often be segmented discontinuously by the two constituents (refer Case (1) 而...则 in Table 3-2).

Conjunctive Adjuncts. It is worth noting that from the part-of-speech perspective, connectives are not necessarily conjunctions or adverbials in English or Chinese. Some adjuncts can also indicate semantic relations, mainly including prepositional phrases (e.g. *as a result*, *in addition*) and some parallel expressions (e.g. 一方面 *yifangmian*, 另一方面 *lingyifangmian* [*on the one hand, on the other hand*]). However, these conjuncts often cannot be segmented; instead, they

act as a whole to express a specific semantic relation (cf. the difference between *according to this*).

In numerous Chinese discourse annotation schemes, whether an item is a connective is much more complicated than the present study's connective definition and classification. For example, in the CDT scheme (Kong and Zhou 2017), any discourse-like word or phrase can be marked as connective (see Example 3-7 below):

Example 3-7

对此, 浦东 不是 简单得 采取...的做法, 而是 借鉴 发达国家 和 深圳
 To this Pudong not be simply adopt...DE approach, but be use for reference developed countries and Shenzhen
 等 特区 的 经验教训, ... , 使 这些 经济活动 一开始 就 被
 and the like special regions DE lessons learned make these economic activity from the beginning JIU BEI(PASSIVE)
 纳入 法制 轨道. (Kong and Zhou 2017, p.2)
 Incorporate legal track
 Gloss: **To this**, Pudong **is not** simply adopting an approach of..., **but** is taking advantage of the lessons from experience of developed countries and special regions such as Shenzhen, **so** these economic activities are incorporated into the sphere of influence of the legal system as soon as they appear.

Grammatically, a discourse connective can be a verb phrase (e.g. 不是...而是 *bushi...ershi* [*is not... but(is)*]), a predicate-object verb (e.g. 使/使得 *shi/shide* [*make, so that*]), and a preposition phrase (e.g. 对此 *duici* [*to this*]). Morphologically, a connective, like 不是...而是, consists of more than one word and the constituents appear separately. Semantically, whether the same expression is a connective (e.g. 为 *wei* [*in order to*] is a connective) or not (e.g. 为 *wei* [*for*] is not a connective) highly depends on its meaning. To simplify the problem of determining the nature of the above-mentioned discourse-like word or phrase and to avoid disputes, these expressions are not treated as connectives in the present study. Furthermore, it is assumed that many expressions are not subjected to connective constraints and need further classification, especially when the research is partly within the framework of explicitation/explicitness in Translation Studies. For example, rather than being regarded as a whole, 对此 *duici* can be divided into 对 *dui* [*to*] and 此 *ci* [*this*], and 此 can be further investigated from the co-reference perspective. In other words, a prepositional phrase is not counted as a connective unless it can act as an independent function word, encoding certain semantic relations. Likewise, for modified subordinate conjunctions, the present study only counted the conjunctions and did not regard the whole modified conjunctions as a variation of connectives. This is due to the argument that, unlike linking adverbials, the adverbs (e.g. 正

zheng[just, precisely]in 正因为*zhengyinwei* [just because]) in subordinate conjunctions which do not indicate a particular semantic relation per se, the modified conjunctions can be further studied as a modifier that, perhaps, indicates the speaker's degree of certainty.

Some closely similar forms also exist, i.e. Chinese connectives 虽*sui*[although] and 虽然*suiran* [although] and indicate the same semantic relations. Scholars, such as Xue (2005, p.90) believe that the forms are almost the same connectives evaluated in the long language history or have undergone a particular morphological process. For example, 虽 can be considered as an abbreviation of 虽然. Nevertheless, all the different form variations are counted separately here to establish whether the authors or translators have a preference.

As illustrated in the paired subordinated conjunction examples in Table 3-5, the combination of paired connectives in Chinese is quite flexible.

Table 3-5 Examples of the combination of paired connectives

Relation	Equivalent in English	The Front	The Back ¹⁷
COMPARISON. Concession	Although	虽 <i>sui</i> [although] 虽然 <i>suiran</i> [although] 虽说 <i>suishuo</i> [although] 尽管 <i>jinguan</i> [although] ...	但 <i>dan</i> [but] 但是 <i>danshi</i> [but] 可是 <i>keshi</i> [but] 却 <i>que</i> [however] 然而 <i>raner</i> [however] 不过 <i>buguo</i> [nevertheless] ... Null
CONTINGENCY. Cause	Because	因为 <i>yinwei</i> [because] 因 <i>yin</i> [because] 由于 <i>youyu</i> [because] ...	所以 <i>suoyi</i> [so] ... Null
CONTINGENCY. Condition	if	如果 <i>ruguo</i> [if] 如 <i>ru</i> [if] 若 <i>ruo</i> [if] 假如 <i>jiaru</i> [if] ...	那么 <i>name</i> [then] 则 <i>ze</i> [then] ... Null

In principle, the Front markers can randomly match the Back markers without changing the joint semantic relation as long as the markers are from the same row. Except for some minor

¹⁷ T'sou et al. (2000) defined the Backs as Candidate Discourse Markers (CDM) that can be dropped without changing the semantics of the relation. They further explained that the Fronts can match the Backs if they form a pair that is segmented by at least two words or punctuation marks, and that such pairs are known as matching RDM-CDM pairs.

differences in syntaxis (e.g. 虽然 can occur in clause-initial or clause-medial positions, while 虽 only appears clause-medially), the matching pairs may indicate the same logical-semantic relation. For example, in Example 3-6b illustrated previously, the Back markers of the paired discourse connective can often be followed by another discourse connective. Example 3-6d shows that the Back can be omitted without changing the semantic relation; thus, explains why T'sou et al. (2000) named the Fronts as *Real Discourse Markers* (RDM) that reveal the semantics of the relation.

If each part of the parallel connectives is counted as one connective, there will be multiple repetitions in Chinese connectives compared to English connectives. Therefore, the paired construction of connectives has been considered continuously. Inspired by T'sou et al.'s (2000) concepts and ideas, the following rules are proposed to resolve ambiguity in the process of matching paired connectives to a semantic relation:

- i) **The Rule of Greediness:** When matching paired connectives for a semantic relation, priority is given to maximise the encoded relations. For example, for the paired construction 但 also [but also], the semantic meanings expressed are distinctive between 但 [but] and also [also]. This is because 但 is a connective representing *Contrast*, and also represents *Conjunction*. Therefore, although the two connectives appear in pairs, each connective is counted separately. Likewise, the connectives in the paired construction and therefore are regarded as expressing two different relations whereby and is expressing *Conjunction* and therefore is expressing *Inference*.
- ii) **The Rule of Locality:** When matching a paired subordinate conjunction for a semantic relation, priority is given to the relation where the distance between its constituent marker is the shortest. For example, although an independent 则 may express a *Contrast* relation with another nonadjacent unit, the paired construction of connectives 如果.... 则 ruguo....ze [if...then] is treated as a whole to indicate a *Condition* relation.
- iii) **The Rule of Explicitness:** When matching paired connectives for a semantic relation, priority is given to the relation where markers are explicitly presented altogether. Referring back to Case (1) in Table 3-2, for the paired construction of connectives 而... 则 er....ze [while], the conjunction 而 can signify the *Conjunction*

and *Contrast* relations, and the adverbial 则 can signify either *Contrast* or *Inference*. Since 而 and 则 can both express a *Contrast* relation, and the unit where they remain indicates an alternate with shared property compared to what the precedent unit indicates, 而...则 here is regarded as a whole and expresses a *Contrast* relation.

Table 3-6 is constructed using the rules discussed above and is used to compare the occurrence frequency of certain connectives. As shown in the table below, connectives are classified using two criteria i) connectives indicating an INTER- or INTRA- sentence relation are listed in columns, and ii) connectives representing the same sense of semantic relation are listed in a single row. Furthermore, the occurrence of each variation of connectives is illustrated in the table in brackets.

Table 3-6 Classification of connectives

Hallidayan semantic relations	Sub-semantic relations	INTER-sentence relation (Occurrence)	INTRA-sentence relation (Occurrence)
Conditional	Contingency. Condition		
Causal	Contingency. Cause		
	Contingency. Inference		
Adversative	Comparison. Contrast		
	Comparison. Concession		
Additive	Expansion. conjunction		

3.2.2 Identification of Connective-Based Explicitness

One of the main concerns of the present study is the determination of the degree of explicitness through connectives. The explicitness of a text here is assumed to be determined by the occurrence frequency of the investigated linguistic forms. The following (tentative) Scale of Connective-Based Explicitness is proposed for the present study:

Figure 3-2 The scale of connective-based explicitness

1. **No Connective.** Semantic relation is not specified additionally.
→ low degree of connective-based explicitness
2. **Less Explicit Connective.** The reader requires context to infer semantic relations.

- medium degree of cohesive explicitness
- 3. **More Explicit Connective.** The reader does not require context to establish semantic relations.
- high degree of cohesive explicitness

The (tentative) scale assumes that a phrase has semantically different degrees of explicitness through connectives. Connective-related explicitness is minimal when there is no connective (Case 1). If a sentence consists of connectives, it is assumed to have a medium degree of connective-related explicitness (Case 2). If the semantic relation is constrained by a connective encoding exclusively one field, the phrase can be viewed as maximumly explicit (Case 3). The scale emphasises the importance of analysing connectives both quantitatively and qualitatively, namely the frequency of connectives and the degree of explicitness associated with connectives, to compare the explicitness of a TT with a non-translated text written in the TL.

3.2.3 Form and Working Definition of Connective-Based Explicitation and Implication

As highlighted in the typology model discussed in Section 3.1.2, connective-based additions in the analyzed corpus are generally considered potential explicitations, whereas connective-based omissions are viewed as implications. This perspective is supported by the examination of the semantic encoding function of connectives detailed in the preceding subsection. Additionally, as noted in Chapter 2, Becher (2011a, 2011b) emphasizes that text cohesion necessitates pre-existing coherence; the presence of coherent relationships allows for the addition of connectives to explicitly mark these relationships. Conversely, the omission of a connective does not eliminate the coherence relation, which remains inferable by readers. However, the study also acknowledges, as previously discussed, that not every instance of addition or omission can automatically be classified as explicitation or implication, respectively. It recognizes instances where connective-based additions do not necessarily contribute to explicitation, such as when these additions are part of broader cohesive changes or when less explicit connectives from the source text are replaced with more explicit ones in the target text. Similarly, the omission of connectives does not invariably lead to implication. There are scenarios where omitted connectives may not significantly impact the coherence or comprehensibility of the target text, especially if the coherence relation remains clear without explicit markers or if other linguistic means are employed to maintain text cohesion.

Connective-based substitutions can also be defined as explicitations when a less explicit connective in the ST is substituted in the TT by a more explicit connective. This highlights an important question of how to determine the degree of explicitness associated with a connective, especially when the connectives are from different language systems.

A semantic matrix is proposed to simplify the process for analysing individual connectives and connective substitutions in the translation process. The matrix in Table 3-7 illustrates the different types of relations denoted by the different means of languages, such as connectives. Specifically, the first two columns of the matrix show the potential basic semantic meaning and the subcategory of semantic meaning investigated in the present study. Furthermore, the last column of the matrix illustrates the reinterpretation and semantic enrichment of the connective results.

Table 3-7 The universe of linguistically encodable semantic relations

Hallidayan semantic relations	Sub-semantic relations	The reinterpretation and semantic enrichment of a connective
Conditional	Contingency. Condition	(√ or ×) ¹⁸
Causal	Contingency. Cause	(√ or ×)
	Contingency. Inference	(√ or ×)
Adversative	Comparison. Contrast	(√ or ×)
	Comparison. Concession	(√ or ×)
Additive	Expansion. conjunction	(√ or ×)

The connectives *and*, *但是* [*but*] and *因为* [*since*] and their potential semantic profiles are used as examples in Table 3-8. As shown in Table 3-8, *and* can be regarded as the most flexible connective in semantic encoding as it can link two textual fragments filling out almost the whole universe of semantic relations (cf. Blühdorn 2010; Becher 2011a, p.105).

¹⁸ √ means that the connective can encode the type of semantic meaning, and × means that the connective cannot.

Table 3-8 Semantic profile of the connectives *and*, 但是 ‘*but*’, 因为 ‘*since*’

Hallidayan semantic relations	More specific semantic relations	And	但是 [but]	因为 [since]
Conditional	Contingency. Condition	√		
Causal	Contingency. Cause	√		√
	Contingency. Inference	√		
Adversative	Comparison. Contrast	√	√	
	Comparison. Concession	√	√	
Additive	Expansion. conjunction	√		

Examples 3-8 to 3-10 (taken from Becher 2011a, pp.105-106) illustrate that *and* links text fragments which may encode more than one semantic relation between each other. Apart from the basic *Conjunction* sense, other plausible reading may be inferred from the context, such as *Temporal* (3-8), *Inference* (3-9), and *Condition* (3-10). Such relations can be made more explicitly by adding a more semantically specific connective such as *at the same time* in 3-8 and *therefore* in 3-9.

Example 3-8

Svenja is at home and [at the same time] Agnieszka is in her office.

Examples 3-9

Paul missed the train and [therefore] came late.

Examples 3-10

If Paul misses the train and [therefore] comes late, we have a problem¹⁹.

Compared to *and*, other connectives only have the potential to encode a smaller set of meanings. Table 3-8 shows that most of the relations cannot be reinterpreted by the Chinese connectives 但是 [but] and 因为 [because]. This indicates that 但是 and 因为 have fewer plausible readings; thus, require less inferential translation work for the addressee. Applying the definitions of explicitation/implicitation and explicitness/implicitness provided in Section 3.1, the translations with a connective substitution in Examples 3-11 and 3-12(taken from Huang, 2007, p.80) are more explicit than the original sentence as the former provides direct

¹⁹ The *and* in 3-10 encodes “a relation of temporal condition when used in combination with if”(Becher 2011a, p.105).

information about the possible semantic relations: *但是*[*but*] in Example 3-11b only refers to some type of adversativity and *因为*[*since*] in Example 3-11b only refers to some kind of reasoning. Conversely, the connective *and* in Examples 3-11a and 3-12a allow for plausible readings as readers must rely on the previous and following context to infer the semantic relation. Therefore, translated sentences with shifts like those illustrated in Examples 3-11b and 3-12b are viewed as explicitations as the connectives used in the TT feature a higher degree of explicitness than the original connectives in the ST.

Example 3-11

a. C: The words had been there for year, **and** they had never said them.

b. E: 这句话已存了多年，**但是**从来没有说出来过。

Back-translation: The words had been there for year, **but** they had never said them.

Example 3-12

a. E: He went from his dressing room, **and** I did not hear him go.

b. C: **因为**他是从更衣室下楼的，我没有听到他走出去。

Back-translation: **Since** He went from his dressing room, I did not hear him go.

As shown above, the matrix is useful as it can be used to make comparisons between connectives of the same language and/or between connectives of different languages by precisely identifying the properties they have and do not have in common. Furthermore, the matrix can be used to assess the degree of explicitness of different connectives and determine whether a connective-based explicitation occurs during the ST-TT translation process.

To conclude, this study argues that the classification of connective-based additions and omissions as explicitation or implicitation is dependent on the co-text; the presence or absence of a semantic relation should be taken into account to accurately determine whether an addition or omission constitutes explicitation or implicitation. Similarly, the categorization of connective-based substitutions as explicitation or implicitation is also contingent upon the co-text; connective-based substitutions are considered explicitations when a less explicit connective in the ST is replaced by a more explicit one in the TT, and the process is reversed for implicitation. This nuanced approach emphasizes the importance of a detailed examination of each instance, recognizing that the role and effect of changes in connectives within translated texts are shaped by a complex interplay of textual and contextual elements. Consequently, a comprehensive working definition of connective-based explicitation and connective-based implicitation is provided as follows:

Connective-Based Explicitation: This process involves the addition or substitution of connectives in the TT to clarify or specify semantic relations that are implicit or less explicitly marked in the ST. Explicitation occurs when a more explicit connective replaces a less explicit one in the TT, thereby enhancing the text's clarity and making underlying relations more accessible to the reader. Determining whether a change constitutes explicitation depends on the co-text, requiring careful consideration of the involved semantic relations and their articulation within the broader textual and contextual framework.

Connective-Based Implication: In contrast, connective-based implication involves the omission or substitution of connectives in the TT that were present in the ST, resulting in a more implicit presentation of semantic relations. Implication takes place when a more explicit connective in the ST is substituted with a less explicit one in the TT or when connectives are omitted altogether, with the assumption that the semantic relation remains inferable by the TT's readers. Similar to explicitation, deciding if an instance qualifies as implication is co-text-dependent, necessitating a nuanced analysis of how the omission or substitution impacts the text's coherence and the reader's ability to infer semantic relations.

3.3 Summary

Chapter Summary. This chapter has identified several factors that affect the results of investigating the explicitation-related phenomenon, and these factors are summarised as follows:

- This chapter has introduced an integrated model of explicitation typology that is constructed based on an ST-TT relation of explicitation. This model is theoretically and methodologically more advantageous than traditional models, as it considers numerous factors that influence translators' explicating shifts and do not assume that such shifts are universal in translations.
- The semantic encoding function of each connective is the main reason why connective additions and substitutions are described as explicitations, whereas connective omissions are described as implications.
- A provisional scale is used to illustrate the impact of connectives on the semantic relations expressed in a sentence. Furthermore, the scale can explain why the degree of

explicitness of a text, whether translated or not, can be reflected by the occurrence of connectives.

- This chapter has also discussed the semantic typology and grammatical classes of connectives. The discussion provides structured semantic descriptions of connectives, which can help to identify English and Chinese connectives' semantic profiles and compare the degree of explicitness associated with connectives *per se*.

Discussion. The application of the typology framework of explicitation (see Section 3.1.2) in empirical studies may be criticised as it may not be *ideal* in some cases. For example, although there is connective-based addition or substitution during the ST-TT translation process, there might be cases in which the verbalisation of semantic relations in the TT compared to the ST is not clear-cut and is, therefore, more difficult to be qualified as explicitation. To avoid obscurity and subjectivity, shifts that might be questionable are presented in the results chapter (see Chapter 6) and kept open for readers looking for a challenge.

It is crucial to highlight that semantic relations cannot be easily identified in some circumstances, especially when the connective itself is polysemous. For example, under the English and Chinese PDTB schemes, there were some disagreements when the annotators tagged the texts according to different semantic relation levels (see Xue 2005; Prasad et al. 2008). In the present study's tagset scheme, the connectives *but*, *however*, and *although* can signify either *Contrast* or *Concession*, and the connectives *while* and *meanwhile*, which typically refer to simultaneous situations, can signify both the *Temporal* and *Comparison* relations. Additionally, the connectives *after*, *since*, and *when*, which are usually associated with non-simultaneous situations, signify either *Temporal* or *Contingency*. Acknowledging the complexity of these distinctions and the inherent subjectivity in interpretation, this study recognizes that fully disentangling these relations with absolute objectivity is challenging, and some degree of subjective interpretation is unavoidable.

The present study focuses on the explicitness and explicitation phenomena as described in Translation Studies and not in Discourse Analysis. Therefore, a full-sized formal discourse annotation, including a scope of the argument, attribution, and discourse structure, is not needed for the study. Furthermore, discourse analysis annotators, such as Penn Discourse Annotators (Prasad et al. 2008; Zhou and Xue 2012) and the RSTTool (O'Donnell 2000), are not used as annotation tools for the present study. As analysing semantic information requires a comprehensive thesaurus, and a matchable automatic semantic tagger is currently unavailable,

the study uses syntactic and grammatical information provided by Part-of-Speech. Additionally, Part-of-Speech is used to attribute neighbouring words and reflect some degree of the syntactic characteristics to identify connectives. The data and the detailed analysis procedure will be discussed in the next chapter.

4 Chapter 4 Data and Methodology

A research plan was designed to answer the present study's research questions. Firstly, the study analyses connective-based explicitation from a corpus-based approach by comparing the translations not only against their source texts but also against the non-translations in the TL. Secondly, the study adopts both a product-oriented approach and a process-oriented approach to investigate explicitness and explicitation. Due to research limitations, the present study uses a relatively small corpus to allow for an investigation of every single shifting instance during the E-C translation process. This chapter will discuss the corpus design (Section 4.1), preparation procedures of the texts in the corpus (Section 4.2) and the methods adopted (Section 4.3) in detail.

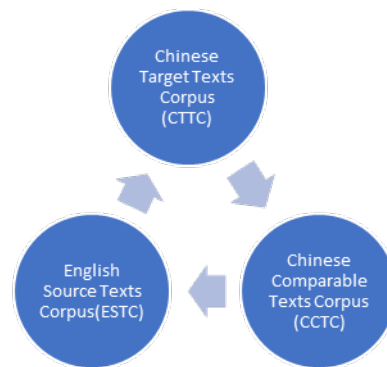
4.1 Corpus Design

The section provides an overview of the corpus design. In Section 4.1.1, details about the sources of the texts and the languages included in the corpus are described. In Section 4.1.2, the sampling criteria and material compiling process are discussed, which involve the selection of texts based on certain characteristics and organizing them systematically in the corpus.

4.1.1 Corpora Framework

As illustrated in Fig. 4-1, a triangulation of composite corpora is adopted as the fundamental tool. Specifically, three sub-corpora, including the ESTC, the CTTC and the CCTC, are created.

Figure 4-1 The triangulation of composite corpora



The different sub-corpora are examined using text sampling techniques and the number of languages involved, which are the criteria for defining corpora (cf. Baker 1993, p. 248; Olohan 2004; McEnery et al. 2006) to create the three types of corpora which are summarised below.

- ***The English-Chinese Parallel Corpus (ECPC):*** ESTC and CTTC form a bilingual parallel corpus as the corpus contains English source texts and the corresponding Chinese translations in parallel (Olohan 2004, p.24). Every instance of connective-based shifts during the E-C translation process can be identified by comparing ESTC and CCTC.
- ***The English-Chinese Comparable Corpus (ECCC):*** ESTC and CCTC make up a comparable bilingual corpus as the corpus contains comparable original texts in the two languages (Olohan 2004, p.35). Additionally, comparisons between SL norms and TL norms in terms of the use of connectives in the given genre can be realised through the corpus.
- ***The Monolingual Chinese Comparable corpus (MCCC):*** CTTC and CCTC altogether can be regarded as a comparable monolingual corpus because the corpus contains Chinese translations and Chinese non-translations of the same text genre (Olohan 2004, p.35). Furthermore, the translated language's features can be investigated with reference to the original language using the corpus.

4.1.2 Sampling Criteria and Compiling Process

In this section, the sampling criteria for each sub-corpus are introduced, including the corpus size and composition. By illustrating these criteria, the process of compiling the texts for each sub-corpus is also clarified.

(1) ESTC and CTTC

The present study focuses on the genre of scientific academic writing in English-Chinese translation. Since English is the primary language of scientific discourse, the study sample was selected based on the “accessibility of texts and their translation criterion”(Olohan 2004, p.25). To this end, the English-Chinese bilingual edition of *Nature: The Living Record of Science*, published in China, was chosen as the main corpus for investigating explication in this genre. The edition, co-published by Foreign Language Teaching and Research Press, Macmillan Publishers, and the Nature Publishing Group, includes the most influential articles published in *Nature* since 1869. The collection, which has been published annually since 2011, comprises 10 volumes, each containing several English texts published during a specific period, accompanied by their Chinese translations.²⁰

Volume VIII 1993-1997, published in China in 2017, was used as the ECPC sampling pool for the present study as the volume was the most recently published printed issue during the research period of the study. The volume contains 61 EST-CTT pairs, including two in physics, nine in chemistry, 18 in biology, 14 in astronomy and 18 geoscience texts. The 18 pairs of EST-CTT in geoscience, viz. ten pairs in geophysics and eight pairs in atmospheric science (see Appendix I), were used as materials for ECPC for two reasons. Firstly, together they make up the largest amount of text, allowing for an investigation of a wider range of linguistic features. Secondly, the 18 pairs of EST-CTT in geoscience are more appropriate than the biology texts, as biology texts include more items, such as images, tables, and figures, that are time-consuming to exclude (see Section 4.3.1). Additionally, because some text patterns, such as semantic connectives, have a distribution that potentially varies between different text sections (e.g. Introduction and Conclusion), the present study included the text pairs in full, apart from those components that are not parts of the body of the text.

The work of seven translators is included in the CTTC. In addition to the translators' involvement, each CTTC text was reviewed by one or two reviewers (see Appendix I). All the translators and reviewers are “outsiders” (Katan 2016) as they are not academics working

²⁰ See <http://old.fltrp.com/wyzyx/0912zt/>

within the related geoscience field, but professional translators. The inclusion of multiple translators in the corpus can determine whether the translators express individual variations for certain connective explicitations. Although Hongyan Qi and Guiping Yu are represented 11 times and twice, respectively, in the CTTC, most translators are only represented once (see Appendix I). Despite the uneven representation of translators, the materials in the CTTC may continue to yield reliable results, given that 2,000 words are usually sufficient to identify recursive patterns and norm-governed behaviour (Koester 2010, p.66). Although Koester's statement is open to dispute, it highlights the important issue of identifying recursive patterns and norm-governed behavior that should be taken into account in translation studies.

(2) CCTC

A preliminary consultation was conducted to determine the source of the Chinese non-translations that would be included in the sub-corpus of CCTC. To ensure comparability with the ESTC and CTTC, only texts from the field of geoscience were selected for inclusion.

Three Chinese experts working in closely related disciplines were asked to list five reputable Chinese domestic journals in the geoscience field. *Science China: Earth Sciences* was the journal that was named the most. It is a monthly peer-reviewed multidisciplinary academic journal about geoscience, including domains such as geology, geochemistry, geophysics and more. The journal is reputable, as it was supervised by the Chinese Academy of Sciences and co-sponsored by the Chinese Academy of Sciences and National Natural Science Foundation of China.²¹ In terms of accessibility, the journal is available online and in print. Based on all the above qualifications, *Science China: Earth Sciences* may be regarded as the Chinese equivalent of *Nature*; thus, it was selected as the source material from which the CCTs were sampled.

The CCTC was designed to be comparable to the CTTC by following several criteria: (1) both corpora include only research articles (RAs) to maintain consistency in text genre and register, excluding other sub-registers such as review papers and progress reports; (2) the sampling period for the CCTs was restricted to the year 2017 to match the publication date of the CTTs as a print version; and (3) both corpora were drawn from the same domain, with the CCTs

²¹ See <http://engine.scichina.com/publisher/scp/journal/SCES?slug=Overview>

focusing on the disciplines of geophysics and atmospheric science to ensure comparability in subject matter.

The CCTC's text sampling pool was compiled through a two-round sampling process. In the first round, 88 scientific RAs in geoscience were selected from the website of Science China: Earth Sciences based on criteria (1) and (2). The second round involved selecting 11 texts in geophysics and 14 texts in atmospheric science in accordance with criterion (3) from the 88 texts selected in the first round. To ensure a range of topics, the texts were examined, and various topics were analyzed. For instance, among the 14 atmospheric science texts, four discussed the effect of El Niño, and only one was randomly chosen for inclusion in the corpus. Finally, the CCTC sampling pool comprised ten geophysics texts and eight atmospheric science texts.

Although some researchers, such as Chen (2006), have compiled extracts from a reference corpus, it was decided to incorporate the entire body of texts in the CCTC. This is because semantic connectives may be unevenly distributed throughout the entire text, and it would be challenging to include a balanced representation of the beginning, middle, and end of texts if only extracts were sampled. Given that the CCTC sample texts are generally longer than those in the CTTC sample, preference was given to the 12 medium-sized non-translated texts ranging between 5000 and 9000 words. This was also an attempt to include a greater number of different authors and subjects in the CCTC.

Table 4-1 shows that the overall size of the ESTC, CTTC and the CCTC is 56,478 words, 68,229 characters, and 93,767 characters, respectively. Although “a large scale contrastive stylistic study (in a given register)” (Blum-Kulka 1986, p.33) was recommended for explicitation investigation, I, like other academics (e.g. Becher 2011a, 2011b), opted to use small-scale specialised corpora. Unlike large-scale corpora, which usually reveal the general patterns of a language, specialised corpora may be adopted as tools to investigate the use of patterns of language within particular contexts, namely the “sub-language” (McEnery et al. 2006, p. 60) of the RA in geoscience here. Accordingly, they “do not need to be large to yield reliable results” (Koester 2010, p.66). Furthermore, the present study’s corpora are self-constructed and I, as the corpus compiler and analyst, am highly familiar with the context and can facilitate a more accurate interpretation of data.

Table 4-1 Corpus size of ESTC, CTTC and CCTC

Sub-corpora	ESTC	CTTC	CCTC
Words or Characters	56,478 words	68,229 characters	93,767 characters
Content	18 ESTs included in full	18 CTTCs included in full	12 CCTs included in full

4.2 Preparation for the Texts and Software Used

The texts obtained in the first stage were not suitable for use in commercially available concordancers that support English and Chinese. As a result, the texts needed to be manipulated to facilitate corpus analysis. The text preparation procedures and software suites used are discussed in the following sections.

4.2.1 Text Capture and Encoding

The raw texts in the CTTC are only available in paper-based versions through purchase. TsingHwa OCR-2000, a reliable OCR (Optical Character Recognition) software program used for recognising Chinese characters, was also used to convert these paper-format texts into machine-readable forms. For the texts in the CTTC, along with those in the ESTC and CCTC available in electronic format, only written textual data was included, with elements such as graphics and tables in the original texts replaced by <gap> elements in the corpus texts. The cleaning and editing work were processed using the software EmEditor. Furthermore, careful proofreading was also conducted during the process using Microsoft Office Word: (1) English spellchecking and global replacement functions offered by Microsoft Office Word facilitated the correction of English texts; (2) the correction for Chinese texts was conducted manually due to the lack of reliable checkers for Chinese characters and, (3) once an error was identified, all the errors were searched and replaced globally using Microsoft Office Word.

After all the OCR-recognising and checking processes, the texts in the CTTC and those in the ESTC and CCTC were created and saved in plain text format. The reason for doing this is that all of the .txt format versions of the three sub-corpora can be compatible with tokenisers, POS taggers and ParaConc (see Section 4.2.2 and 4.2.3).

4.2.2 Segmentation and POS Annotation

English sentences use spaces to delimit words, whereas Chinese sentences are written in running strings of characters without any delimitations. The segmentation of Chinese is crucial because most of the concordancers can only process segmented Chinese texts. Moreover, the tokenised texts require POS tagging, given that this permits a search in software, like AntConc or Wordsmith, for a specific class of words in combination with tokens or a particular word belonging to a specific class.

The .txt documents encoded in Section 4.2.1 were processed further. Specifically, the Chinese sub-corpora CCTC and CTTC were tokenised and annotated using CKIP, a Chinese morpheme analyser released by the Institute of Taiwan's Academia Sinica. This free online tool integrates word tokenisation and POS tagging. The tool's latest open tests were reported to have a positive precision rate for tokenisation and part-of-speech tagging.²² Figure 4-2 presents an example of the extracted paragraphs of segmented and POS-tagged Chinese texts.

Figure 4-2 Segmented and tagged version of a fragment of Chinese text

这些(Neqa) 热量(Na) 的(DE) 多少(Neqa) 及(Caa) 其(Nep) 输送(VC) 路径(Na) 与(Caa) 全球(Na) 热盐(Na) 环流(Na) 模式(Na) 紧密(VH) 相关(VH) 。(PERIODCATEGORY)
--

The Corpus ESTC was tagged using the CLAWS web tagger, which is the online version of the CLAWS POS tagger developed by the University Centre for Computer Corpus Research on Language (UCREL) at Lancaster University. Texts were submitted online to be POS-tagged using this tool. The online tagger was chosen because it was free and produced accurate results with a high precision rate. Examples of the extracted paragraphs of segmented and POS-tagged English texts can be found in Figure 4-3.

Figure 4-3 Segmented and tagged version of a fragment of English text

The_AT amounts_NN2 and_CC routings_NN2 of_IO this_DD1 heat_NN1 are_VBR closely_RR tied_VVN to_II the_AT global_JJ pattern_NN1 of_IO thermohaline_NN1 circulation_NN1 ._.
--

After all the tokenising and POS tagging processes, the texts in the ESTC, CTTC and CCTC were created and saved into two versions: one in a plain text format and the other in a DOCX

²² See <https://github.com/ckiplab/ckiptagger>

format. This ensures that all the .txt format versions of the three sub-corpora are compatible with Antconc and that all the .docx format versions can facilitate the searching and retrieval of connectives in Microsoft Office Word (see Sections 4.3.1 and 4.3.2).

4.2.3 Alignment of Source and Target Texts

Automatic sentence alignment of English source texts and Chinese target texts is essential to facilitate the analysis of the ECPC. BFSU ParaConc is a free software developed by Xu Jiajin, Liang Maocheng and Jia Yunlong from the Beijing Foreign Studies University. The .txt format versions of the texts in ESTC and CTTC will be loaded into the ParaConc to align the source and target text pairs. This tool for E-C parallel corpora building was used to align the ESTC and CTTC due to several advantages. Firstly, the tool is time-efficient because of its high accuracy and alignment quality. Secondly, the tool can align English and Chinese at the sentence level. Lastly, the tool can create the output of each pair of E-C texts and save the output into the DOCX file formats with the help of Heartsome TMX Editor; thus, permitting further editing and self-tagging for the explication analysis (see Section 4.3.3 for more details). Figure 4-4 presents an extracted sample of aligned parallel paragraphs.

Figure 4-4 An extracted sample of aligned parallel paragraphs

English	Chinese
But the paths from Kermadec to Kongsberg (KONO) and Bergen (BER), Norway, show smaller residuals for the 1990s than the 1980s.	但是，自克马德克到挪威孔思贝格（KONO）和卑尔根（BER）的路径，从 20 世纪 80 年代到 20 世纪 90 年代残差是见效的。
The paths from Tonga to Graefenberg, Germany (GRFO) show no such systematic differences in the data between the 1980s and 1990s.	沿着汤加到德国格拉芬城堡（GRFO）路径的数据则在 20 世纪 80 年代和 20 世纪 90 年代之间并未表现出系统性的差异。

In summary, different versions of the texts in the corpus were produced²³:

- 1) The tokenised and POS annotated version of the texts in CCTC (in DOCX conformant)
- 2) The POS annotated version of the texts in ESTC (in DOCX conformant)
- 3) The tokenised and POS annotated version of the texts in CTTC (in DOCX conformant)
- 4) The tokenised and POS annotated version of the texts in CCTC (in TXT conformant)
- 5) The POS annotated version of the texts in ESTC (in TXT conformant)

²³ It should be noted that there is no change in the content of the texts. The difference of text versions lies only in the following criteria: text format, tokenisation, POS tagging and parallel aligning.

- 6) The tokenised and POS annotated version of the texts in CTTC (in TXT conformant)
- 7) Parallel aligned versions of each ST-TT text pair from ESTC and CTTC (in DOCX conformant)

Each version of every single text and each aligned version of each ST-TT pair was stored in a single file, which facilitated the manual identification and classification of connectives. The files were subjected to further processing in the subsequent section.

4.3 Research Questions and Methodology

In this section, the methodology for each research question will be discussed in detail. The following subsections will provide an overview of the specific methods used to address each research question, including data analysis techniques, software tools, and criteria for data selection.

4.3.1 Research Question 1 Method: A Bilingual Comparable Investigation

Research Question 1: Given the theoretical assumption that a higher frequency of connectives is indicative of greater connective explicitness, do English scientific research articles exhibit a greater degree of connective explicitness compared to their Chinese counterparts?

A quantitatively oriented analysis was undertaken to compare an aspect of the data, namely the bilingual comparable corpus of non-translated English and Chinese texts. The tokenised and POS tagged ESTC and CCTC (either in DOCX or TXT conformant), produced in Section 4.2, were subjected to additional processing.

To generate the occurrences of connectives to answer Research Question 1, the tokenised and POS-tagged versions (in DOCX conformant) of the two sub-corpora were loaded separately into Microsoft Office Word. Based on the different tagsets framed in CLAWS and CKIP, the tags of *CCB*, *CS*, *CSA*, *CC*, and *RR* for English and *Cbb*, *D* and *DK* for Chinese were searched for in Microsoft Office Word by running the search function to display the investigated

connectives (see Appendix II for the details of tags).²⁴ Following this, each retrieved instance was manually examined to determine whether it paralleled the definition of different types of connectives discussed in Chapter 3. The selected connectives were then classified in Table 4-2 (also illustrated in Chapter 3) using two criteria: the type of semantic relation and above or below the sentence level. With the detailed classification, additional statistics concerning the research question, such as the total occurrence of inter-sentence and intra-sentence connectives and the occurrences of each semantic relation or sub-semantic relation, could be obtained for the corpora ESTC and CCTC.

Table 4-2 Classification of connectives

Hallidayan semantic relations	Sub-semantic relations	INTER-sentence relation (Occurrence)	INTRA-sentence relation (Occurrence)
Conditional	Contingency. Condition		
Causal	Contingency. Cause		
	Contingency. Inference		
Adversative	Comparison. Contrast		
	Comparison. Concession		
Additive	Expansion. Conjunction		

The tokenized and POS-tagged versions (in TXT format) of the two sub-corpora were loaded separately into AntConc, and additional statistics regarding the research questions were obtained for the corpora ESTC and CCTC. These statistics included the corpus size in tokens (A), tokens of connectives (B), and the percentage (B/A).

The ESTC and CCTC statistics were compared to determine whether English texts typically display a higher degree of explicitness than comparable Chinese texts due to the more frequent use of connectives within the scientific RAs genre. Additionally, four aspects of the corpus data, including global statistics, connectives for different semantic relations, inter-sentential and intra-sentential connectives, and the range of connectives, were examined to identify some basic patterns of connective use.

²⁴ This connective retrieval process with the use of tags can also be conducted in Concordance (like Wordsmith or Antconc). However, the Concordance window where the connectives associated with tags are viewable is limited. Microsoft Office Word is more for analysing semantic relations, especially across different sentences. Thus, the present study's retrieval process was conducted using Microsoft Office Word.

4.3.2 Research Question 2 Method: A Monolingual Comparable Investigation

Research Question 2: Within the context of this theoretical framework, do translated Chinese texts demonstrate a greater degree of connective explicitness, as indicated by the frequency of connectives, compared to non-translated Chinese texts?

Research Question 2 adopted a monolingual comparable approach to investigate whether English-Chinese differences in the degree of connective explicitness affected Chinese translations within the investigated genre. Similar to Research Question 1, an examination of quantitative aspects of connective explicitness in the Chinese-translated texts was compared with those in the non-translated Chinese texts for Research Question 2.

The following procedures, equivalent to those of Research Question 1, were conducted for Research Question 2:

1. The tokenised and POS-tagged versions (in DOCX conformant) of the two sub-corpora CTTC and CCTC were opened separately in Microsoft Office Word, and a search of different tags (the tag Cbb, D and DK for Chinese) was made for CTTC and CCTC, respectively. Each instance was retrieved manually and analysed to determine whether it paralleled the working definition of connective in the present study. Furthermore, the selected connectives were classified in Table 4-2.
2. The tokenised and POS-tagged versions (in TXT conformant) of the two sub-corpora CTTC and CCTC were loaded individually into AntConc for a quick and automatic calculation of the corpus size in token count terms.
3. The four aspects of the corpus data (global statistics, connectives for different semantic relations, inter-sentential and intra-sentential connectives) were examined in accordance with the statistics obtained from the previous two steps.

4.3.3 Research Question 3 Method: A Parallel and Process-Oriented Investigation

Research Question 3: In cases where there is a discernible difference in connective explicitness between Chinese target texts and non-translations in the corpora, to what

extent are the connectives in the Chinese target texts retained from the English source texts, and to what extent are connectives added, omitted, or substituted during the translation process?

Research Question 3 assessed the extent to which the ST connectives are retained in the TT or omitted during the translation process and the extent to which the TT connectives are attributed to the addition during the translation process. Therefore, a more in-depth parallel process-oriented analysis was conducted for Research Question 3 by comparing ESTC and CTTC.

As discussed in Chapters 2 and 3, the connective-based translation operations are formally classified as (a) preservations; (b) additions; (c) substitutions and (d) omissions, in accordance with the type of operation a translator undertakes. Although the label connective suggests different syntactic categories, such as conjunction, linking adverbs and more, the present research mainly concentrates on the semantic relations illustrated in Table 4-3. Additionally, the present study also analyses implicitation, as the hypothesis regarding explicitation may be disproved if more implicitations than explicitations appear in the Chinese translations.

Table 4-3 Self-tagging label of each type of semantic relations

Hallidayan semantic relations	Sub-semantic relations	INTER-sentence relation (Occurrence)	INTRA-sentence relation (Occurrence)
Conditional	Contingency. Condition	A	a
Causal	Contingency. Cause	B	b
	Contingency. Inference	C	c
Adversative	Comparison. Contrast	D	d
	Comparison. Concession	E	e
Additive	Expansion. conjunction	F	f

Considering the above discussion, the data was analyzed using the E-C aligned files (in DOCX format) presented in Section 4.2.3. Every ST-TT pair was carefully read through and edited by adding the taggers with suitable labels. The following tagging scheme was adopted for data analysis: the abbreviation of explicitation or implicitation (*exp*: short for explicitation, *imp*: short for implicitation; only tagged when the shift matched the narrow concept of implicitation and explicitation) followed by the abbreviation of operation (*pre* short for preservations, *add* short for additions, *sub* short for substitutions, *omi* short for omissions) and the label of

semantic relation type. The symbol _ was inserted between the abbreviations. Thus, this scheme created labels such as *add_A*, *exp_sub_b* and *imp_omi_F* for the present study.

It should be highlighted that the tags were only annotated alongside the occurrence of connectives. Therefore, when there was an omission of ST connectives, the tag was inserted after the ST connective. When there was an addition or substitution of connectives in the TT, the tag was inserted after the TT connective. Figure 4-5 illustrates a sample of the tagged aligned parallel paragraphs under different conditions. The frequency of different operations was identified and calculated electronically in Microsoft Office Word by searching for the relevant labels.

Figure 4-5 A sample of tagged aligned parallel paragraphs

English	Chinese
But the paths from Kermadec to Kongsberg (KONO) and Bergen (BER), Norway, show smaller residuals for the 1990s than the 1980s.	但是 <i>pre_E</i> , 自克马德克到挪威孔思贝格 (KONO) 和卑尔根 (BER) 的路径, 从 20 世纪 80 年代到 20 世纪 90 年代残差是见效的。
The paths from Tonga to Graefenberg, Germany (GRFO) show no such systematic differences in the data between the 1980s and 1990s.	沿着汤加到德国格拉芬城堡 (GRFO) 路径的数据则 <i>exp_add_D</i> 在 20 世纪 80 年代和 20 世纪 90 年代之间并未表现出系统性的差异。
Some minor changes in our model would also <i>imp_omi_F</i> bring it closer to geophysical reality	在我们模型中的一些微小变化可能会使其更近于地球物理的真实情况。
These plots can be compared with VGP transition paths or patches from the palaeomagnetic records, which some argue occur at preferred longitudes and others interpret in other ways.	这些图可以与古地磁中记录的 VGP 转换路径或者部分区域进行比较, 一些人主张古地磁记录出现在特定精度, 另一些人则 <i>exp_sub_d</i> 以其他方式进行解释。

4.3.4 Research Question 4 Method: A Qualitative-Oriented Investigation

Research Question 4: To what extent can the shifts, namely connective additions, omissions, and substitutions during the translation process, be characterized as explicitations or implicitations, and are these shifts explainable by Becher's (2011a, 2011b) five triggers?

The quantitative analysis of Research Question 3 determined the extent to which the connective shifts in the corpus were classified as explicitations or implicitations. To answer whether explicitations or implicitations could be explained by Becher's (2011a, 2011b) five triggers, a

qualitative analysis was conducted. Before illustrating the methods and data used to substantiate the triggers, the five triggers were briefly summarized as follows:

- (1) *Complying with Communicative Norms:*** A higher degree of explicitness of certain texts originally written in the TL, or a higher frequency of particular connectives within the TL, can reflect the stylistic preferences of the target audience, register conventions, or similar dynamics. Translators may add certain connectives that are particularly pervasive or common among authors of the investigated genre and register.
- (2) *Exploiting Features of the Target Language System:*** Translators may use connectives to comprehensively use the syntactic and lexical features of the TL system. For example, in Chinese, two asyndetically connected clauses in compact clauses are normal, with readers of Chinese discourse needing to extract the semantic relation from the context. Therefore, if the connective is in English, it is left unspecified in Chinese. Such implicitation arises due to the translator's realization of the option provided by the Chinese syntax and lexicogrammar to omit connectives and make comprehensive use of the TL resources.
- (3) *Dealing with Restrictions of the Target Language System:*** A trigger of explicitation is the dearth of certain target language features. Translators tend to add connectives when confronting certain SL constructions that do not have a close equivalent in the target language.
- (4) *Avoiding Stylistically Marked Ways of Expression:*** Several translation academics have indicated that translations are typically more “homogenous”, “conventional” or “standardised” compared to non-translated texts. For example, Laviosa (1998) proposed the term “convergence”, while Toury (1995) assumed a “law of growing standardization” for translated texts. Thus, it is plausible to assume that the translator’s principal aim underpinning certain shifts is to make the TT appear more conventional or “normal”, which can avert the risk of creating a translation that does not meet the demands of clients or readers.

(5) *Optimising the Target Text's Cohesion:* When no immediate reason can explain the cross-linguistic difference as to why the translator undertakes an explicating or implicating shift, the translator's mediating role can explain such difference. As a mediator between cultures, the translator is responsible for ensuring a clear understanding between ST authors and TT readers. If a clear understanding is not achieved, the translator can potentially face a substantial level of risk that results in a loss of clients and receiving complaints from target language readers (Pym 2005, 2008). To avert such risks, translators may explicitate to optimise target text cohesion by adding connectives.

The following methods and data were used to substantiate the triggers:

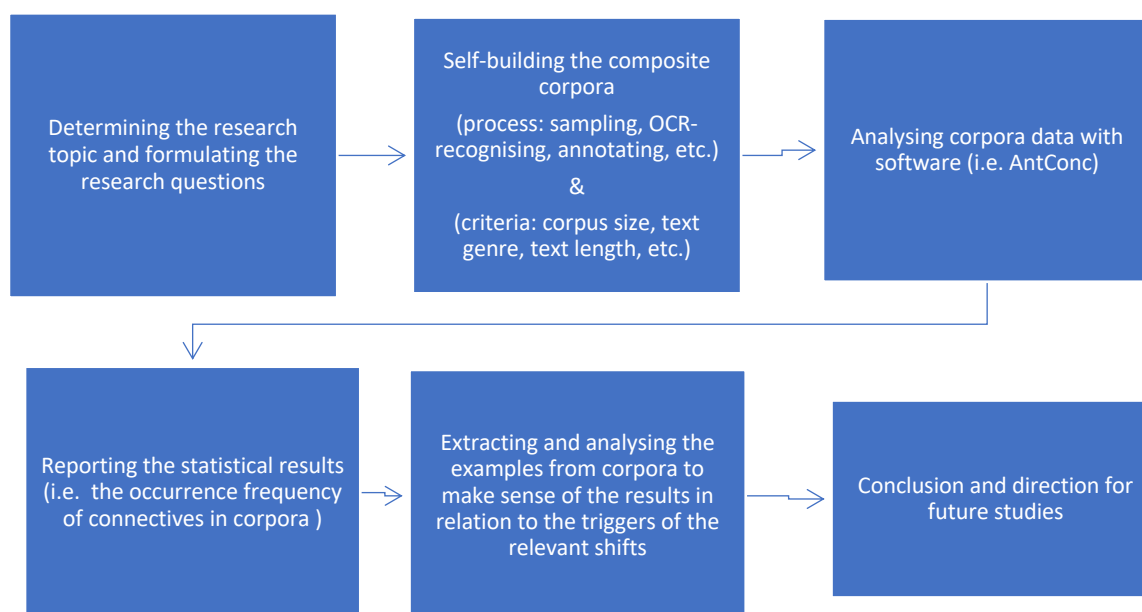
- The quantitative analysis of Research Questions 1 and 2 enabled the identification of triggers (1) and (4). Specifically, Research Question 1's CCTC results were used to determine whether Chinese authors of the investigated genre tend to maximize or minimize certain semantic relations. Research Question 2's results revealed high- and low-frequency connectives for varied semantic relations in both non-translated Chinese texts (CCTC) and translated Chinese texts (CTTC). By comparing the explicating or implicating connectives in CTTC with the quantitative findings from Research Questions 1 and 2, it was possible to determine whether translators tend to maximize or minimize certain semantic relations to comply with communicative norms or use high-frequency connectives to avoid stylistically marked ways of expression.
- The remaining triggers required a qualitative analysis, as they could not be generalized based solely on the quantitative findings from Research Questions 1 and 2. Specifically, the explicating or implicating shifts of connectives were compared to the differences between SL and TL norms in the register of scientific RAs.
- Concrete examples were classified and discussed to illustrate each type of trigger and explain why connective explicitations or implicitations occur in the present corpus.

4.4 Summary

Chapter Summary. The data and methodology introduced in this chapter are used to facilitate the study of connective-based explicitation/explicitness in the Chinese target texts of English scientific research articles within the integrated framework of comparable and parallel approaches. A set of computerised corpora were compiled, which can be further divided into different subcorpus.

Although a large amount of manual identification and classification is necessitated, the availability of some software suites, including TsingHwa OCR-2000 and CLAWS, provides robust support to overcome several technical challenges, such as text capture, Chinese word segmentation and POS-tagging. Overall, the present research follows the steps illustrated in Figure 4-6 flowchart (adapted from Li and Zhang 2010) to analyse data qualitatively and quantitatively and produce results for in-depth analyses in the following chapters.

Figure 4-6 Flowchart of the present research



Discussion. It is important to note that the notions of connective explicitness and connective explicitation should not be treated using the same method as the former refers to a textual feature, and the latter focuses on the verbalisation of inferable semantic relations. The present

study's research questions and procedures are specifically formulated to investigate the hypothesised connective explicitation and explicitness in the translated Chinese texts within the genre investigated. Furthermore, both the product-oriented and process-oriented aspects are covered through a comparison between the English source texts and non-translated Chinese texts.

Several theoretical and logical considerations have guided the design of the present study's research questions. The discussion of the English–Chinese texts contrast in communicative preferences of connectives, raised by research question 1, may be deemed as an attempt to establish whether the aforementioned observations by previous researchers, such as Huang (2007), can also be identified in the genre of scientific research RAs. However, more importantly, the additions or substitutions of connectives (whether they may be considered explicitations or not) can be explained using recourse to cross-linguistic contrasts (e.g. post-modification in English vs. juxtaposition in Chinese; a higher incidence of relative clauses in English vs. a higher incidence of juxtaposition in Chinese; hypotactic expressions in English vs. paratactic expressions in Chinese) or communicative preferences (e.g. more extensive use of connectives, more frequent use of certain connectives) in English and Chinese in numerous cases. Additionally, a quantitative investigation of all the hypothesised linguistic features triggering explicitations or implicitations would be challenging to fulfil and is also outside of the scope of this research. Therefore, the present study focuses on analysing a single representative example case, namely the occurrence frequency of connectives of various semantic relations. The findings will be highly pertinent to the previously discussed research questions because:

- i) The tendency of language A authors to express themselves more explicitly than language B authors using connectives within a specific genre (cf. Research Question 1) could affect translation strategies as higher degrees of connective explicitness are more likely to be retained by the translators in their renderings of target language B (cf. Research Questions 2 and 3).
- ii) Since professional translators are fully cognisant of cross-linguistic differences in communicative conventions, they adjust their translations accordingly, which can result in explicitations or implicitations in English–Chinese translations (cf. Research Questions 3 and 4).

Unlike Research Questions 1 to 3, which focus primarily on the frequency of connectives and related shifts, the final research question attempts to value when and why with regards to the triggers underlying explicitations or implicitations. Instead of testing a concrete hypothesis, the last research question departs from the basic assumption that each instance of explicitation and implicitation has a distinct cause (Becher 2011a, p.122). Additionally, the present study examines the assumption that there is no need to resort to a speculative assumption of a “translation-inherent” cognitive process of explicitation to explain the findings (cf. Blum-Kulka’s 1986 Explicitation Hypothesis).

As illustrated in Chapters 2 and 3, the present study elaborated several refinements to the working definition of connective. Therefore, in many cases, a certain item tagged as a conjunction may be excluded from the connective analysis. Similarly, a connective addition or omission must be excluded from the explicitation analysis as it may transcend the limits of explicitation’s narrow conceptualisation. Additionally, explicitation may be realised by substituting connective A, which can be interpreted as encoding several semantic relations, with a more explicit connective B, which encodes fewer semantic relations. Consequently, a process-oriented analysis that investigates each instance of shifts is required to determine whether a connective shift is a verbalisation of semantic relations. Hence, manual identification and classification of connective in each monolingual sub-corpus and connective shifts in the parallel corpus are necessary in the present case.

5 Chapter 5 Data Analysis of Research Questions 1 and 2: A Product-Oriented Analysis

Chapter 5 focuses on the product-oriented analysis of the data reports for Research Questions 1 and 2. Using mainly quantitative analysis, this chapter aims to determine the differences in the degree of connective explicitness between English and Chinese scientific research articles and between Chinese translations and non-translations of the same genre. Section 5.1 reports the results of the analysis of Research Question 1, which examines whether English scientific research articles exhibit a higher degree of connective explicitness than their Chinese counterparts. Section 5.2 reports the results of the analysis of Research Question 2, which examines whether Chinese translations exhibit a higher degree of connective explicitness than Chinese non-translations of the same genre.

5.1 Data Analysis of Research Questions 1

To address Research Question 1, the study examined four aspects of the corpus data: overall occurrences and percentages of connectives, distributions of inter-sentential and intra-sentential connectives, distributions of connectives for different semantic relations, and the range of connectives used in ESTC and CCTC. The results of the analysis are discussed in detail in the following sections.

5.1.1 Basic Analytical Components in Quantitative Terms

(i) Overall Occurrences and Percentages

Table 5-1 presents the overall occurrences and percentages of connectives used in the two sub-corpora.

Table 5-1 Percentage in token word count terms vs Percentage in token count terms

Sub-corpus	ESTC	CCTC
Corpus size in words/characters (A)	56478	93767
Corpus size in tokens (B)	56094	61762
Occurrences of connectives (C)	778	837
Percentage (C/A x 100%)	1.38%	0.89%
Percentage (C/B x 100%)	1.39%	1.35%

As illustrated in the Table, connectives in ESTC occur 778 times, accounting for 1.39% in token count terms and 1.38% in word count terms of all the sub-corpus ESTC. In contrast to

ESTC, connectives in CCTC have 837 occurrences, making up 1.35% in token count terms and 0.89% in character count terms. Given that Chinese characters and English words are not equivalent in a 1:1 ratio, the corpus size and percentage of connectives are compared in token count terms. Therefore, the lower proportion of connectives in CCTC (1.35%) compared to ESTC (1.39%) may indicate a lower degree of connective-based explicitness of the original Chinese texts compared to their English counterparts of the given text genre.

Pearson's Chi-square is a statistical test used to determine if there is a significant association between two categorical variables. Chi-square tests were employed to assess the significance of differences in the frequency of connectives between ESTC and CCTC. As illustrated in Figure 5-1, Pearson's Chi-square tests produce a p-value > 0.05 . This indicates that the difference between ESTC and CCTC regarding the frequency of connectives is not statistically significant. Therefore, it can preliminarily be concluded that the present corpus' Chinese and English scientific RAs do not demonstrate significant differences in the degree of connective-based explicitness.

Figure 5-1 The results of Chi-Square Tests of RQ1

Chi-Square Tests					
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.219 ^a	1	.640		
Continuity Correction ^b	.196	1	.658		
Likelihood Ratio	.219	1	.640		
Fisher's Exact Test				.652	.329
N of Valid Cases	117856				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 768.67.

b. Computed only for a 2x2 table

This finding is in contrast with the commonly accepted norms of “paratactic or implicit cohesion in original Chinese” (Lian 2002, pp.40–46; Song 2022, p.153), given that English and Chinese texts in the corpus feature a similar reliance on connectives, and correspondingly a similar degree of cohesion. However, considering that the present study is mainly connective-grounded, it is not surprising that ESTC does not demonstrate a more extensive use of connectives than CCTC. This is because realising logical-semantic relations in English is not necessarily through connectives, as hypotactic languages, including English, can rely on various linguistic forms (both lexical and morphological) to explicitly mark logical-semantic

relations (Wang 1984, p.241). For example, Chen's (2006) study demonstrated that the Chinese causal connective 因为 *yinwei* [*because*] has a wide variety of ST equivalent English forms, which can be connective or other structures or terms, such as *be caused by*, *because of*, *reason* and a relative clause. In contrast, compared to their English counterparts, Chinese ones rely more on connectives to express complex logical relations due to the lack of prepositions and formal changes of tenses and aspects in Chinese (Shang 2020, p.119).

Moreover, such Chi-Square test' findings highlight the importance of the given text genre. Reiss (1989) classifies texts into three types according to their text functions: informative, expressive, and operative. As a typical register of academic writing, research articles belong to informative texts, aiming to use logic or referential meaning to convey information, facts, opinions, etc. Correspondingly, emphasising logical-semantic relations and marking them explicitly in the context is typical in the given text genre. Thus, it is justifiable that Chinese RAs illustrate no tendency for a lower degree of explicitness compared to English ones in terms of the use of connectives.

(ii) Distributions of Inter-Sentential and Intra-Sentential Connectives

Table 5-2 provides the inter-sentential connection and intra-sentential connection results. As indicated below, the Chi-square value in Table 5-2 (Chi-square value: 20.659) is used to determine if there are significant differences between the distributions of inter-sentential and intra-sentential connectives in ESTC and CCTC. The p-value less than 0.05 (Significance (p): < 0.001) indicates that the observed differences are statistically significant. Therefore, it implies that there are significant differences in the frequency of inter-sentence and intra-sentence connectives between ESTC and CCTC. Intra-sentence links are more predominantly used (80.29%) than inter-sentence links (19.71%) in CCTC. The same tendency is also observed in ESTC as intra-sentential options (70.57%) are more frequently used than inter-sentential options (29.43%) in ESTC. The results indicate that Chinese and English authors of scientific RAs tend to exhibit similar patterns in the overall distribution of inter-sentence and intra-sentence connectives.

Table 5-2 Distribution of intra-sentential/ inter sentential relations indicated by connectives

	INTER-Sentence	INTRA-Sentence
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	Occurrence	%	Occurrence	%
ESTC	229	29.43	549	70.57
CCTC	165	19.71	672	80.29
Pearson Chi-Square: 20.659				
Significance (p): <0.001				

However, there is a slightly heavier reliance on intra-sentential connectives in CCTC (80.29%) than in ESTC (70.57%) and correspondingly a slightly heavier reliance on inter-sentential connectives in ESTC (29.43%) than in CCTC (19.71%). Additionally, the contrast between intra-sentential and inter-sentential discourse markers is less sharp in ESTC (41.14% difference between intra-sentential and inter-sentential connectives) than in CCTC (60.58% difference between intra-sentential and inter-sentential connectives). As illustrated in the above table, the Chi-square value is 20.659 and the $p\text{-value} < 0.05$, which reveals that the corpus of different languages has significant differences in the frequency of the use of inter-sentence and intra-sentence connectives.

As discussed in the previous sub-section, there is consensus that English predominantly utilizes a hypotactic structure, while Chinese favors a paratactic approach. Nida (1982, p.23) highlights this distinction as one of the most significant linguistic differences, stating, “for Chinese and English, perhaps one of the most important linguistic distinctions is the contrast between parataxis and hypotaxis.” Parataxis in Chinese involves linking words or clauses primarily through their inherent meanings or logical connections, promoting fluency and coherence. Conversely, hypotaxis in English places greater emphasis on language forms—both lexical and morphological—to achieve cohesion. Therefore, the practice of Chinese authors in scientific research articles (RAs) inserting connectives to explicitly provide information on logical-semantic relations, facilitating reader comprehension of complex sentences segmented by commas, might initially seem at odds with the paratactic nature of Chinese. However, this can be understood as a strategic adaptation in the specific genre of scientific RAs. Even within a predominantly paratactic framework, the deliberate insertion of connectives serves to ensure clarity and assist readers in navigating through intricate logical connections between clauses. This adaptation underscores a nuanced application of parataxis in Chinese scientific discourse, aiming to enhance readability without compromising the inherent linguistic orientation towards parataxis (refer to Sections 6.2 and 6.3 for further details).

(iii) Distribution of Connectives for Different Semantic Relations

Table 5-3 shows that CCTC and ESTC present the same distribution regarding connectives based on semantic relations.

Table 5-3 The proportion of conditional, causal, adversative, and additive connectives

Hallidayan semantic relations	ESTC		CCTC	
	Occurrences	Percentage	Occurrence	Percentage
Conditional	90	11.57	53	6.33
Causal	117	15.04	216	25.81
Adversative	233	29.95	257	30.70
Additive	338	43.44	311	37.16
Total	778	100%	837	100%

Specifically, additive connectives account for the most significant proportion (37.16%) of the overall connectives in CCTC, followed by adversative connectives (30.70%) and causal connectives (25.81%). Conditional connectives are the least represented (6.33%) in the overall CCTC connectives. Similar to CCTC, the appearance of additive connectives in ESTC is also pre-dominant as it accounts for the overwhelming majority (43.44%) of the overall connectives in the sub-corpus. Adversative connectives also occupy a substantial proportion (29.95%) of the overall CCTC connectives. Furthermore, the use of Causation and Condition is less frequent compared to the other connectives, with a frequency of 15.04% and 11.57% respectively.

Table 5-4 shows the occurrence and percentage of connectives regarding different types of senses, and the results are listed in numerical order.

Table 5-4 The distribution of connectives regarding different senses

senses indicated by connectives in ESTC			senses indicated by connectives in CCTC		
	Occurrence	%		Occurrence	%
Comparison. Contrast	36	4.63	Contingency. Condition	53	6.33
Contingency. Inference	58	7.46	Contingency. Cause	93	11.11
Contingency. Cause	59	7.58	Contingency. Inference	123	14.70
Contingency.	90	11.57	Comparison.	126	15.05

Condition		Contrast	
Comparison. Concession	197 25.32	Comparison. Concession	131 15.65
Expansion. conjunction	338 43.44	Expansion. conjunction	311 37.16
	778 100		837 100

The table shows that the top two most frequent senses for ESTC and CCTC are the same: *Expansion.Conjunction* and *Comparison.Concession*. These senses account for more than 50% of all semantic types annotated in each sub-corpus, which illustrates the importance of the two senses in realising the semantic relations within the given text genre. Nonetheless, there are also differences between ESTC and CCTC. Specifically, compared with ESTC, quantitatively, CCTC features: (i) slightly lower total occurrences and percentages of Conjunction and Concession senses marked by connectives; (ii) much heavier dependence on contrast connectives which appear nearly three times more frequently; (iii) higher proportions of causal connectives, including connectives for Inference sense and Cause sense; (iv) lower total occurrence and proportion of conditional connectives.

(iv) Range of Connectives

If the lists of connectives are examined (see Appendix III and IV), it becomes clear that there are more types of connectives in Chinese than in English, although some forms have few instances. For example, CCTC features 13 types of connectives to realise a Condition sense, whereas ESTC only features 8 types. The gravitation towards paired connectives for many logical-semantic relations primarily causes a less restricted range of connectives in original Chinese texts. As shown in Table 5-5 below, although Chinese non-translations demonstrate a heavier reliance on stand-alone connectives to realise semantic relations, the 89 occurrences of paired connectives reflect 34 types of paired connectives.

Table 5-5 Stand-alone connectives vs Paired connectives for Intra-sentential relations in CCTC

Hallidayan semantic relations	More specific semantic relations	INTRA-Sentence connections	
		Stand-alone	Paired
Conditional	Contingency. Condition	41	12
Causal	Contingency. Cause	71	22

	Contingency. Inference	123	0
Adversative	Comparison. Contrast	99	27
	Comparison. Concession	116	15
Additive	Expansion. conjunction	298	13
Total		748	89

In contrast, the use of paired connectives is not acceptable in English in most cases. Therefore, since the paired construction is only an option exclusively in Chinese, it will not be elaborated on. The following section will examine the statistics obtained from the translated Chinese texts to determine whether this distinctive linguistic element characteristic tends to be retained or whether such paired construction will be under-represented in Chinese translations.

The use of connectives seems highly selective, as it varies from author to author. For example, according to most Chinese grammars (such as Liu et al. 2001), 亦 is an ancient Chinese function word that is usually used in idioms, such as 反之亦然 *fanzhiyiran* meaning *and vice versa* and 人云亦云 *renyunyiyun* meaning *echoing the views of others*. The additive connective 亦 *yi* [*also*] only appears in one Chinese non-translation in the CCTC. Thus, it can be argued that this “unusual” use of the word potentially points to what Toury (1995) describes as “idiosyncrasy”.²⁵

5.1.2 Summary of Research Question 1 and the Discussion

Findings. As demonstrated above in quantitative terms, the findings of research question 1 are summarised below:

(1) CCTC and ESTC feature a similar degree of connective-based explicitness, as there

²⁵ Toury defined (1995, p.42) idiosyncrasy as "individual traits, inclinations, and choices that deviate from the socially expected and culturally approved patterns of behaviour". He suggested that idiosyncrasies can be seen as the individual characteristics of translators that are not necessarily determined by social or cultural factors. These choices may reflect the translator's personal preferences, experiences, or beliefs, and can contribute to the diversity of translation practice.

- are no statistical differences in the frequency of connectives in the two sub-corpora.
- (2) Both ESTC and CCTC have a heavier reliance on intra-sentence connectives than inter-sentential ones to realise logical intra-sentential relations. However, compared to ESTC, CCTC is characterised by more frequent intra-sentential connectives and less frequent inter-sentential connectives.
 - (3) CCTC and ESTC feature similar overall distributions of connectives regarding different types of semantic relations. Additive, adversative and causal connectives are more likely to be used than conditional connectives in ESTC and CCTC. In contrast to ESTC, CCTC is characterised by a larger dependence on connectives of Contrast, Inference, and Cause senses and a smaller dependence on connectives of Conjunction, Concession and Condition senses.
 - (4) CCTC features a more comprehensive range of connectives than ESTC. This is primarily due to the paired construction of connectives, which is exclusively acceptable in Chinese for most logical-semantic relations.

Discussion. As reviewed in the framework discussion of Chapter 3, to ensure a reasonable level of coverage of English and Chinese connectives, the double standard is used to delimit the elementary unit for analysis. The double standard is 1) syntactically, an elementary unit should contain at least one predicate and express at least one proposition, and 2) functionally, an elementary unit should be related to others with some propositional function—that is, not acting as a grammatical element of others. Any connectives link elementary units are counted, while other conjunctive devices, especially those below the syntactical level of elementary units, are excluded from the analysis.

It should be noted that although commas can help to simplify the identification of relations marked by connectives in Chinese, this may not necessarily be for English connectives. For example, a Chinese connective encodes a semantic relation, such as the causal connective 为 *yinwei* [because] in Example 5-1²⁶, which is almost always accompanied by a punctuation (usually period and/or comma) preceding or flanking it. In contrast, the comma is not a sensible solution to delimit clauses in English. The comma-delimited approach is a strategy for visually identifying the boundaries of connected clauses in Chinese by observing punctuation, especially commas. It's a technique that aids in the analysis of connectives and their associated

²⁶ Examples 5-1 and 5-2 are examples found in the corpus.

relations in the context of the Chinese language. If I apply the comma-delimited approach to Chinese and English sentences, the causal relation and the English connective *because* will not be selected. Thus, the commonly adopted comma-delimited approach (cf. Cao et al. 2018) is not adopted in the present study to prevent the loss for the connective count.

Example 5-1

EST: 【...】 although a direct comparison may be misleading **because** our simulation lacks rigid plates

CTT: 【...】 尽管这种直接的对比可能会令人误解, **因为**我们的模拟缺少坚硬板块。

Back-translation: 【...】 although this direct comparison may be misleading(,)because our simulation lacks rigid plates

However, the difference in the sentence structure and the system of the language pair still necessitates a rethinking of other situations. For example, refer to the below-listed Example 5-2. If I apply the current double-standard approach to the Chinese sentence, one logical-semantic relation will be annotated, and the additive connective *并* *bing* [*and*] will be identified as a connective. However, if the same logic of delimitation is applied to the English sentence, no semantic relation will be identified. This is because the unit flanking the conjunctive device *with* is not qualified as an elementary unit, given that it is not an adjunct verb clause followed by *with*.

Example 5-2

EST: Temperature is warmer before 200 kyr BP, **with** a well-marked peak around 215 kyr BP.

CTT: 从距今 20 万年前再向前,温度变暖和一些, **并**在距今 215 万年左右达到峰值。

Back-translation: From 200,000 years ago, the temperature became warmer and peaked around 2.15 million years ago.

In other words, although semantically, the two sentences express the same meaning, one semantic relation captured in one language would be lost in its counterpart due to the difference between the two languages. In this case, the identified semantic relation and the corresponding connective in the translation are not necessarily related to explicitation. Such a case may be prevalent due to the frequent use of non-verbal and static expressions in English and the difference in the range of conjunctive devices of the two language pairs (see Sections 6.2 and 6.3). To make up for this section to the maximum extent, Research Questions 3 and 4 were examined to provide supplementary findings for this section. In Research Questions 3 and 4, every connective-based shift, including additions, omissions, and preservation by language forms other than connectives, was investigated to determine whether there is an addition or loss of semantic relations. Such addition and loss are defined as explicitation and implicitation, respectively, which are key research subjects of the present study.

5.2 Data Analysis of Research Question 2

To address Research Question 2, the chapter compares the use of connectives in the CTTC and the CCTC, using the same four analytical aspects applied to the ESTC and CCTC in Section 5.1. The results of this analysis are also discussed in detail in the following sections.

5.2.1 Basic Analytical Components in Quantitative Terms

(i) Overall Occurrences and Frequencies

Table 5-6 shows the frequency profiles of connectives in the sub-corpus CCTC and CTTC.

Table 5-6 Percentage of connectives in tokens count terms in CTTC and CCTC

	CTTC	CCTC
Corpus size in words/characters (A)	68229	93767
Corpus size in tokens (B)	44188	61762
Occurrences of connectives (C)	985	837
Percentage (C/A x 100%)	1.44%	0.89%
Percentage (C/B x 100%)	2.23%	1.35%

As the two sub-corpora are of different sizes, frequencies were compared in token count terms and percentages. As illustrated in the table, connectives are more frequently used in CTTC (985 instances in CTTC versus 837 instances in CCTC) and account for a more substantial proportion of tokens of connectives in CTTC than those in CCTC (2.23% and 1.35% in tokens count terms, respectively).

As illustrated in Figure 5-2, the Pearson Chi-square test results show that the p -value is <0.05 . Hence, it is believed that whether the text in the corpus is translated or not has a significant impact on the frequency of connectives. Correspondingly, it can primarily be concluded that compared to their non-translated counterparts, which are produced in the same TL, Chinese academic translated texts demonstrate an explicating trend by drawing more heavily on connectives.

Figure 5-2 The results of Chi-Square Tests of RQ2

Chi-Square Tests				
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)
Pearson Chi-Square	116.398 ^a	1	<.001	
Continuity Correction ^b	115.881	1	<.001	
Likelihood Ratio	114.425	1	<.001	
Fisher's Exact Test				<.001
N of Valid Cases	105950			

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 759.89.

b. Computed only for a 2x2 table

This finding is in line with Chen's (2006) observation of translated Chinese popular science texts, which have a higher occurrence of connectives than non-translated Chinese texts of the same text genre. This finding is also further confirmed by Xiao and Hu's (2015, p.170) of general translational Chinese, which has a relatively higher proportion of conjunctions than native Chinese.

On the other hand, according to Xiao and Hu (2015, p.104), genres of popular lore and academic prose generally demonstrate a more frequent use of conjunctions in non-translated texts. Furthermore, Shang (2020) found that non-translated Chinese academic texts and Chinese academic translated texts do not show a difference in the degree of explicitness, as the overall frequency of connectives of the translations and non-translations is similar. Furthermore, the Chinese translations display an implicating trend in some logical relations (viz. progressive, juxtaposed and purpose) in Shang's study. Nonetheless, the present study's findings are in contrast with those of Xiao and Hu (2015) and Shang (2020). One possible explanation of such contrast is that differences exist in the scopes of the studies. For example, from the working definition, connectives in the present study and conjunctions for Xiao and Hu (2015, p.53) overlap but certainly do not equate.

Furthermore, Shang (2020) adopted the classification of connectives of Liu et al. (2001), which is mainly associated with the customary Chinese writing style. As for *customary Chinese writing style*, it refers to the established conventions, linguistic norms, and traditional practices in the way Chinese text is typically written. Here it specifically relates to the classification of connectives used in Chinese writing, reflecting common linguistic features and rhetorical structures prevalent in various genres and academic contexts. However, as stated in Chapter 3, the classification and typology of connectives in the present study were proposed to ensure a

reasonable level of coverage of English and Chinese connectives. Furthermore, the paired construction of connectives in the present study was counted as one token in many cases to avoid nonessential double-counting semantic relations compared to English cases. It could also be genre-dependent, as the present data are the genre of RAs of natural science. The data used by Shang (2020), for example, are the translations of a Handbook in the domain of education, which may lead to differences in findings.

The discussion in 5.1.1 has demonstrated that the corpus' English and Chinese academic non-translated texts do not display significant differences in the degree of connective-based explicitness. Though, such a tendency of the English source texts has not been held in their translated Chinese corpus CTTC in the present study as there is a specific explicating trend for Chinese academic translated texts compared to their non-translated counterparts in the same language. The more frequent use of connectives and the correspondingly higher degree of connectives-based explicitness in CTTC may suggest that i) compared to English source texts, translators have a tendency to add connectives during the E-C translation process of the given text genre, and ii) compared to the originally produced Chinese texts' authors, translators in the Chinese scientific RAs community tend to draw more heavily on connectives, which helps to mark semantic relations explicitly and strengthen logical relationships between units.

(ii) Distribution of Inter-Sentential and Intra-Sentential Connectives

Table 5-7 demonstrates the ratio of inter-sentential and intra-sentential connections indicated by connectives in CCTC and CTTC. Referring back to the ratio of inter-sentential and intra-sentential connections in the English source texts (see the discussion in 5.1.1), it was found that Chinese translations tend to have a similar pattern as their source texts.

Table 5-7 The ratio of inter-sentence and intra-sentence connectives

	INTER-Sentence		INTRA-Sentence	
	Occurrence	% (of the total connectives)	Occurrence	% (of the total connectives)
CTTC	282	28.63	703	71.37
CCTC	165	23.02	672	76.98
Chi-Square: 19.429				

Firstly, for the total connectives in CCTC and CTTC, most of the occurrences with a proportion of more than 70% display intra-sentential relations. In contrast, a significantly smaller proportion of 28.63% and below function as inter-sentential markers. Secondly, compared to CCTC, CTTC demonstrates a larger dependence on connectives above the sentence level and the opposite below the sentence level. Thirdly, the gap regarding inter-connectives and intra-connectives is less marked in CTTC (28.63% versus 71.37%, with a difference of 42.74%) than in CCTC (23.02% versus 76.98%, with a difference of 53.96%).

As reviewed previously (cf. Section 5.1.1), compared to CCTC, ESTC features i) a larger dependence on inter-sentential connectives versus a smaller dependence on intra-sentential connectives, and ii) a less marked gap between the proportion of intra-sentential connections and that of inter-sentential connectives. If most of the connectives in the translations are carried over from equivalent English connectives, or motivated by certain structures in the source texts, it is, therefore, predictable that ESTC and CTTC feature similar overall proportions regarding the distribution of intra-sentence and inter-sentence connections marked by connectives.

At the same time, in contrast with CCTC, CTTC features an elevated frequency of connectives inter-sententially and intra-sententially if the corpus size is considered. Table 5-8 compares the occurrences and the proportions of inter-sentence and intra-sentence connectives of the total tokens of the corresponding sub-corpus.

Table 5-8 The proportion of inter-sentence and intra-sentence connectives (in total corpus size count terms)

	CTTC		CCTC		Chi-square	p-value
	Occurrence	% (of the tokens of CTTC)	Occurrence	% (of the tokens of CCTC)		
INTER-Sentence	282	0.64	165	0.27	84.405	<0.001
INTRA-Sentence	703	1.59	672	1.09	50.854	<0.001

As shown in the table, CTTC features a larger proportion of connectives, both at inter-sentence (0.64% of CTTC versus 0.27% of CCTC) and intra-sentence levels (1.59% of CTTC versus 1.09% of CCTC) ($p\text{-values} < 0.05$) than CCTC. The results indicate that translators are more sensitive towards logic-semantic relations and are more likely to rely on connectives to elaborate the logic-semantic relationship, whether above or below the sentence level.

(iii) Distribution of Connectives for Different Semantic Relations

Table 5-9 illustrate the distribution of connectives in CCTC and CTTC across four semantic relations: Condition, Causality, Adversity and Addition.

Table 5-9 The distribution of connectives in CCTC and CTTC across four basic semantic relations

Hallidayan semantic relations	CTTC		CCTC	
	Occurrence	%	Occurrence	%
Conditional	109	11.38	53	6.33
Causal	154	15.63	216	25.81
Adversative	311	31.57	257	30.70
Additive	408	41.42	311	37.16
Total	985	100%	837	100%

The table results indicate that additive connectives (41.42%) account for the largest proportion of all the instances of connectives in CTTC, followed by adversative connectives (31.57%), causal connectives (15.63%) and conditional connectives (11.38%). This order of connectives is in line with one of the connective distributions in ESTC and CCTC (cf. Section 5.1 Table 5-1). Additionally, it should be noted that the proportion of connectives for each semantic relation in CTTC is more similar to that in ESTC than in CCTC, which may reflect the influence of the source language texts. Hence, this provides evidence against the simplification hypothesis for translations.

Table 5-10 illustrates the distribution of connectives in different senses in the two Chinese sub-corpora.

Table 5-10 The distribution of connectives regarding different senses

senses indicated by connectives in CTTC			senses indicated by connectives in CCTC		
	Occurrence	%		Occurrence	%
Contingency. Cause	75	7.61	Contingency. Condition	53	6.33
Comparison. Contrast	78	7.92	Contingency. Cause	93	11.11
Contingency. Inference	79	8.02	Contingency. Inference	123	14.70
Contingency. Condition	109	11.07	Comparison. Contrast	126	15.05
Comparison. Concession	236	23.96	Comparison. Concession	131	15.65
Expansion. conjunction	408	41.42	Expansion. conjunction	311	37.16
	985	100		837	100

Similar to the ESTC case, the proportions of ultra-high-frequency senses are the same in CCTC and CTTC: Conjunction and Concession senses are more likely to be marked by connectives, with a total proportion over 50% of all the occurrences of connectives. Such findings may suggest that Concession and Conjunction are the core semantic relations commonly illustrated in both English scientific and Chinese scientific RAs. Correspondingly, these core relations are also highlighted in the Chinese translations through connectives. As stated in 5.1.1, in comparison to CCTC, ESTC has a higher proportion of conjunctive, concessive and conditional connectives and a lower proportion of causal and contrastive connectives. Similarly, compared to the originally produced Chinese corpus (viz. CCTC), the Chinese translational corpus (viz. CTTC) also features a higher proportion of conjunctive, concessive and conditional connectives. Furthermore, the proportion of connectives has increased in Contrast, Inference and Cause, especially compared to their English source texts.

Table 5-11 presents the percentages of connectives in the whole corpus and the results of the Chi-Square Tests.

Table 5-11 The frequency of connectives in the whole corpus regarding different senses

Relation	Sense	CTTC		CCTC		Chi-square	p-value
		Occurrence	%	Occurrence	%		
Condition	Contingency. Condition	109	0.247	53	0.085	43.666	< 0.001

Causation	Contingency. Cause	75	0.170	93	0.151	0.597	0.440
	Contingency. Inference	79	0.179	123	0.199	0.562	0.454
Adversity	Comparison. Contrast	78	0.177	126	0.204	1.013	0.314
	Comparison. Concession	236	0.534	131	0.212	77.360	<0.001
Addition	Expansion. conjunction	408	0.923	311	0.504	67.344	< 0.001
Total		985	1.44	837	0.89	117.398	<0.001

The results demonstrate that the CTTC has a higher number and percentage of connectives in Condition, Concession, and Conjunction (with a p-value <0.05) than the CCTC. This suggests that the translated Chinese version relies more heavily on connectives to mark Conjunctive, Adversative, and Concessive semantic relations than the original Chinese version. On the other hand, the difference in the percentages of connectives between CTTC and CCTC is not statistically significant (with a p-value >0.05) in the remaining three semantic types. Therefore, the difference in the degree of connective explicitness is not significant between the two Chinese corpora in Cause, Inference, and Condition.

As CTTC has a higher number of connectives than their source texts across all the senses (compared to the ESTC data in 5.1.1), it is possible that the addition of connectives during the translation process is responsible for the features observed in CTTC relative to CCTC, namely, i) the increased levels of connective explicitness in Conjunction, Adversity, and Concession, and ii) the smaller difference in the reliance on connectives in Cause, Inference, and Condition.

(iv) Range of Connectives

Table 5-12 compares the frequencies of stand-alone and paired connectives, which are measured in terms of the proportion of stand-alone or paired connectives in the total number of connectives for each semantic relation.

Table 5-12 Stand-alone connectives vs Paired connectives for Intra-sentential relations in CCTC and CTTC

Hallidayan semantic relations	More specific semantic relations	INTRA-Sentence connections					
		Stand-alone			Paired		
		CCTC		CTTC	CCTC		CTTC
Conditional	Contingency. Condition	41	52.77%	52	59.10%	12	47.23%
						36	40.90 %

Causal	Contingency. Cause	70	75.27%	56	64.37 %	23	24.73%	31	35.63%
	Contingency. Inference	123	100%	97	100%	0	0%	0	0%
Adversative	Comparison. Contrast	24	48%	35	53.85%	26	52%	30	46.15%
	Comparison. Concession	145	87.35%	210	82.35%	21	12.65%	45	17.65%
Additive	Expansion. conjunction	342	95.80%	360	93.26%	15	4.20%	31	6.74%
Total		745	88.48%	814	87.34%	97	11.52%	118	12.68%

As illustrated in the table, stand-alone connectives are of high-frequency bands in comparison to paired connectives in the two Chinese sub-corpora—i.e. with a proportion greater than 80%, while paired connectives are of the usage band 12.68% and below. Overall, the results show that although the difference is not significant (12.68% vs 11.52%), translated Chinese (viz. CTTC) still utilises a slightly greater number of paired connectives than native Chinese (viz. CCTC) within the given genre. Hence, the paired construction of connectives, as one of the distinctive linguistic element characteristics of the Chinese language, tends to be retained and is not under-represented in Chinese translations.

The gravitation towards stand-alone connectives is prominent across all the semantic relations, although there are variations across senses: in the four senses (*Inference*, *Conjunction*, *Concession* and *Cause*), stand-alone connectives are predominantly used; in the *Condition* and *Contrast* senses, the contrast is less marked between the proportion of stand-alone connectives and that of paired connectives; and in the *Contrast* sense, the difference is reversed in the two sub-corpora, that is, stand-alone connectives are used more frequently in CTTC, whereas paired connectives are applied more frequently in CCTC. Hence, in terms of the use of stand-alone and paired connectives, translational Chinese within the genre does not necessarily demonstrate a simple normalisation tendency.

Table 5-13 demonstrates that there are similar numbers of inter-sentential connective types in the two Chinese sub-corpora (79 in CTTC versus 77 in CCTC).

Table 5-13 Type token ratio of INTRA-sentential connectives in CTTC and CCTC.

	CTTC	CCTC
Types of intra-S connectives (A)	79	77
Tokens of intra-S connectives (B)	703	672
Type-token ratio (A/B x 100)	11.24	11.46
Inverse type-token ratio (B/A)	8.89	8.73

However, suppose the lexical density of intra-sentential connectives is measured in terms of a standardised type-token ratio. In that case, there are subtle differences between translated and native Chinese within the genre. As shown in Table 5-13, the type-token ratio of intra-sentential connectives in CCTC (11.46) is slightly higher than that in CTTC (11.24). The connective difference implies that the range of intra-sentential connectives is more restricted in CTTC, and CTTC has a slightly higher repetition rate of intra-sentential connectives.

Nonetheless, Table 5-14 has contrasting results as it illustrates a higher type-token ratio of inter-sentential connectives (15.96 for CTTC versus 15.76 for CCTC). Thus, this indicates that lexical variability is less restricted in CTTC compared to that in CCTC in terms of the use of inter-sentential connectives.

Table 5-14 Type token ratio of INTER-sentential connectives in CTTC and CCTC.

	CTTC	CCTC
Types of inter-S connectives (A)	45	26
Tokens of inter-S connectives (B)	282	165
Type-token ratio (A/B x 100)	15.96	15.76
Inverse type-token ratio (B/A)	6.27	6.35

List 5-1(i) and (ii) shows the top-frequency (items that occur ten times and above) inter-sentential and intra-sentential connectives results, and the percentages refer to the proportion of the connectives in total tokens of inter-sentential or intra-sentential connectives.

List 5-1 Connective of high-frequency in CTTC and CCTC

(i) Inter-Sentence

CTTC	CCTC
1. 也 ye[also] (41) 2. 因此 yinci[therefore] (38) 3. 但是 danshi [However] (26) 4. 然而 raner[however] (24) 5. 不过 buguo[however](18) 6. 则 ze[whereas](15) 7. 此外 ciwai[moreover](14) 8. 还 hai[also] (11)	1. 因此 yinci[so](37) 2. 但 dan[but](22) 3. 也 ye[also](20) 4. 同时 tongshi[at the same time](13) 5. 还 hai[also](12) 6. 然而 raner[but](11)
187 instances 66.31%	115 instances 69.70%

(ii) Intra-Sentence

CTTC	CCTC
1. 而 er[and](63) 2. 并且 bingqie[and](49) 3. 但 dan[But] (43) 4. 并 bing[and](41) 5. 因为 yinwei[because] (36) 6. 但是 danshi[but](31) 7. 当...(时) [When] (25) 8. 而...则[and, whereas](24) 9. 也 ye[also](20) 10. 从而 conger[and therefore](20) 11. 虽然...但 suiran...dan[although](19) 12. 由于 youyu[as](18) 13. 且 qie[and](18) 14. 因此 yinci[so](18) 15. 同时[and](12) 16. 如果 ruguo[if](12) 17. 由 于...所 以 youyu...suoyi[because...(so)](11) 18. 因 为...所 以 yinwei...suoyi[because...(so)](11) 19. 如果...那么 ruguo...name[if...then](10)	1. 也 ye[also](100) 2. 但 dan[but](75) 3. 而 er[and](60) 4. 由于 youyu[because](38) 5. 并 bing[and](36) 6. 因为 yinwei[because](28) 7. 当...(时) dang...(shi) [when](23) 8. 从而 conger[thus](20) 9. 而...则 er...ze[whereas](16) 10. 而且 erqie[and](12) 11. 则 ze[whereas](10)
481 instances 68.42%	418 instances 62.20%

The results demonstrate that a small group of high-frequency connectives display a super large proportion (66.31% and above). Above the sentence level, there are 8 and 6 types of connectives of this usage band in CTTC and CCTC respectively, and 4 of those types overlap. Below the sentence level, there are 19 types in CTTC and 11 in CCTC, and 9 of those types overlap.

Previous translational corpora literature, including Pápai's (2004) translated Hungarian corpus and Chen's (2006) non-translated Chinese corpus of popular science studies, have illustrated that the higher proportion of connectives in translational texts is motivated by certain connectives which have a higher occurrence frequency than their counterparts in non-translational texts. Connectives' higher occurrence is accompanied by a tendency to favour a smaller range of linking devices than those featuring in non-translations. Nevertheless, the result of type-token ratios and distributions of high-frequency connectives indicate that although CTTC features a more repetitive use of intra-sentential connectives, it is less restricted in its variety of the most frequent connectives compared to the counterpart CTTC.

As demonstrated in List 5.2, the connectives that only appear in one of the Chinese sub-corpora account for a small proportion (3.05% and below).

List 5-2 List of the connectives that did not overlap in CTTC and CCTC

Connectives only appear in CTTC	Connectives only appear in CCTC
1. 倘使...那么 tangshi...name[if...(so)](8) 2. 倘若...则 tangshi...ze[if...(so)](6) 3. 倘若 tangruo[if](6) 4. 相反 xiangfan[in contrast](6) 5. 倘使 tangshi[if](1) 6. 相比之下 xiangbizhixia[by contrast](1) 7. 即使如此 jibianruci[even so](1) 8. 再 zai[then](1)	1. 故 gu[so](4) 2. 因为...故 yinwei...gu[because...(so)](4) 3. 因...故 yin...gu[because...(so)](3) 4. 若 ruo[if](2) 5. 总的看来 zongdekanlai [in short] (2) 6. 总的来说 zongdelaishuo[in short](2) 7. 由于...可见 youyu...kejian[because...(so)](1) 8. 考虑到...故 kaolvdao...gu[considering that...(so)] (1) 9. 之所以 zhisuoyi[the reason why](1) 10. 由此可见 youcikejian [it follows that](1) 11. 反而 faner[instead] (1) 12. 反之 fanzhi[otherwise](1) 13. 如...则 ru...ze[if...(then)](1)
30 instances 3.05%	25 instances 2.99%

The connectives that only appear once in the corpus may be due to the author or translator's stylistic preferences (cf. Toury's (1995) "idiosyncrasy"). The instances that appear more than once are typically formal and archaic, and this includes 倘使...那么 tangshi...name[if...(so)], 倘若...则 tangshi...ze[if...(so)], 倘若 tangruo[if], 故 gu[so], 因为...故 yinwei...gu[because...(so)], 因...故 yin...gu[because...(so)] and 若 ruo[if]. In contrast, four instances that appear in the CCTC list but not in the CTTC list are informal, colloquial, and simple, i.e. 总的来说 zongdelaishuo [in short] and 总的看来 zongdekanlai[in short], which usually have more formal alternatives, e.g. 总之 zongzhi for "in a word". Overall, formal connectives are more common in CTTC. Additionally, the occurrence of informal and simple connectives in CCTC may imply that the authors of non-translated texts within the genre are more likely to use simpler and informal forms than the Chinese translators. The data suggesting an increased prevalence of informal and simple connectives in non-translated texts, as opposed to more formal connectives in translated texts, may raise questions about the straightforward application of the simplification hypothesis to translations. However, it is important to note that the observed patterns could be influenced by various factors, including authorial style and individual preferences. While these findings might challenge the strict interpretation of the

simplification hypothesis, a comprehensive understanding would necessitate a nuanced examination of multiple contributing factors.

Regarding the degree of explicitness associated with the connectives *per se*, most connectives in the corpus are semantically specific as they only express a smaller set of logical-semantic meanings which at least belong to the same Hallidayan semantic relation. For example, for the present study's tagsets scheme, the connectives *但是* *danshi*[but], *然而* *raner*[however] and *而...则* *er...ze*[whereas] may indicate either *Contrast* or *Concession*. However, they generally express *Adversity* relations. As discussed in Chapter 3, the Chinese stand-alone connective *而*, however, is "flexible" in semantic encoding as it can fulfil different Hallidayan relations, viz. adversative and additive relation, expressing conjunction, contrast, or concession. Examples 5-3 to 5-6 give an illustration of this connective's semantic profiles:

Example 5-3

EST: Global P-wave models are typically based on relatively noisy short-period travel data reported to international data centres reported to international data centres by thousands of station operators worldwide.

CTT: 全球 p 波 模型 通常 基于 有 相当杂讯 的 短周期

Gloss: global p wave model typically based on have quite noise DE short-period
走时 数据, 而 这些数据 由 全球 范围 内 成千上万 的 台站 操作员
travel data, and these data by global scope in thousands of DE station operators
报告 到 国际 数据 中心。
report to international data centre

Example 5-4

EST: ...the inner ring would have had about half a kilometre of throw visible at surface above the crater floor, and the outer ring slightly less.

CTT: 内环 应该 有 大约 半 千米 的落差, 在撞击坑 底

Gloss: inner ring would have about half kilometre DE throw, at crater floor
之上 的 地表 可见, 而 外环 的 落差 稍 小。
above DE surface visible, and outer ring DE throw slightly less

Example 5-5

EST: Mesocosm experiments with complete communities, however, correlated highly with whole-lake responses to nutrient enrichments.

CTT: 而 具有完整 生物群落 的 围隔 实验 结果, 与 整个 湖泊 对

Gloss: however have complete communities DE mesocosm experiment result, with whole lake to
营养盐 富集 的 响应, 具有 很好地 相关性
nutrient enrichment DE response, have highly correlation

Example 5-6

EST: ... our model results suggest that slabs do not immediately penetrate, but instead build up in the transition zone.

CTT: ...结果 显示 板 不能 立即 穿透 , 而 是在 过渡带上 堆积....

Gloss: ... result suggest slab do not immediately penetrate , but BE in transition zone build up

The above examples illustrate that the connective *而且* can be used as an equivalent of *and* which can encode similarity relations between states of affairs, propositions, and speech acts (cf. Blühdorn 2010; Becher 2011a, pp.219-222). Moreover, within such a relationship, the relational roles taken by the two units are the same. This indicates that the two connective units may be identical to each other (Example 5-3) or may be in any contrast (Example 5-4). Furthermore, the connective *而且* can be used as an inter-sentential or intra-sentential concession connective as an equivalent form of, e.g. *however* (Example 5-5) and *but* (Example 5-6).

Table 5-15 shows that the use of stand-alone *而且* is more common in CTTC as CCTC has a higher *而且* occurrence frequency of 9.24% compared to CTTC's occurrence frequency of 7.17%. Nonetheless, the frequency results are not statistically significant due to the *p-value* > 0.05.

Table 5-15 Occurrence of less explicit connective *而且* in CTTC and CCTC.

Corpus	CTTC	CCTC
Occurrences of <i>而且</i> (A)	91	60
Occurrences of connectives (B)	985	837
Frequency (A/B x 100%)	9.24%	7.17%
Chi-square: 2.551 P-value: 0.110		

One possible explanation for the more frequent use of *而且* may be the so-called source language interference, especially the high-frequency connective *and* in ESTC. When referring back to the source texts, among the 91 stand-alone *而且* in CTTC, 24 were translated from the *and*, which is similar to the case illustrated in Example 5-3, and 41 were translated from a contrastive *and*, as the case in Example 5-4. Compared to the other contrastive connectives, like *whereas*, that cannot encode other relations other than *Contrast*, *and* is less explicit and less strong as readers often need to depend on the linguistic contexts, for example, a pair of antonyms, to decide the semantic relation encoded by *and*. Therefore, given that the original ST connective is *and* and it is less intense, translators are more likely to use *而且* which falls in between *Addition* and *Contrast*, instead of making a more strongly expressed *Contrast* relation.

The above discussions suggest that translational Chinese corpus CTTC generally demonstrates the same tendency as CCTC in the gravitation towards stand-alone connectives. However, CTTC also differs from CCTC in numerous aspects, including the range of variety, high-and-low frequency connectives and the use of less explicit connective 而.

5.2.2 Summary of Findings of Research Question 2 and the Discussion

Findings. The discussions of Research Question 2 are summarised in the following:

- (1) The comparison of the percentage of connectives illustrates that CTTC has a higher degree of explicitness than CCTC. This can help to explicate logical and semantic relationships between units and make translated texts more cohesive.
- (2) In the two Chinese sub-corpora, the frequency of intra-sentential connectives is significantly higher than inter-sentential connectives. Compared to CCTC, CTTC heavily relies on both inter-sentential and intra-sentential connectives.
- (3) In contrast to CCTC, CTTC features a higher proportion of conjunctive, concessive, and conditional connectives versus a lower proportion of causal and contrastive connectives of all the instances of connectives in the corresponding corpus.
- (4) Compared to CCTC, CTTC has a more restricted range of connectives below the sentence level versus a wider range above the sentence level. Moreover, CTTC has more varieties in the high-frequency connectives and a higher frequency of paired connectives. This illustrates that, to some extent, translational Chinese differs from the native Chinese norms within the genre.

Discussion. In this section, a closer comparison of the lists of connectives in their respective corpus sheds new light on the use of high-and-low frequency variations, simplification, and nominalisation. Although some of these findings, such as the preference of connectives in the respective corpora and the range of connectives, are not directly related to explicitation and explicitness defined in the present study, they are highly relevant to Research Question 4. Therefore, such findings were further used to examine whether an added connective during the E-C translation process aligns with the preference instantiated in specific corpora.

In this section, a higher frequency of connectives in the translations signals a departure from their English source texts and non-translated Chinese counterparts. Considering that the English non-translations do not demonstrate a higher degree of connective explicitness than the Chinese non-translations, it is reasonable to assume that the explicating trend found in the translations may be due to connective additions during the translation process. However, it might be the extreme case that all the source texts' connectives are omitted in the translations, and all the translations' connectives are added by the translator. Therefore, a parallel quantitative analysis of connectives was conducted, which is associated with the third research question. The analysis involved a detailed and in-depth investigation of all the connectives to determine the extent to which the connectives are added, omitted, or substituted during the translation process. The following chapter discusses the results of such analysis.

6 Chapter 6 Data Analysis of Research Question 3: A Process-Oriented Analysis

The chapter focuses on determining the extent to which the connectives are added, omitted, and substituted during the E-C translation process. According to the typology framework of this study (see Chapters 3 and 4), there are four subcategories under process-based translation patterns of connectives: preservations, substitutions, additions, and omissions. Based on the observation of the present corpus, a set of recurrent ST structures and the corresponding structure shifts during the E-C translation process motivate the occurrence of TT connectives. Therefore, this chapter also reviews these structures and the corresponding structural shifts. The statistical results of the four translational patterns of connectives are discussed in Section 6.1. The patterns alongside structural shifts in the corpus are introduced in the following Section 6.2. Lastly, the causes of the structural shifts and corresponding connective-related shifts are assessed in Section 6.3.

6.1 Distribution of Translational Patterns of Connectives

Table 6-1 shows the number and the percentage of the four connective-based translation patterns in the parallel corpus. The following observations can be made from the table:

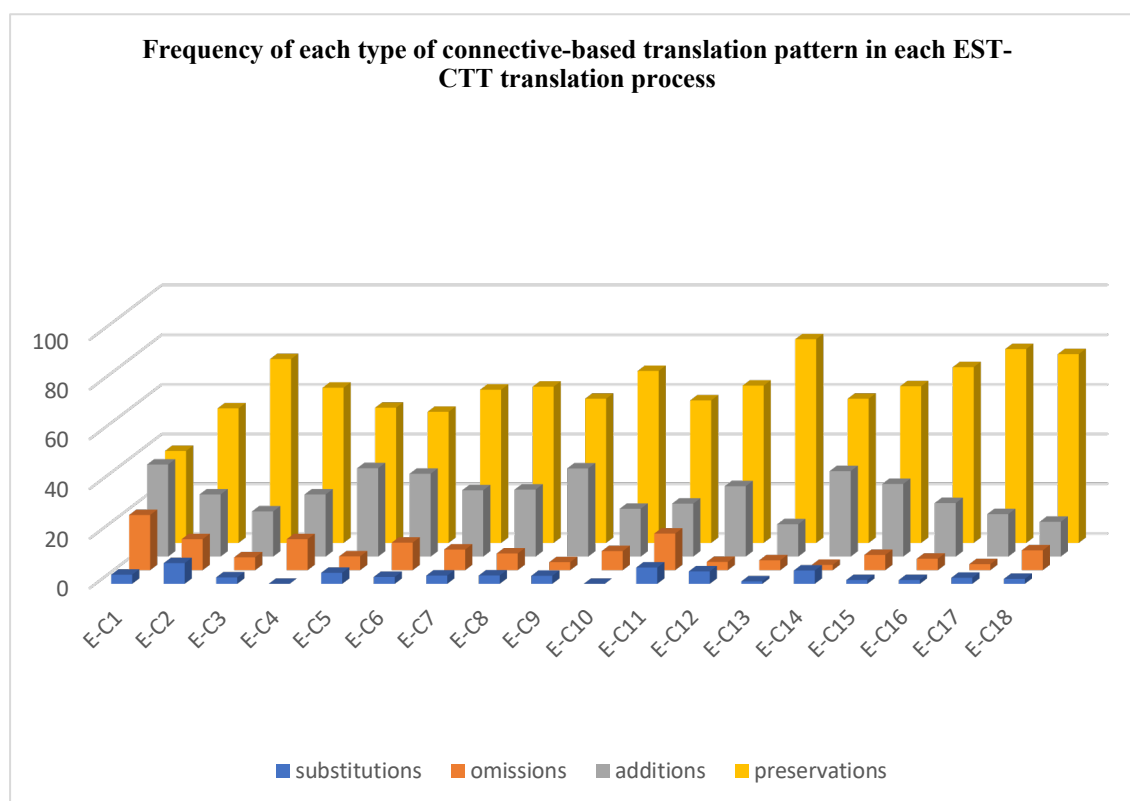
Table 6-1 Instance and frequency of connective-based translation patterns during the E-C translation process

Patterns	Preservations	Substitutions	Additions	Omissions	Total
Instances	675	34	276	69	1054
Frequency (%)	64.04%	3.22%	26.19%	6.55%	100%

- (a) 64.04% of the 1054 connective-based translation patterns are in the form of preservation, concerning translating an ST connective into a TT equivalent connective. As illustrated in Figure 6-1, every translator or group of translators in the corpus has made preservations of their prior choice, with a 37.037% or above frequency of preservations. In contrast, there are significantly fewer substitutions (34 instances which accounts for 3.22% of the total translation patterns) than preservations. This significant difference indicates that there is the tendency observed among the translators in the corpus showing it is common for professional translators to preserve the original

semantic and logical message expressed by an English connective between units, with an equivalent Chinese connective in the translations.

Figure 6-1 Frequency of each type of connective-based translation pattern in each EST-CTT translation process



(b) 276 additions of connectives have been identified, and there is a higher frequency of additions (26.19%) compared to omissions. Specifically, 69 connectives with an occurrence frequency of 6.55% were not translated. Furthermore, Figure 6.1 illustrates that there is a general tendency for the translator to make additions more frequently than omissions and substitutions. Therefore, it is reasonable to claim that apart from preservations, adding an inferable connective seems to be the most preferred strategy for translators to rephrase the original message in the E-C translations.

(c) As demonstrated in Table 6-2 below, 71.98% of the connectives in the translations reflect a carry-over from the source texts: 68.53% (675 out of 985 connectives) are preservations, viz. a verbatim translation of the ST connectives and 3.45% (34 out of 985 connectives) are substitutions, viz. a replacement of the ST connective by a more

semantically explicit TT connective. Additionally, 28.02% of the total connectives (276 out of 985 connectives) in the Chinese translations were added during the translation process.

Table 6-2 The source of the connectives in the Chinese translations

The source		Instance	Percentage
Being a carry-over from the ST	Preservation	675	68.53%
	Substitution	34	3.45%
Being added during the translation process	Addition	276	28.02%
Total		985	100%

Overall, the source text significantly affects the occurrence of connectives in E-C translations as most TT connectives reflect a carrying-over of ST connectives either in the form of preservation or substitution. Furthermore, the translation process *per se* may also have a crucial effect on connective occurrence as there is a net positive of connectives added in the translation process, with 276 connectives added vis-à-vis 69 connectives omitted.

The addition of connectives during the translation process has been demonstrated in numerous E-C parallel corpora of different texts, including Chen's (2006) corpus of English popular science texts and their translations published in Taiwan and Mainland China, Tang's (2018) corpus of an English speech and the interpretations of different subjects, and Shang's (2020) corpus of *Handbook of Social Justice in Education* and the translations. Such additions of connectives may result in a higher level of textual cohesion (Blum-Kulka 1986; Øverås 1998). As discussed in Chapter 5, although there are no significant differences, English non-translated texts contain fewer connectives than Chinese non-translated texts. Therefore, it can be justified to assume that the increased frequencies of connectives in the E-C translations, compared to Chinese non-translations, are primarily due to the additions during the translation process.

It is crucial to note that multiple studies have extensively commented on the namely controversial inherent, subliminal process of explicitation in translation (cf. Blum-Kulka 1986). For example, Olohan and Baker (2000) believed that a higher incidence of certain optional words, such as *that*, in translated English would provide evidence of such type of explicitation, while Becher (2010a) suggested that Olohan and Baker did not succeed in proving the

translation-inherent explicitation as concrete factors can explain the shifts or the higher frequency of the optional words. As illustrated quantitatively in the previous analysis, the number and frequency of omissions have been considered alongside additions and the latter accounts for a higher frequency of the total connective shifts. Nevertheless, it is important to question whether such a higher frequency of added connectives in the translation process and the correspondingly higher frequency of connectives in translations compared to non-translations provide evidence for translation-inherent explicitation. I would argue that this is not the case, because rather than “resulting from the process of translation performed by the translator on the source text” (Tang 2018, p.25), there are more concrete reasons that can explain the higher incidence of connectives in E-C translations of the present corpus. Specifically, the addition and omission cases identified in the corpus could be explained by two alternative explanations – “source language interference” and translators’ “conservatism” (see below for further discussion), which complies Becher’s (2010a, pp.6–7) proposed idea.

As discussed in Chapter 2, Tang (2018) argued that the hypothesis “explicitation is a Translation Universal” can be supported by the presence of explicitation in translations across different language pairs and text genres, irrespective of its form or frequency. This approach does not require demonstrating the existence of translation-inherent explicitation. Consistent with Tang’s approach, the findings of the present study provide evidence to support the hypothesis that “explicitation is a Translation Universal” in the language pair and text genre examined, as explicitation was observed in the data. This is further demonstrated by the following examples, specifically 6-1(a) and 6-2(a).

Examples 6-1 to 6-4 are typical cases of each type of translation patterns of connectives.

6-1. Addition: 因此 yinci [therefore, thus, so]

a. E: There they are resampled on the 90 by 110 m pixels of the elevation model to improve the signal-to-noise ratio.

C: 因此 他们 被 重新 采样为 高程模型 中的 90米 乘 110

Gloss: So they Passive-BEI again sampled elevation model in DE 90 meter multiply 110

米 的 空间 解析度, 以 提高 信噪比。

meter DE spatial pixel to improve signal-to-noise ratio

Back-translation: So they were resampled to the spatial pixels of 90m by 110m in the elevation model to improve the signal-to-noise ratio.

b. E: There are strong horizontal gradients as a result.

C: 因此 这里的 水平 梯度 很 大。

Gloss: So here DE horizontal gradient very large

Back-translation: So the horizontal gradient here is very large.

6-2. Substitutions: 但 dan[but] for and, inter-sentential 同时...也 tongshi...ye[at the same time...also] for intra-sentential and

a. E: ...the terrestrial biosphere has been a net sink for carbon, large enough to account for the missing carbon injected into the atmosphere and not accounted for in oceanic uptake or atmospheric storage.

C: ... 陆地 生物圈 一直 是一个净的 碳汇槽, 大到 足以 达到 进入 大气

Gloss: terrestrial biosphere always be a net sink carbon large enough achieve inject atmosphere
中的“遗失 碳汇”的量, 但 还 不足以 解释 海洋吸收 和 大气
in DE missing carbon DE amount but still not enough to explain oceanic uptake and atmospheric
储存 中的 那 部分。

storage in DE that part

Back-translation: The terrestrial biosphere has been a net sink for carbon, large enough to account for the amount of missing carbon injected into the atmosphere, but not enough to account for in ocean uptake and atmospheric storage.

b. E: The question of whether [...] , has received much attention **and** has profound implications for the Earth's thermal and chemical structure and evolutions.

C: 这一 科学问题 受到了 人们 的 极大关注。

Gloss: this science question receive LE people DE great attention

同时, 该 问题 对 地球的 热 和 化学 结构 及 演化 也 具有
at the same, this question for Earth DE thermal and chemical structure and evolution also have
重大意义。

profound implication

Back-translation: The question of whether...has received much attention. At the same time, the question also has profound implications for the Earth's thermal and chemical structure and evolutions."

6-3. Preservations: 因为 yinwei[because since] for because

E: [...], because the phase loop width affects the inhibition of flow across the boundary, [...]

C: [...], 因为 相环 宽度 影响 流体穿过 边界 时 所 受 的

Gloss: because phase loop width affect flow across boundary when Prosodic-SUO withstand DE
阻碍力, [...]

inhibition

Back-translation: [...], because the phase loop width affects the inhibition as it crosses the boundary, (and) the recent experiment constraints this width to be a few kilometres at most, [...]

6-4. Omissions: null for hence and and

a. E: We plot changes in the isotopic composition of sea water, and hence inferred continental ice volume, against age.

C: 我们画出了 海水 同位素 变化 曲线, 而 该 曲线 可以 反映 过去 大陆

Gloss: We plot LE sea water isotopic shifts curve and this curve can reflect past continent
上的 冰 的 体积 时间 的 变化。

on DE ice DE volume age DE change

Back-translation: "We have plotted the isotopic shifts curve of seawater, and this curve reflects how the volume of ice on the continents has changed over time in the past."

b. E: ..., because the phase loop width affects the inhibition of flow across the boundary, **and**²⁷ recent experiments constrain this width to be a few kilometres at most.

C: ..., 因为 相环 宽度 影响 流体穿过 边界 时 所 受 的

Gloss: because phase loop width affect flow across boundary when Prosodic-SUO withstand DE
阻碍力, 最近的 实验 限制 这 一 宽度 最多 为 几 千米。

inhibition recent experiment constrain this one width at most be a few kilometre

"..., because the phase loop width affects the inhibition as it crosses the boundary, (and) the recent experiment

²⁷ The clause introduced by *and* is also part of the causal clause covered by *because*. The result clause is omitted in the example here.

constraints this width to be a few kilometres at most."

In the above examples, only 6-1(a), 6-2(a) and 6-4(a) are identified as explicitations or implicitations:

Explicitation 6-1(a): The implied inter-sentential causal relation of the ST are identified by the addition of the connective 因此~~yinci~~[therefore].

Explicitation 6-2 (a): The additive relation implied by *and* is replaced by the adversative relation encoded by 但是~~dan~~[but].

Implication 6-4 (a): The translator's adoption of 而且~~er~~[and] in Chinese may intend to change the topic from *we* into *this (isotopic) curve*, but the underlying causal relationship between the two arguments is not clarified.

At the same time, the added, substituted, or omitted connectives may also have insufficient informational value in the discourse. In such cases, the related shifts are not labelled as explicitations or implicitations and this is illustrated in the cases of 6-1(b) and 6-2(b) and 6-4(b).

6-1(b): As the added connective 因此 functions similarly to *result* in revealing the inter-clausal relation here, there is no new inferable semantic relation.

6-2(b): Having the same subject and topic, *the question*, the two arguments *received much attention* and *has profound implications* are organised in the same sentence in English. However, the Chinese rendition illustrates that a stylistic shift has occurred at the inter-sentential level, as there is a different message organisation whereby the two arguments are divided into different sentences. Consequently, the inter-sentential connective pair 同时...也~~tongshi...ye~~[at the same time...also] is substituted for the intra-sentential connective *and*. However, such substitution does not change the ST semantic information because the relation between the two arguments is always *Conjunction*, whether in the ST or in the TT.

6-4(b): Chinese can sometimes maintain the logical relationship between a group of intra-sentential linguistic units without an explicit maker for this relation. Although an

English native speaker can provide the same interpretation for the sentence, an overt linkage marker is required for the sentence to be grammatically correct. For example, *and* in English has grammatical functions and indicates an additive relationship between the two clauses. Such a conjunction is lacking in the Chinese translations, but the translator can render the relations using additive connectives such as *而且*[*and*] and *而且**ergie*[*and*]. However, given that such construction of intra-sentential conjunctions is grammatically acceptable in Chinese and that additive relations are inherently less intense than other relations (e.g. causality and concession), such cases are not counted as implicitations.

Generally, the results show that the translators in the corpus may often add, replace, or omit semantically weak connectives to rephrase the original message into the given target language and may not intend to reveal or hide certain semantic relations. This finding is not surprising, as many linguists (e.g. Catford 1965; Van Oost et al. 2016) have found that the syntactic pattern used in the source language is not always translated into the same pattern in the target language. Therefore, when translating English RAs into Chinese, structural shifts commonly occur in the present corpus alongside connective shifts, and this will be discussed in detail in the following sections.

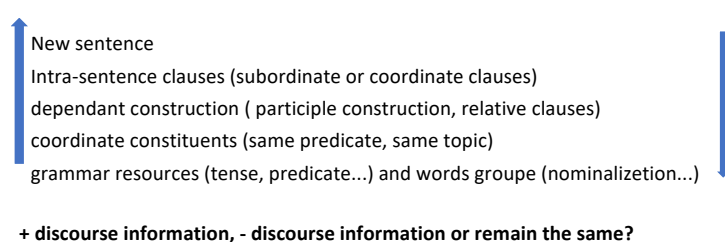
6.2 Structure Shifts Alongside Connective Shifts

Before analysing the extent of explicitations and implicitations, it is vital to highlight that different SL structures can contribute to occurrences of TL connectives in the present corpus. It is important to demonstrate such structures and the corresponding shifts during the E-C translation process in this section as these shifts can provide support for the argument that the differences between the language pair play a crucial role in the heavier reliance on connectives in Chinese translations. Furthermore, the shifts may also trigger connective-based gains or losses of semantic information (viz. explicitations and implicitations), which highlights the importance of examining such shifts.

6.2.1 Moving in the Syntactical Rank Scale

After analysing all the cases, the Diagram illustrated in Figure 6-2 is proposed to delineate the vertical rank scale in the present corpus's E-C translation. The scale can summarise a significant number of interlingual shifts caused by substituting an SL unit in a particular position on the rank scale with a higher or lower TL rank unit. For example, an SL phrase is translated into a TL clause/sentence or conversely. In other words, as indicated by the vertical arrows, the structure shifts often occur upwards or downwards on the rank scale. When the translator seeks an appropriate TL replacement for an SL unit, he/she can either move up or continue down the TL rank scale until a TL unit in the lowest or highest position is found, and this is optional or mandatory. Consequently, upward or downward shifts take place during the E-C translation process.

Figure 6-2 Diagram of vertical scale of rank



The above scale closely parallels with Al-Zoubi and Al-Hasnawi's (2001) scale, whereby a sur-face-level analysis is conducted between four levels: unit, structure, class, and system. The difference between the scales is that the present study's scale is connective-grounded. This ensures that the surface levels are restricted to the syntactic units that affect the determination of the minimal elementary unit to connectives. Following the model for shift analysis in translation constructed by Al-Zoubi and Al-Hasnawi (2001), connective shifts in the present study are analysed in two dimensions — the syntactic and semantic dimensions. As demonstrated at the bottom of the Diagram, semantic shifts may occur when syntactic shifts occur. Furthermore, such gain or loss of semantic information is highly related to connective explicitations and implicitations in the present study if a connective-based shift has specific discourse information value.

In the present corpus' E-C translations, the shifts in the upward direction are identified as unmarked, as they are more likely to occur. For example, 163 out of 276 additions are identified as upwards ones. The connective additions usually occur when the translator moves up in the TL rank scale to identify a higher unit in the rank, for which a connective is optional, whether for grammatical sake or cohesive sake.

It should be noted that a connective does not necessarily create upward shifts as cohesion can also be indicated by coreference that refers to the previous units. Coreference can be realised by lexical repetition, pronominalisation, and a mixed approach whereby a coreferential phrase contains both a pronoun and a lexical specifier. In Example 6-5, the cohesive relation connected to previous units is indicated by additions of co-referential items *此* (*ci*) [*this*] and *其* (*qi*) [*its*].

Example 6-5 The realisation of coreference

ST	TT
Essential to our interpretation of the travel-time data is the recent discovery that the inner core (REP) is anisotropic , and this anisotropic has cylindrical symmetry, its axis aligns approximately with the Earth's north-south spin axis.	<p>对于我们解释走时数据至关重要的一点，是最近内核各向异性的发展，且此各向异性具有圆柱对称性，其对称轴近似与地球南北自转轴一致。</p> <p>A word-to-word back translation of the sentence would be:</p> <p>"For us explain walking time data to-be crucial important one point, is recently core anisotropy development, and this anisotropy possesses cylindrical symmetry, its symmetry axis approximate with Earth south-north self-rotation axis consistent."</p> <p>A more fluent and coherent back translation into English would be:</p> <p>"One crucial point for us in explaining the travel time data is the recent development of anisotropy in the core, which possesses cylindrical symmetry, with its axis of symmetry approximately aligned with the Earth's north-south axis of rotation."</p>

6.2.2 Connective Additions and Upward Shifts

Two broadly defined ST syntactic patterns, post-modification and juxtaposition, typically coincide with upward shifts and connective additions in the TT. Specifically, the following types of structures can be drawn from all the cases:

(A) Coordinate Constituents

Coordinate constituents in the ST often lead to TT clauses introduced by a connective. In Case 1 of Example 6-6, the two coordinate noun phrases *higher noise levels* and *fewer significant results* in the SL are translated into two clauses. In the second clause, the additive connective *也* *ye[also]* indicates that the two events, *noise levels are higher* and *significant results are fewer*, co-occur. In Case 2 of Example 6-6., the two noun phrases *these findings* and *new clues* are both complements of *confirmation*. Additionally, the original message is shown in TT by a different arrangement of coordinate clauses with the same subject *we* and the same predicate *expect*, viz. *we expect the findings to be confirmed* in the first clause and *we expect the new clues to be found* in the second clause. Semantically, there is no loss or gain of information caused by additions of connectives, in either Case 1 or Case 2, since the *Conjunction* relation is already illustrated by the coordinate construction in the SL, and such relation is realised with additive connectives introducing clauses in the TL. Following this, although such shifts have given rise to translation solutions of connectives, they are not counted as explicitations or implicitations.

Example 6-6	ST	TT
surface-level shifts	coordinate constituents -> coordinate clauses	
CASE 1	There is also a dependence on the CGCM used to estimate noise, <u>with higher noise levels and fewer significant results</u> for noise estimates obtained from the HC control run.	<p>另外, 研究 杂讯 性质 对 采用的 CGCM 也 具有</p> <p>Gloss: In addition, study noise properties for use DE CGCM also have 依赖性, HC 对照试验结果 中 噪音 信号 越强, 显著性 也 越低。</p> <p>lower</p> <p>Back-translation:</p> <p>In addition, the noise properties of the study are also dependent on the CGCM used, and the stronger the noise is in the HC control test, the lower the significance is.</p>
CASE 2	We can rapidly expect both <u>confirmation of these finding and new clues</u> .	<p>我们有 理由 期待 上述 发现 很快 就 可以</p> <p>Gloss: we have reason expect afore-mentioned finding soon at once can 得到 证实, 并 从中 找到 新的线索。</p> <p>get confirmation and therefrom find new clue</p> <p>Back-translations:</p> <p>We have reason to expect that the findings above will soon be confirmed and to find from there new clues.</p>

The distribution of the ST coordinate constructions translated into the TT clauses (which are introduced by connectives) are illustrated in List 6-1:

List 6-1 Coordinate construction translated into TL clauses introduced by connectives

- **Additive Connectives (100% - 37 instances):**
 - Examples: as well as, and, or
 - Translations: 并 (and), 并且 (and), 同时 (and), 进而 (and then), 同时也 (and also), 同时还 (and also), 还 (also), 且 (and), 也 (also), 亦 (also), 而 (also), 而...亦 (and...also)
- **Adversative Connectives (0%): N/A**
- **Conditional Connectives (0%): N/A**
- **Causal Connectives (0%): N/A**

List 6-1 demonstrates that there is a dominant trend towards additive connectives in the TT for the ST coordinated construction. This indicates that the relation implied between the two ST units under investigation is the simple *Conjunction* that is by nature less semantics-encoded and less intensely expressed than other relations. The use of TT connectives here is closely related to syntactic shift, and not related to explicitations/implications in the present study.

(B) Prepositional Phrases

The connective solution introducing clauses is a helpful translational tool in the TT to accommodate prepositional phrases in the ST. The prepositional phrases can sometimes be highly discourse-salient, expressing strong logical-semantic relation cues (Carlson and Marcu 2001, p.42). They would provide both syntactic and semantical links with the main clause and function as a rhetorical device (Carlson and Marcu 2001, p.42). For example, a causal relation can be achieved by a causal adverbial phrase (i.e. *due to/because of/owing to* plus noun phrase) or realising a causal clause and no apparent difference in semantic relations between the latter two.

Considering this, the additions of TT connectives translated from vital discourse-like phrases are labelled as non-explicitation-related shifts in the present study. For *discourse-like phrases*, it refers to expressions or linguistic constructs within the text that resemble typical elements

found in discourse. These phrases are likely those that contribute to the organization and coherence of the discourse. In the specific context of the passage, the focus is on prepositional phrases that exhibit characteristics associated with discourse, such as providing syntactic and semantic links with the main clause and functioning as rhetorical devices.

For example, in Case 1 of Example 6-7, a structural shift is illustrated by the translation of the prepositional phrase *due to the difficulties in tracking a patch overtime* into a causal subordinate clause which is bounded by a subordinate conjunction 由于_{youyu}[because]. The translation is longer than the original sentence due to the alteration of the phrase into clauses using the paired connectives 由于...因此_{youyu...yinci}[because...(so)]. However, there is no apparent gain or loss of information found in this data as the *Causality* relation is conveyed by the causal discourse-salient phrase *due to*.

Example 6-7	ST	TT
sur-face-level shifts	Prepositional phrase -> subordinate clauses	
CASE 1	Enrichment experiments in the open ocean have not been feasible <u>due to</u> the difficulties in tracking a patch over time.	然而，由于 追踪 某 片 海区 随时间的 Gloss: however because track certain CLASSIFIER ocean area with time DE 变化 并非 易事， 因此直到最近， 开阔 大洋中的 加富 change not easy thing, so until recently open ocean DE enrichment 试验 仍未能实施。 Experiment Back-translation: However, because it is not easy to track a pitch over time until recently, enrichment experiments in the open ocean have not been carried out.
/S.		
CASE 2	due to colloidal aggregation and/or sinking of large particles containing iron	由于 胶体的 聚集 和/或 含铁的 较大 Gloss: due to colloidal aggregation and/or iron-containing larger 颗粒 的 沉淀 Particle DE sinking Back-translation: due to colloidal aggregation and/or sinking of iron-containing and larger particles

On the other hand, there exists *discourse-salient phrases*, which refer to linguistic elements within the text that are particularly noticeable, prominent, or significant in the context of the discourse. These phrases stand out and play a crucial role in conveying logical-semantic relations. In the passage, prepositional phrases, such as those expressing causal relations, are considered discourse-salient because they express strong logical-semantic relation cues. Their significance lies in their ability to contribute to both syntactic and semantic links with the main clause, enhancing the overall coherence of the discourse. It should be noted that such discourse-

salient phrases are not constantly altered into clauses in Chinese translations, as a nominal construction is also acceptable. Compared to Case 1, in Case 2 of Example 6-7, the ST prepositional phrase bounded with *due to* is realised in the same way in the TT, except that Chinese noun phrases typically consist of a noun preceded by a modifier. Thus, the ST postnominal modifier *containing iron* is presented as a prenominal adjective 含铁的 *hantiede*[*iron-containing*] in the TT.

The distribution of connective translation solutions for such prepositional phrases are as follows in List 6-2:

List 6-2 Prepositional phrases translated into TL clauses introduced by connectives

- **Additive Connectives (32.26% - 20 instances):**
 - "with" Translations: 并 (and), 并且 (and), 同时 (and), 且 (and), 并且 (and), 而 (and), 而且 (and) - 15 instances
 - "without" Translation: 而 (and) - 1 instance
 - "In addition to" Translations: 除了还 (besides) also, 另外还 (and also) - 3 instances
 - "At the same time" Translation: 且 (also) - 1 instance
- **Adversative Connectives (30.65% - 19 instances):**
 - "Instead of" Translation: 而...则 (whereas) - 1 instance
 - Various Phrases (e.g. rather than/without/despite/not to/instead of) Translation: 尽管...但 (although... but), 尽管 (although), 而 (非/不) but (not) - 18 instances
- **Conditional Connectives (6.44% - 4 instances):**
 - "In either case/in any case" Translations: 无论 (regardless), 不管 (regardless) - 2 instances
 - "At depth" Translation: 当...时 (when) - 1 instance
 - "With" Translation: 当...时 (when) - 1 instance
- **Causal Connectives (30.65% - 19 instances):**
 - "With/in the favour of" Translations: 从而 (therefore) - 2 instances
 - "Given/due to/owing to/because of/as a result of/in such a way that/in turn" Translations: 由于 (because), 因为 (because), 鉴于 (given), 由于...因此 (because... so), 以致 (so that), 从而 (therefore), 因此 (so) - 14 instances
 - "By+noun" Translation: 从而 (therefore), 因此 (so) - 2 instances
 - "As a result" Translation: 进而 (and then) - 1 instance

The results illustrate that 62 connectives with the clauses they introduce are identified as potential correspondence of the prepositional phrases produced in the ST. Compared to other ST structures (see the data illustrated in the present sub-section), prepositional phrases can be regarded as the primary source motivating the occurrence of connective additions. Specifically, 62 of the 276 connectives (cf. Section 6.1) added during the translation process are due to the rephrasing of ST prepositional phrases during the E-C translation process. The results show that there is frequent use of English phrases in the given text genre and the difference in terms of the range of conjunctive devices of the language pair (see Section 6.3 for further discussion below).

Sometimes, phrases are marked by cues, such as *for*, *in*, *with* and *during*, that are “weak or only occasional discourse indicators” (Carlson and Marcu 2001, p.42). It can be argued that such prepositions are implicit because: 1) they are not always related to semantic relations, as the corpus reveals other functions, such as phrases indicating means and instrument (e.g., *by/with* + gerund or noun phrase) or replacing conditional clauses (e.g., expressing exclusion with “without” + gerund); and 2) even when discourse-related, a specific prepositional phrase may be translated into connectives representing different logical-semantic relations in the TL. Therefore, translators must account for these cases and identify whether the phrases imply a semantic relation by inferring from the context.

For example, the distribution of translation solutions for *with*, which are connective-related, is illustrated in List 6-3:

List 6-3 *with* phrases translated into TL clauses introduced by connectives

- **Additive Clauses:** 15 instances (88.24%)
 - This category represents the majority of instances where “with” phrases are translated into clauses that add information or elements in a cumulative or inclusive manner.
- **Adversative Clauses:** 0%
 - There are no instances where “with” phrases are translated into clauses that introduce contrast or opposition.
- **Conditional Clauses:** 1 instance (5.88%)
 - A small portion of “with” phrases are translated into clauses that express conditions, possibilities, or hypothetical situations.
- **Causal Clauses:** 1 instance (5.88%)

- Similarly, a minimal number of "with" phrases are translated into clauses that establish a cause-and-effect relationship or rationale.

List 6-3 results demonstrate that there is a trend towards connective solutions along with clauses in the TT. In addition, the translation solutions are often intra-juxtapositions, resulting in a trend of using coordination in superordinate clauses or coordinated clauses in the TT. Moreover, the most common connectives in this category are additive ones (88.24%), which correlates with the semantics *Conjunction* of the underlying English. For example, the prepositional phrases in Example 6.8 below have the constitutions of a preposition (*with/along with*) + noun word in the SL.

Example 6-8 prepositional phrase *with* upgraded

Example 6-8	ST	TT
sur-face-level shifts	Prepositional phrase with/along with -> coordination in superordinate clauses/coordinated clauses	
CASE 1	Temperature is warmer before 200 kyr BP, <u>with</u> a well-marked peak around 215 kyr BP.	<p>从 距今 20 万 年 前 再 向前， Gloss: from before present 20 ten thousand year before again onwards 温度 变 暖和 一些, <u>并</u> 在 距今 215 万 temperature become warm a bit <u>and</u> at before present 215 ten thousand 年 左右 时 达到 峰值。 year or so when reach peak Back-translation: From 200,000 years ago, the temperature became warmer and peaked around 2.15 million years ago.</p>
CASE 2	The new results are plotted against depth in Fig.1, <u>along with</u> data from the bottom part of core.	<p>上述 新 测定结果 随 深度 的 变化情况 Gloss: afore-mentioned new measured result with depth DE changing condition 见 图一, <u>同时</u> 我们<u>还</u> 给出 了 冰芯 底部 的 See figure 1 <u>at the same time</u> we <u>also</u> provide LE ice core bottom DE 相关数据。 relevant data Back-translation: The variation of these new measurement results with depth is shown in Figure 1, and we also provide relevant data from the bottom part of ice core.</p>
CASE 3	We are currently provoking the Earth climate <u>with</u> a steady build-up of greenhouse gases.	<p>我们 现在 正 使 温室气体 逐渐 增加, <u>从而</u> We now be being make greenhouse gases gradually increase, <u>therefore</u> 破坏 地球气候。 Damage earth climate Back-translation: We are now building up greenhouse gases, and thus damaging the Earth climate.</p>

In Case 1 of Example 6-8, a structural shift has occurred during the translation of the phrase into coordination (viz. 并达到峰值[*and peaked...*]) in superordinate clauses in Chinese. The two coordination (viz. 变暖和一些[*become warmer*] and 达到峰值[*and peaked...*]) of the superordinate clause have the same subject (温度[*the temperature*]), and the Conjunction relation between them is indicated by the additive connective 并 *bing*[*and*]. In Case 2, there is also an intra-sentence juxtaposition, viz. coordinated clauses where 同时...也 *tongshi...ye*[*and...also*] is used in the second one to indicate the *Conjunction* relation. The two

clauses of the sentence have different subjects, viz. *the variation of...* for Clause 1 and *we* for Clause 2, which is an inferred and added subject of predicate 给出[provide].

In both Cases 1 and 2, regardless of the added connective or inferred subject, there is no obvious increase of information in the translation solution. Therefore, such additions should not be perceived as explicitations as their explicating effect is ambiguous compared to the ST. It is problematic to assume that such additions make the additive semantic relation explicit rather than an additional arrangement due to syntactic upwards shifts. Specifically, like other English clause-reducing devices (i.e. participle construction, relative clauses, infinitive clauses), preposition construction is a preferred feature of scientific and technical discourse in English as it meets the register requirement of a higher level of abstraction (cf. Krein-Kühle 2003). Since many English grammatical clause-reducing construction is not available in Chinese, or there is no direct corresponding form, the recourse used in the TL often enable upward shifts to be performed.

The few occurrences of causal and conditional connective in the translation solutions (11.76%) reflect the implied semantic aspect of *with*. For instance, as shown in Case 3, the ST-TT correlation in the case of the phrase *with* is achieved by parataxis and by adding a causal connective 从而/conger[and thus]. The connective functions as a semantic marker and highlights the *Reference* relation between the two units of the sentence. Theoretically, the logical relationship between the linguistic units can be maintained without an explicit marker for such logical-semantic relation. For example, I propose the following translations in Case 3*²⁸ below.

Example 6-8 CASE 3*	We are currently provoking the Earth climate <u>with</u> a steady build-up of greenhouse gases.	(1) 我们 现在 正 使 温室气体 逐渐 增加, 并 Gloss: We now be being make greenhouse gases gradually increase, <u>and</u> 破坏 了 地球气候。 damage LE earth climate Back-translation: We are now building up greenhouse gases and damaging the Earth climate.
		(2) 我们 现在 正 使 温室气体 逐渐 增加, Gloss: We now be being make greenhouse gases gradually increase, 破坏 了 地球气候。 damage LE earth climate Back-translation: We are now building up greenhouse gases, damaging the Earth's climate.

²⁸ The translations in Case 3* are proposed by the author but are not present in the corpus.

The first translation contains a less intense linkage marker, and the second translation does not contain a linkage marker. These translations reflect the possibility that the information can be organised with a less explicit or no discourse marker. By comparison, in Case 3, the translators explicitate the implied logical-semantic information by adding an explicit causal connective, which leads to a gain of reference relation between units. Following this, such additions in the corpus are labelled as explicitation-related.

(C) Past Participles and Present Particles

Participle constructions, especially present participles, are frequently used in scientific and technical discourse to contribute to syntactic compression and condensation of meaning (Baakes 1994, p.63). In the present corpus, the participles in the ST can lead to the potential connectives' equivalents in the TT (see Example 6-9).

Example 6-9	ST	TT
sur-face-level shifts	-ing/ past participle -> coordination in superordinate clauses/coordinated clauses	
CASE 1	The strength of upwelling in the equatorial zone, affecting the operation of the great tropical convection systems that lead the atmosphere with much of its moisture	同时大洋环流的变化很可能扰乱了赤道地区 Gloss: and ocean circulation DE change quite likely disrupt LE equatorial zone 上升流的强度, 从而影响巨大的热带对流系统, 导致 upwelling DE strength therefore affect great tropical convection system lead to 大气湿度增加。 atmospheric humidity increase Back-translation: At the same time, changes in ocean circulation are likely to disrupt the strength of upwelling in the equatorial zone, (and) therefore affecting the great tropical convection systems that lead to an increase in atmospheric moisture
CASE 2	they reflect a mode of climate forcing that caused ice sheets to grow, culminating each time in a prolonged, cold stadial, ice-sheet instability and massive calving.	他们只是反映了一种气候驱动模式导致 Gloss: they simply reflect LE a CLASSIFIER climate forcing model cause 冰盖增大, 并且每次都以一个很长的 ice sheet increase and each time all with a CLASSIFIER very long 冷冰阶、冰盖不稳定和大规模的裂冰作为结束。 Ice scale ice sheet instability and massive DE calcination as the end Back-translation: they simply reflect a climate-driven pattern of ice sheets grow that each time ends with a long ice scale, ice sheet instability and massive calcination.
CASE 3	the carbon budget does not balance, implying uncertainty as to the current terrestrial carbon flux	碳的收支并不平衡, 意味着当前陆地碳通量 Gloss: carbon DE budget not balance imply ZHE current terrestrial carbon flux 存在不确定性。 exist uncertainty Back-translation: the carbon budget does not balance, implying that there is uncertainty as to the current terrestrial carbon flux.
CASE 4	we made diurnal and seasonal measurement of..., using a portable ecosystem cuvette and gas exchange system.	我们利用一个携带型生态系统模拟仓和气体交换 Gloss: we use one CLASSIFIER portable ecosystem cuvette and gas exchange 系统测量了...的日通量和季节通量 System measure LE DE diurnal flux and seasonal flux Back-translation: we used a portable ecosystem cuvette and gas exchange system to measure the diurnal and seasonal flux of ...
CASE 5	the volume is likely to be closer to 50,000 km ³ , calculated assuming an effective depth of burst at surface.	若假设有效冲击深度就位于地表, 则体积可能更 Gloss: if assume effect burst depth JIU at surface then volume may more 接近 50,000 立方厘米。 close to 50,000 km ³

		Back-translation: If the effective depth of the burst is assumed to be at the surface, then the volume may be closer to 50,000 km ³ .
CASE 6	global tomography models lack the increased heterogeneity near 660 km depth <u>expected</u> for a thermal boundary layer at that depth,	<p>在全球 层析成像 模型 中, 660km 深度 附近 缺少 增强的</p> <p>Gloss: in global tomography models in, 660km depth near lack increased 非均匀性, 而 <u>如果</u> 这个 深度 存在 一个 热 边</p> <p>heterogeneity <u>and if</u> this depth have a CLASSIFIER thermal boundary 界层 的话,...</p> <p>layer if</p> <p>Back-translation: in the global tomography models, there is a lack of increased heterogeneity near 660km depth, and if there is a thermal boundary layer at this depth....</p>

Specifically, there are two types of participles, the unrelated present participle, and the related participle. The former, viz. the *-ing* clause in the final position, is a structure often expressing results by denoting the outcome of the action expressed by the main clause (Sager et al.1980, p.218). Furthermore, a conjunctive device does not necessarily introduce it in the TT, and this is exemplified in Cases 3 and 4. The vague intra-sentence reference of the *-ing* form can sometimes make it difficult to identify the antecedents as it may refer back to the content of a stretch of language, which requires a great deal of supra-sentential and co-textual inferencing if the translator is in the search for equivalence (Krein-Kühle 2003, p.149). Interestingly, in translating an unrelated present participle, clause constructions with additive connectives are sometimes used to establish the correlation of ST and TT in the present corpus. Since intra-sentence additive connectives are less strong by nature, the problem with the “blurred intra-sentential reference” of the structure in the SL is retained in the TL when such connectives are used in intra-sentence juxtapositions. For instance, in Case 2, inferencing skill is still needed to determine whether the argument *ends with* refers to the antecedent noun 冰盖[ice sheet] or the contents of the main clause. In this sense, the additive connectives exert low information value; thus, are not counted as explicitations. However, although the *Causal* category of Case 1 is far less extensive, it is closely related to explicitations/implicitations in the present study. Translators’ tendency to explicate the implied logical semantic relation between the arguments may give rise to the variety of potential equivalent connectives of the other relations that are, by nature, more strongly expressed than the simple *Conjunction*.

The related participles are often used after a noun in the same way as relative clauses, giving more information about the noun (Sager et al.1980, p.218). For related participles found in the investigated corpus, only a small number of cases are identified as TL upward shifts with clauses introduced by hypothetical conditional connectives (i.e. Case 5 and 6 in Example 6-9). However, they are non-explicitation-related forms as the hypothetical semantic relation is

assumed by the underlying semantics of the ST's lexical roots of *assuming* and *expected* in the ST.

The potential correspondence of connectives and clauses for participles is ascertained in List 6.4. The total number of TT connectives motivated by the ST participles is 17; hence, is insignificant. Furthermore, unrelated present participles account for 82.35% of the total with 14 occurrences and related participles account for 17.65 % of the total with only 3 occurrences.

List 6-4 Distribution of connectives translated from participles

Additive Connectives: 10 instances (58.82%)

- **-ing Translations:** 并 (and), 并且 (and), 同时 (and), 而 (and) — Totaling 10 instances
 - These translations indicate a continuation or addition in the translated clauses, using a variety of connectives to maintain the additive nature of the original participle phrases.

Adversative Connectives: 0%

- **No instances identified**
 - This category has no instances where participles are translated into clauses introducing contrast or opposition.

Causal Connectives: 4 instances (23.53%)

- **-ing Translation:** 从而 (therefore) — All 4 instances
 - These translations convert the participles into clauses that express a cause-and-effect relationship, with "therefore" signifying the result or consequence of the preceding action.

Conditional Connectives: 3 instances (17.65%)

- **Assuming A Translations:** 若...则 (if ...then) — 2 instances
- **Expected for Translation:** 如果的话 (if) — 1 instance
 - These instances involve the translation of participles into conditional clauses, suggesting hypothetical situations or conditions for the subsequent action to occur.

(D) Relative Clauses (Non-Restrictive and Restrictive)

The search for correspondence in the construction of relative clauses also tends to favour an intra-sentence juxtaposition in the TT. For ST attributive clauses, there is a potential trend towards a subordinate or coordinate clause solution in the TL, which can result in intra-sentence connectives. Here in the ST, the attributive clauses mainly refer to the adnominal relative clause and sentential relative clause. The adnominal relative clause always postmodifies a noun and

can be restrictive or non-restrictive. In contrast to the former clause, the sentential relative clause is always non-restrictive and “refers back to the predicate or predication of a clause [...] or a whole clause or sentence [...] or even to a series of sentences [...]” (Quirk et al. 1995, p. 1557).

All these categories are not analysed separately here as most of the use of connectives is optional and not decided by restrictiveness or non-restrictiveness. In Cases 1-3 of Example 6-10, a restrictive clause can contain an intra-sentence linkage marker (i.e. *从而* *conger* [*and therefore*] in Case 3), which is nevertheless lacking in another restrictive clause (i.e. Case 2). A non-restrictive clause can also be introduced by a connective (i.e. *并* *bing* [*and*] in Case 1); however, it can be grammatically acceptable to be omitted (i.e. Case 1*²⁹).

Example 6-10	ST	TT
surface-level shifts	Attributive clauses -> coordination in superordinate clauses/coordinated clauses	
CASE 1	The energy is thought to drive convection in the outer core, <u>which</u> in turn maintains the dynamo action that generate the Earth's magnetic field	<p>外核 的 对流 被 认为 由这些能量 所</p> <p>Gloss: outer core DE convection BEI-PASSIVE consider by these energy SUO</p> <p>驱动, 并 进而 维持 了 产生 地磁场的 发电机</p> <p>Drive and then in turn maintain LE generate earth magnetic field DE dynamo function</p> <p>Back-translation: Convection in the outer core is thought to be driven by these energy, and then in turn maintains the dynamo action that generates the Earth's magnetic field.</p>
CASE 1*		<p>外核 的 对流 被 认为 由这些能量 所</p> <p>Gloss: outer core DE convection BEI-PASSIVE consider by these energy SUO</p> <p>驱动, 进而 维持 了 产生 地磁场的 发电机作用。</p> <p>Drive in turn maintain LE generate earth magnetic field DE dynamo function</p> <p>Back-translation: Convection in the outer core is thought to be driven by these energy, maintaining in turn, the dynamo action that generates the Earth's magnetic field.</p>
CASE 2	The NADW circulation is a nonlinear system <u>which</u> is highly sensitive to changes in freshwater forcing	<p>NADW 环流 是一个 非线性 系统, 他们对 淡水 强迫的</p> <p>Gloss: NADW circulation be a nonlinear system they to freshwater forcing DE 变化 高度 敏感。</p> <p>change highly sensitive</p> <p>Back-translation: The NADW circulation is a nonlinear system, (and) they are highly sensitive to changes in freshwater forcing.</p>
CASE 3	He calls on a global cooling to propel the rapid advances <u>which</u> pushes large quantities of Canadian ice into the sea,....	<p>他 认为 全球 变冷 推进了 冰川 的 快速 前进, 从而 推动</p> <p>Gloss: he argue global cooling propel LE glacier DE rapid advance thus push 了 大量 加拿大 冰川 进入 大洋...</p> <p>LE large quantities Canadian glacier into ocean</p> <p>Back-translation: He argues that global cooling has driven the rapid advances of glaciers, which in turn has pushed large quantities of Canadian ice into the ocean.</p>

²⁹ The translation of the ST in Case 1* is proposed by the author but is not present in the corpus.

For these, the following potential correspondence with connectives in the present corpus are listed below:

List 6-5 Distribution of connective motivated by particles

Additive Connectives: 18 instances (94.72%)

- Particles: that, which, where, whose
Translations: 并 (and), 也 (also), 而 (and), 进而 (and then), 而且 (and) — Totaling 18 instances
 - This dominant category showcases the extensive use of additive connectives, which serve to combine or add information seamlessly in the translation.
- Note: Connectives of restatement were excluded from this analysis. The focus was specifically on those instances that directly contribute to the addition of new or complementary information, bypassing instances where restatement connectives were used alongside nouns/noun phrases, as they did not meet the criteria for minimal elementary units.

Adversative Connectives: 0%

- No instances identified
 - Indicates the absence of adversative connectives motivated by the examined particles within the corpus.

Causal Connectives: 1 instance (5.26%)

- Particle: which
Translation: 从而 (therefore) — 1 instance
 - A rare occurrence where the particle leads to a causal connective translation, highlighting a cause-and-effect relationship or rationale within the translated text.

Conditional Connectives: 0%

- No instances identified
 - Reflects the absence of conditional connectives stemming from the specific particles analyzed, indicating that these scenarios were not prevalent or applicable in the corpus under study.

List 6-5 results demonstrate that the most common connective solution encountered in the English ST in this category is additive connectives. The causal expression can also become a potential correspondence; however, this primarily depends on the implied semantics of the underlying arguments and further TL norms considerations. The relevant shifts are highly related to explicitations (see Chapter 7). On the other hand, as discussed previously, TT intra-sentence juxtaposition gives rise to additive connective features, but the value is low in terms of semantic relation compared to ST. Thus, considering this, such additions are not counted as explicitations.

(E) Others: Grammatical or Lexical Resources

For the *Others* category, the correlation between the ST and the TT is achieved when the lexical or grammatical means in the ST are translated into the TT with subordinations. Furthermore, the SL forms are TL connective-related and feature a shallow frequency of occurrence (which is statistically underpinned in List 6.6) in the present corpus.

List 6-6 Distribution of connective translation solutions in the *Others* Category

Adversative Connectives: 10 instances (35.71%)

- **Expressions:** even, rather, only
- **Translations:** 即使...也 (even if...also), 即使...亦 (even if...also), 即使 (even if) — Totaling 10 instances
 - These translations introduce adversative relations, emphasizing contrast or conditions despite potential contradictions or expectations.

Conditional Connectives: 9 instances (32.145%)

- **Translations and Contexts:**
 - "This suggests" -> 这样的话 (if so): 1 instance
 - Mood 'would' -> 如果 (if), 如果...的话 (if...then): 2 instances
 - Nominalisation -> 当...时 (when): 3 instances
 - "Whatever" -> 不管 (regardless), 无论 (regardless): 3 instances
 - This category covers instances where conditional connectives are utilized to denote hypothetical or contingent relations in the translation.

Causal Connectives: 9 instances (32.145%)

- **Contexts and Translations:**
 - Predicates (make/be connected with/ensure/result) -> 由于 (because), 由于...所以 (because...so), 因而 (so): 4 instances
 - "Too...to/So...that" -> 因为 (because), 由于...因而 (because...therefore), 以致于 (so that), 因而 (therefore): 5 instances
 - This section illustrates translations that establish cause-and-effect relationships, explicating the rationale or outcome of actions or situations in the target text.

The *Others* category connective translation solutions are illustrated in Example 6-11:

Example 6-11	ST	TT
Surface-level shifts	Predicate, adverbials, embedded structure-> subordination	
CASE 1	The ECM record has the highest time resolution of available measurements,	由于 ECM 记录 具有 所有 可 测量方法 中 最高的 Gloss: because ECM record have all available measurement of highest 时间 解析度, 并且 对粉尘 具有较强的敏感性, 这使得 ECM 非常

	and together with the sensitivity to dust, <u>this makes</u> EMC suitable for...	Temporal resolution and to dust have stronger sensitivity this make ECM very suitable for... Suitable for Back-translation: Because ECM records have the highest temporal resolution of any measurable method and are highly sensitive to dust, this makes ECM ideal for
CASE 2	Any correction to the isotope-temperature gradient would only serve to increase the estimated temperature shifts.	如果 校正同位素-温度梯度值, 只 会 使 估算出的 Gloss: if correct isotope-temperature gradient, only will make estimated temperature shift larger. Back-translation: If the isotope-temperature gradient is corrected, the estimated temperature shifts will only be increased.
CASE 3	Even allowing for peak broadening due to diffusion	即使在 由于 扩散作用导致 峰值 变宽 的 情况 下 Gloss: even when due to diffusion lead to peak widen DE situation under the same is true Back-translation: This is true even when the peak is widened by diffusion
CASE 4	The measurements are too scarce to discuss in detail this new part of the CHP record.	由于 测定结果 太少 因而 无法 对 CHP 记录 中的 新的 Gloss: because measurement too few so cannot to CHP record of DE new part make detailed discussion Back-translation: The new portions of the CHP record cannot be discussed in detail because the measurements are too few.

Case 1 demonstrates that *this makes* shows what *this* refers to affects what is followed by *makes*. The logic embedded between the participants and the predicate indicates a causal relationship between the arguments. Instead of only literally translating *this makes* into *这使得* *zheshide*[*this makes*], the translator also adds a causal connective *由于* *youyu*[*because*] to the first TL argument; thus, emphasising the embedded causal relation. The shift illustrated in the translation, however, is not counted as explicitation. This is because the logic-semantic relation is already marked in the ST by the lexical means *this makes*. Additionally, the shift is not an explicitation because an extra connective, such as the equivalent *由于* *youyu*[*because*], is not grammatically acceptable in the current ST case.

In Case 2, the conditional mood is found in the ST. Since *air* is the verb form (i.e. *would* here) used to explore a hypothetical situation, the semantics of the hypothetical condition are implied by nature. Therefore, the TL subordination introduced by the conditional connective *如果* *ruguo*[*if*] also serves the same textual function.

In Case 3, the SL term *even* suggests that what comes just after it is surprising and unanticipated. *即使* *jishi*[*even when*] can emphasise an unexpected or extreme situation by establishing a hypothetical context. Hence, the recourse to the conditional subordinate clause plus the conditional connective *即使* *jishi*[*even when*] is a possible connective translation solution.

In Case 4, the SL sentence has the constitutions of *too* (*adjective/adverb*) + *to* (*infinitives*). The real logic of the *too ... to* pattern is equivalent to *be so Adj/Adv, so that not possible infinitives*. Thus, it is not unforeseen that in the TT, a complete and more complex subordinate clause is introduced by paired causal connective 由于...因而/youyu...yiner[*because...(so)*].

Grammatical means may be more implicit than lexical means (cf. Baker 2018, p.74; House 1997, pp.88-89).³⁰ Nevertheless, the above discussion has highlighted that despite the grammatical-syntactic difference between the SL and TL structures, the ST and the TT provide the same information of semantic relations. Thus, in many cases the shifts do not lead to explicitations.

6.2.3 Connective Omissions and Structure Shifts

The downward shifts represent the *unmarked* type, as the shifts in this direction are much less likely to occur than in the reverse direction. Such downward shifts occur when translators go down the syntactical rank scale and substitute an SL unit with a lower-in-rank TL unit. Consequently, ST connectives may be omitted in the TT in some cases. However, it is crucial to highlight that connective omissions are not necessarily related to downward syntactical shifts, given that most omissions in the corpus do not coincide with a structural shift. Typical cases of connective omissions in the corpus are summarised in the following:

(A) Omission of Intra-Sentence Conjunction Connectives

The breakdown in List 6-7 shows that the omissions of intra-sentence connectives that frequently occur in the corpus, including the intra-sentence connective *and*, are often avoided in the TT.

³⁰ One of the scholars who has suggested that grammatical means may be more implicit than lexical means is Mona Baker (Baker 2018, p.74). In her book “In Other Words: A Coursebook on Translation”, she argues that grammatical structures can be used to express meanings in a more implicit way than lexical items, as they can imply meaning rather than stating it outright. Another scholar who has made a similar argument is Juliane House (House 1997, pp.88-89), who suggests that “it is often the case that grammatical means are more implicit than lexical means of conveying information”.

List 6-7 Omissions of intra-sentence additive connectives

I) Intra-Sentence Juxtaposition Connective "And" Omissions: 38 Instances

- **Omission Beneath the Sentence Level:** 31 instances
 - This category primarily captures omissions occurring within the sentence structure, not attributed to significant structural alterations, including:
 - **Omission Due to an Upward Shift:** 3 instances
 - Occasions where a coordinate constituent is elevated into a more prominent clause structure, necessitating the omission of the connective.
 - **Omission Not Related to Structural Shifts:** 28 instances
 - These omissions occur without any discernible changes to the sentence's structural integrity, possibly for stylistic or clarity purposes.
 - **Omission Due to a New Sentence Upgrade:** 7 instances
 - Instances where the omission accompanies the division of content into separate sentences, enhancing readability or narrative flow.

II) Other Omissions: 3 Instances

- **Intra-Sentence Juxtaposition Connective or Omitted:** 1 instance
 - A specific case where the omission directly impacts the sentence's juxtaposition structure.
- **Intra-Sentence "Also" Omitted:** 1 instance
 - Pertains to a scenario where "also" is omitted in translation, likely to streamline the sentence or due to it being implied in the context. The mention of "即 ji + noun phrases [that is A]" suggests a translation choice aimed at condensing or simplifying the information.
- **Intra-Sentence "As" Omitted Due to Segmentation into a New Sentence:** 1 instance
 - An instance where "as" is omitted as part of restructuring the sentence into a new segment, potentially to clarify the narrative or due to stylistic preferences.

The above list illustrates that the most common *and* omissions occur beneath the sentence level. Additionally, the “*and*” omissions are often not caused by upward or downward syntactical shifts. This is illustrated in Example 6-12 as the second coordinate constituent (viz. 很有可能与火山活动有关[are likely to be associated with volcanic activity] in Case 1 and 可反抗挤压[can resist compression] in Case 2) of the ST sentence is segmented by a comma in the TT without an equivalent connective of *and*.

Example 6-12 Omission of intra-sentence connectives with no structure shifts

Example 6-12	ST	TT
Surface-level shifts	Constituents linked by an intra-sentence connective -> constituents segmented by a comma with no intra-sentence connectives	
CASE 1	The isolated spikes on the ECM record span at most a few years and are likely to	ECM 记录 上的 孤立 尖峰 跨越的 时间 最大值 仅 为 数 Gloss: ECM record on DE isolated spike span DE time maximum only be few

	be associated with volcanic activity.	年，很 有可能 与 火山活动 有关。 Year, very likely with volcanic activity relate to Back-translation: The maximum time span of isolated spikes on the ECM record is only a few years, most likely related to volcanic activity.
CASE 2	The upper mantle is relatively rigid beneath Tibet and can resist compression...	青藏高原 地幔 岩石圈 强度 较 大，可 反抗 挤压... Gloss: Tibetan Plateau mantle lithosphere strength relatively large, can resist compression... Back-translation: The Tibetan Plateau mantle lithosphere is relatively rigid and can resist compression.

Several cases also have an upward structural shift. This shift is illustrated in Example 6-13, as Case 1 shows that the final argument of the ST sentence is upgraded and changed into a clause, and Case 2 shows that the final argument is moved into a new sentence. Furthermore, the Cases do not have an equivalent connective of *and* in the TT.

Example 6-13. Omissions of intra-sentence connectives due to upward structure shifts

	ST	TT
Surface-level shifts	Coordinate Constituents linked by “and”-> a new clause or a new sentence	
CASE 1	A magnetic field is maintained for more than three magnetic diffusion times and has energy at least three orders of magnitude greater than the kinetic energy of the convection that maintains it.	磁场 维持 时间 超过 了 三 个 磁 Gloss: magnetic field maintain time exceed LE three CLASSIFIER magnetic 扩散时间， 磁场 能量 至少 比 其 对流 的 运动能 大 diffusion time, magnetic field energy at least than its convection DE energy large 三个 数量级。 three CLASSIFIER order of magnitude Back-translation: The magnetic field lasts for more than three magnetic diffusion times, and the energy of the magnetic field is at least three orders of magnitude larger than its convection energy.
CASE 2	The Tibetan Plateau is..., and considerable effort has been devoted to understanding...	青藏 高原 是[...]。 为了弄清 [...]。 Gloss: Tibetan Plateau is [...] To understand... Back-translation: The Tibetan Plateau is[...]. To understanding[...].

Similar to Example 6-4(b) discussed in Section 6.1, the omissions of intra-sentence connectives listed above do not result in an omission or distortion of semantic meaning in the TT because a construction with no intra-sentential conjunction is grammatically acceptable in Chinese, and the additive relation is inherently less strong than the other relations. This may reflect one of the features of the language whereby Chinese is more meaning-oriented than form-oriented and features message segments that logically string together (Li 2011, p.189).

Overall, the findings provide supporting evidence that “the extent to which languages are hypotactic or paratactic in given text types is still surprisingly impressionistic” (Xi 2010, p.138). After having been put forward by multiple Chinese scholars (including Liu 1992; Pan 1997; Chan 2004), the notions of *Yihe* and *Xinghe* (translations for parataxis and hypotaxis) are more

widely used in Chinese academia than in western academia. Although there exist differences in opinions about structures above the sentence level, scholars (including Liu 1992; Pan 1997) agree that Chinese is characterised by parataxis beneath the sentence level. Therefore, this means that there may be fewer cases of conjunctions in complex Chinese sentences. In contrast to Chinese, English is predominantly hypotactic, and conjunctions are often needed in English (see Xi 2010, pp.138-140). However, Xi (2010) finds in a case study that more conjunctions are used in the two translations than in their respective English source texts.

Additionally, Xi's (2010) finding contrasts the findings from English literary texts and their Chinese translations. In the present corpus, the translators use different strategies to express intra-sentence semantic relations in Chinese translations when facing different English structures. Strategies translators may use include omitting the SL intra-sentence connective *and* and adding an additive connective when upgrading some juxtapositions or post-modifications into a higher TL structure unit (see 6.2.1). This may indicate that the notions of *Yihe/Xinghe* or *parataxis/hypotaxis* do not always account for an increase or decrease in the use of intra-sentence connectives.

6.2.4 Connective Substitutions and Upward/Downward Structure Shifts

Two substitution categories have been identified and are illustrated below:

(A) Introducing a New sentence: Intra-sentence connective into Inter-sentence Connective

The juxtapositions or post-modifications in ST can be upgraded into a new sentence by substituting inter-sentence connectives with intra-sentence connectives in the TT. In Cases 1 and 2 of Example 6-14, the ST coordinate clause or coordination in the superordinate clause (e.g. *and has profound implications for...* and *and ocean currents, are, therefore...*) is moved to another sentence, with the logical-semantic subject repeated (e.g. 该问题[*this question*] in Case 2). The original semantic relation between the units within the same sentence in the ST is preserved as concisely as possible by transforming the intra-sentence connectives into inter-sentence connectives in the TT.

Example 6-14 Introducing a new sentence: intra-sentence connective into inter-sentence connective

	ST	TT
Surface-level shifts	Intra-sentence connective ->	Inter-sentence connective in a new sentence
CASE 1	This must account for the iron concentrations greater than, and ocean currents are, therefore , the most plausible mechanism for...	...大于 ...的 铁 浓度 可能 就 来源 此。 Gloss: ...greater than ...DE iron concentration may JIU come from this 因而 , 洋流 应该是 最有可能...的 机制。 therefore ocean current should be most likely DE mechanism Back-translations: This is probably where iron concentrations greater than...came from. Therefore, ocean currents should be the likely mechanism for...
CASE 2	The question of whether... has received much attention and has profound implications for...	...这一 科学问题, 受到 了 人们 的 极大关注。 Gloss: ... this science question, receive LE people DE huge attention 同时 , 该 问题 对... 也 具有 重大 意义。 at the same time , this question to... also have great significance Back-translation: ...this scientific question has received a great deal of attention. At the same time, the question is of great significance to ...
Exception case: CASE 3	Absolute temperatures in such a calculation are not meaningful, however , except to the extent that...	然而 , 这样 计算 的 绝对 温度 并没有 Gloss: however this way calculate DE absolute temperature not do not have 意义, 除非... Significance, unless Back-translation: However, the absolute temperatures calculated in this way are meaningless, unless...

However, this different informational arrangement does not frequently occur in the corpus, as only two instances are found. The distributions of arrangements are listed below in their order of occurrence:

List 6-8 The distribution of the connectives led by informational arrangement

I) Intra-Sentence Additive to Inter-Sentence Additive: 2 Instances

- **Transformation:** The additive connective "and" within sentences is translated as "同时也" (and also) or "也" (also) in the target text to maintain additive meaning while shifting from intra-sentence to inter-sentence structure.

II) Intra-Sentence Causal to Inter-Sentence Causal: 1 Instance

- **Transformation:** The causal connective "therefore" is maintained in its causal capacity but shifts from being used within a sentence to linking separate sentences, translated as "因而" (therefore).

III) Intra-Sentence Adversative to Inter-Sentence Adversative: 2 Instances

- **Transformation:** The adversative connective "but" transitions from intra-sentence usage to connecting distinct sentences, translated as "但" (but) or "但是" (but).

One possible explanation for the extremely low occurrence frequency of such translation solutions is source language interference. According to previous studies' findings (including Wang and Qin 2010, p.169), compared to the Chinese academic proeses, the English

counterparts usually use longer sentences. Such a tendency is observed in the Chinese translations of the given text genre. Although the difference is not statistically significant, the Chinese translations have a higher mean sentence segment length than the Chinese non-translations (Wang and Qin 2010, p.169). Therefore, the closer intra-sentential relations in the ST achieved by relative clauses, subordinate clauses, or juxtapositions can be transferred to the TT if the long and complex SL sentences are not segmented differently in the TL.

It is also found that the connectives expressing adversative relations may demonstrate differences in positional features between ST and TT. However, unlike Cases 1 and 2 discussed above, the positional differences do not always result in a straightforward change of the connective from the intra-sentence level to the inter-sentence level. Correspondingly, they are not considered in the shift category due to the introduction of the new sentence. For example, as illustrated in Example 6-15 below, although the SL connective *however* occurs within the sentence boundary in the ST, it semantically introduces an adversative effect between this sentence and the preceding one. In the TT, 然而, the equivalent connective of the English *however*, is located in a sentence-initial position and links the two sentences that express contrasting propositional statements. Nevertheless, there are only two cases of such translation solutions in the corpus.

Example 6-15

ST	TT
Absolute temperatures in such a calculation are not meaningful, however , except to the extent that...	然而, 这样 计算 的 绝对 温度 并没有 Gloss: however this way calculate DE absolute temperature not do not have 意义, 除非... Significance, unless Back-translation: However, the absolute temperatures calculated in this way are meaningless, unless...

(B) Semantic Relation Shifts due to Different Intra-sentence Information Arrangement

Translators often use inversion, viz. different orders of informational units, to comply with the TL's norms of text formation and content organisation (cf. Baker 2018, p.75; Newmark 1988, p.90). The inversions can involve different grammatical aspects, such as predicates, subjects, and modifiers, which may result in connective-based shifts. For example, in Case 1 of Example 6-16, the causality of the ST is formalised as the linear relationship between effect and cause,

where the event *e2* (viz. *because Z-model overestimates...*) is considered as the cause of the event *e1* (viz. *this is probably too high*). On the other hand, the causality in the TT is distributed as the cause of the event *e1* (viz. *the z-model overestimates the depth of excavation*) followed by the effect of the event *e2* (viz. *so the total ejecta may be overestimated*), and the connective of *Inference* 因此[*so*] is consequently used to link two events. Despite the change in the order of the events and a different connective, there are no significant losses, gains or skewing of semantic information in the TT as the TT construction has not lost its cause-effect representation. Thus, such connective substitutions are not considered explicitations. Here The assessment of whether a shift should be categorized as explicitation is inherently subjective and reliant on the specific context. The text suggests that, within this study's framework, the criteria for determining the significance of a shift are connected to the preservation or alteration of semantic information in the TT. Notably, it states that shifts are not deemed explicitations if they do not entail 'significant losses, gains, or skewing of semantic information in the TT'³¹.

Example 6-16 Semantic relation shifts due to different intra-sentence information arrangement

	ST	TT
Surface-level shifts	Different arrangement of information	
CASE 1	This ³² is probably too high because Z-model overestimates the depth of excavation...	<p>Z 模型 高估 了 蚀 深度, 因此抛出物 总体 可能</p> <p>Gloss: z model overestimate LE excavation depth so eject overall may</p> <p>被 高估 了...</p> <p>BEI-PASSIVE overestimate LE</p> <p>Back-translation: The z-model overestimates the depth of excavation, so the total ejecta may be overestimated</p>

³¹ To elucidate, the criteria for determining significance might include:

- **Losses or Gains of Information:** A shift might be regarded as significant if it involves omitting or adding information essential for the discourse's comprehension. Conversely, shifts that do not result in substantial informational changes could be considered less significant.
- **Skewing of Semantic Information:** A shift that alters the intended meaning or representation of semantic relations might be significant. Such distortion could change the focus, subtlety, or logical connections within the discourse.
- **Maintenance of Semantic Relation:** Maintaining the same semantic relation despite the shift could indicate that the fundamental communicative intent remains intact. In these instances, it might be argued that the shift does not significantly alter discourse information.

While the outlined criteria serve as a general framework, determining significance often requires a detailed analysis based on the text's specific features, the nature of the semantic relations, and the overarching communicative objectives. It is crucial to evaluate the shift's impact on the translation's coherence, clarity, and fidelity. Additionally, referring to domain-specific standards or considering the target audience's expectations may enhance the evaluation of significance in the context of explicitation.

³² This in the ST refers to *the estimation of the total ejecta*, which is mentioned previously in the ST. For simplicity, the previous textual information does not appear in the ST provided in the example.

CASE 2	Transitions between these states can be triggered for even smaller, regional changes in the freshwater budget, and they can lead to substantial SST changes within a few years.	淡水 通量 中 即使 存在 很小的、区域性的 变化 也 会 Gloss: freshwater budget in even if exist very small regional changes also can 引发 这些 状态 之间 的 转换, 从而 导致 数年 内 SST trigger these state between DE transition therefore lead to several years in SST 发生 实质性 变化 occur substantial changes. Back-translation: Even small, regional changes in freshwater fluxes can trigger transitions between there states, and therefore leading to substantial changes in SST over several year.
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A possible explanation of such inversion may be that the difference between the SL and TL concerns the representation of specific semantic relations. As illustrated in Chapter 3, the focus of SL and TL complex sentences is fundamentally the same regarding the semantic relation. For example, in a complex sentence expressing *Condition*, *Concession* or *Reasoning* relations, the semantic focus falls on *Result*, *Conclusion* and *Fact* both in English and Chinese. In contrast, the syntactic focus differs between SL and TL sentences, as English sentences prefer to move the focus forward, and Chinese sentences prefer to move the focus backwards. Following this logic, a few cases of connective substitutions related to such intra-sentence information arrangement have been identified in the corpus, and are demonstrated below:

List 6-9 Connective shifts due to intra-sentence information arrangement

- i) Intra Cause-> intra inference, 2 instances**
Because-> 因此 yinci[so]
- ii) Intra concession-> intra contrast, 1 instance**
Although -> 则 ze[whereas]
- iii) Intra Conjunction-> intra inference, 1 instance**
And A can B -> 从而 conger[and therefore]

The table below (Table 6-3) summarizes the data illustrated in Lists 6-1 to 6-6 discussed and exemplified in Section 6.2.2. It shows the five general categories of non-connective-related structures in English that can lead to clauses in Chinese translations. These categories also increase the likelihood of intra-sentence connectives appearing in the target texts. As discussed in Section 6.2.2, although in many cases the relations encoded by the English structures are unclear or less informative, the translators can still reinterpret or “overinterpret” them and mark the relations with connectives in the target texts. Translators also tend to indicate intra-sentence semantic relations with intra-sentence connectives because there is often no direct correlation

between specific words and syntactic structures in the two languages.³³ At the sentence level and above, the translators tend to perceive the implied logical relationships and mark them with inter-sentence connectives (see Chapter 7 for more details).

Table 6-3 Summary of intra-sentence additions

	Coordinate construction translated into TL clauses introduced by connectives	Prepositional phrases translated into TL clauses introduced by connectives	Participles phrases translated into TL clauses introduced by connectives	Relative clauses translated into TL clauses introduced by connectives	Other grammatical or morphological forms translated into TL clauses introduced	Total
Additive	37	20	10	18	0	85
Adversative	0	19	0	0	10	29
Conditional	0	4	4	1	9	18
Causal	0	19	3	0	9	31
Total	37	62	17	19	28	163

The slight increase in the degree of connective-based explicitness, especially below the sentence level in CTTC compared to CCTC (see Chapter 5), is closely linked to the source text interference, namely the frequent occurrence of non-connective-related structures in the English source texts. The structure shifts, alongside the connective additions, can be explained by genre-specific and language-pair-specific factors, which will be discussed in detail in Section 6.3.

6.3 Language-Pair Specific and Genre-Specific Factors

³³ It should be noted that the connectives only appear when it is not redundant or sound awkward to Chinese readers. The connectives are more likely to appear when the translators feel it is necessary to increase cohesion or when the semantic relation between different units cannot be conveyed clearly (see Chapter 7 for more detail).

As mentioned in Chapter 5, English and Chinese display considerable gaps as they are languages belonging to different language families. Compared to English, Chinese is paratactic, dynamic, analytic, and flexible (cf. Lee and Thompson 1989; Pan 1997; Lian 1993, 2010). The following traits of the language pair are briefly discussed in this section.

(1) The Preponderance of Stative Expressions in English versus the Preponderance of Dynamic Expressions in Chinese in the Given Text Genre

In his book *A comparative study of English and Chinese*, the scholar Shuneng Lian (1993) outlined the contrasting characteristics of static English and dynamic Chinese. Lian characterized English as static due to its tendencies towards (1) nominalization, (2) using nouns rather than verbs as agent subjects, (3) using nouns instead of adjectives in titles, (4) extensive use of adjectives, adverbs, and prepositions, and (5) using weak and grammaticalized verbs. In contrast, Chinese is characterized as dynamic due to its tendencies towards (1) verb conjunction, (2) using verb phrases as any component of a sentence, (3) verb repetition or reduplication, and (4) using strong verbs.

Krein-Kühle (2003, p.159-160) also stated that prepositional constructions, i.e. prepositions and prepositional groups functioning, as adverbial phrases, are also a common feature in English scientific and technical discourse because they establish closer intra-sentential relations than their corresponding clause variants. However, linguists such as Wang (1984, p.241), Lian (1993, p.75) and Pan (1997, p.379) highlighted that in contrast with English, Chinese does not have a powerful morphological variation system. Furthermore, Chinese prepositions are less widely used than English prepositions to realise semantic and grammatical relations.

In the present corpus, as illustrated in 6.2.1, the frequent and various use of prepositions and the morphological variation gives the authors of the English Corpus (viz. ESTC) more linguistic choices in expressing the semantic relations. By contrast, Chinese authors or E-C translators may have a more restricted range of rhetorical resources and relies more heavily on connectives to represent semantic and logical relations in academic articles. The renderings exemplified in 6.2.1 from English to Chinese often reflect the translation strategy of turning “static” expressions into “dynamic” ones. When rendering prepositional phrases and noun

phrases from English to Chinese, Chinese translators often change the phrases into clauses containing verbs which are even repeating or overlapping. Such a syntactic change provides evidence for the likelihood of connective-related shifts in the present corpus, as the connectives can greatly enhance the cohesion and logic of the TL.

(2) Nested Structure and Information Package in English versus Linear Structure in Chinese in the Given Text Genre

As mentioned previously in Chapter 5, the hypotaxis of English sentences is prominent, which gives English a nested structure and more compound sentences. The SL constructions, such as attributive clauses and the flexible use of prepositions and participle phrases, reflect nesting in the English structure. Furthermore, these constructions reflect the English habit of “information packaging” (Gerzymisch-Arbogast 1993 cited in Krein-Kühle 2003, p.155). This habit results in syntactic compression and condensation of meaning, especially when English register considerations come into play and modify syntax. For example, the nominalised register is a typical characteristic of English scientific and technical discourse (Sager et al. 1980, p.184). One feature of this nominalised register is the non-finite verb form in English, such as the *-ing* forms analysed in Section 6.2.1. Thus, excessive sentential complexity or excessive use of clauses in the same sentence can often be avoided in the ST by using English clause-reducing linguistic means that express subordination, such as relative clauses, adnominal relative clauses, and the gerundial phrase.

In contrast to English, the parataxis of Chinese sentences is characterised by mainly linear structures realised by clauses segmented by commas, especially when Chinese has no equivalent grammatical construction for an English construction. For example, *which* in English can introduce a subordinate clause that provides additional information about the subject of the sentence. However, there is no direct equivalent in Chinese for *which*, so the translator has to find another way to convey the same meaning. In this case, the translator may use two linear clauses, and a connective may be inserted to indicate the semantic connection between them.

Overall, in many cases found in the present corpus, the E-C translations demonstrate the “non-systematic availability” of languages (Wandruszka 1969 cited in Krein-Kühle 2003, p.148).

This means that what is expressed in the ST through grammatical means may be expressed in the TT through lexical means, allowing for "cross-rank equivalence" or "equivalence in difference" (Jakobson 1992 cited in Krein-Kühle 2003, p.148) at the syntactic and textual levels. The subordinate or paratactic translation solutions for SL clause-reducing devices in the present corpus are mainly due to grammatical syntactic and semantic constraints in the TL. Furthermore, semantic equivalence in the TL is often achieved by adding words, including subordinations that may lead to the occurrence of connectives. However, such shifts should not be confused with explicitation in many cases, especially if they do not alter the discourse semantic relation in comparison to the ST.

The discussion in 6.2 and 6.3 supports that the extensive use of connectives in translations is not always "a universal strategy inherent in any process of language mediation" (Laviosa-Braithwaite 1998, p.289), as the increased number of connectives in the translation is closely connected with systemic and genre constraints. In other words, language-pair differences and genre's characteristics can significantly impact the prominent connective-related additions in English-Chinese translation.

6.4 Summary of the Findings of Research Question 3 and the Discussion

Findings. On the basis of the above-mentioned quantitative and qualitative analysis of the parallel corpus, generalisations in respect of connective-based preservations, additions, omissions and substitutions realised by the use of connectives can be drawn as follows:

- (1) The translators are more likely to retain the original logical-semantic relations by translating the ST connective into an equivalent TT connective. Such a strategy results in many occurrences of connectives (675 out of 985 connectives) in the Chinese translations.
- (2) Compared to the high number of connective additions (276 instances), there are low numbers of substitutions (34 cases) and omissions (69 instances). Around 28.02% of the additions (276 out of 985 connectives) in the translations are added during the E-C translation process. This percentage contributes to the higher frequency of connectives in the translations compared to the non-translations produced in the same language.

- (3) The SL structures drive a significant proportion of connective additions (63.41% of total additions, see for 7.1 more details). Two broadly defined SL syntactic patterns, post-modifications, and juxtapositions, typically coincide with upward shifts and connective additions in the TL.
- (4) At the semantic level, a significant number of shifts (63.41% of total additions, 32.35% of total substitutions and 79.71% of total omissions, see 7.1 for furthermore details) do not necessarily provide new logical-semantic relations. Instead, the shifts can reflect the strategy of rephrasing SL content which is caused by language-pair-specific or genre-specific reasons.

Discussion. The findings and examples discussed in this chapter have illustrated that a set of SL recurrent syntactic forms may lead to occurrences of the TL connectives that are not present in the ST. However, it is important to emphasise that many of the connective shifts should not be considered as explicitations or implicitations because their explicating or implicating effect is unclear. For example, it is problematic to assume that a specific addition attempts to make the additive semantic relation explicit, and not assume that the addition is an arrangement due to a syntactic upgrade. Indeed, is the clause introduced by an additive connective in Chinese generally more explicit than a relative clause, a *with*-construction or an *ing*-adjunct in English? This appears to be far from evident, and instead, it is more likely to be the case that the sometimes-considerable gap between English and Chinese sentence structures triggers different translation solutions. As a result, there may be connective-related shifts between the ST and TT. Therefore, a careful comparison between the ST and the TT is required to distinguish between connective shifts aimed at explicating or implicating the semantic relations or information between sentences, and those connective shifts focused on rephrasing or adapting the syntactic structure of the original sentences. This distinction is crucial in terms of the use of connectives, separating shifts that have an explicating or implicating effect from those that merely rephrase the original ST into the TL. In contrast to explicitation-related shifts, the distinction recognizes that not all shifts in connectives contribute to making the information more explicit or implicit. Some shifts are motivated by the need to adapt sentence structures, reflecting a form-oriented concern rather than a focus on semantic clarity. This nuanced categorization allows for a more comprehensive understanding of the various shifts that can occur during the translation process, going beyond the explicitation-implication binary to consider the role of form-oriented adjustments.

The following chapter is the final investigation associated with the last research question. The investigation involves a parallel comparison between the SL and TL in terms of losses or gains of semantic relations associated with connective shifts to determine the extent of explicitation and implicitation in the corpus. Referring to the quantitative and qualitative aspects of the use of connectives addressed for the first three research questions, the final investigation also comprises qualitative analysis of explicitations and implicitations to understand the motivations and triggers behind them.

7 Chapter 7 Explications/Implications and the Motivations

The four subcategories of connective-based translation patterns (viz. additions, omissions, substitutions, and substitutions) can be further categorised as explications/implications (if they alter the semantic relation in comparison to the source text) and non-explications/non-implications (if they do not alter the semantic relation in comparison to the source text). Section 7.1 discusses the distribution of each type of shifts and Section 7.2 discusses the motivations behind the explications/implications identified in the corpus.

7.1 The Distribution of Explications/Implications and Non-Explications/Non-Implications

As illustrated in Table 7-1, the number of the four patterns in the parallel corpus have been identified according to their explicating or implicating value and are illustrated in Table 7-1:

Table 7-1 Distribution of translation strategies

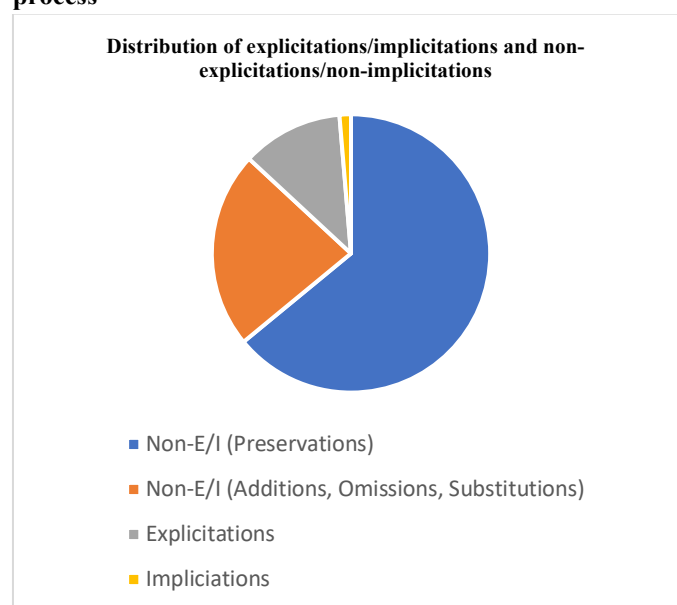
Strategy Type	Inter-Sentence	Intra-Sentence	Total	Percentage of Total Occurrences
Explication-Related				
Addition	57	44	101	9.58%
Substitution	4	19	23	2.18%
Implication-Related				
Omission	5	9	14	1.33%
Non-Explication/Non-Implication-Related				
Addition	1	174	175	16.60%
Substitution	7	4	11	1.04%
Omission	0	55	55	5.22%
Preservation	213	462	675	64.04%
Total	287	767	1054	100%

The following findings can be concluded from the Table:

- (1) As shown in Chart 7-1, 138 instances (101 additions, 23 substitutions and 14 omissions), accounting for 13.09% of 1054 instances, are identified as explications or implications (specifically, 11.76% are explications, and 1.33% are implications) as

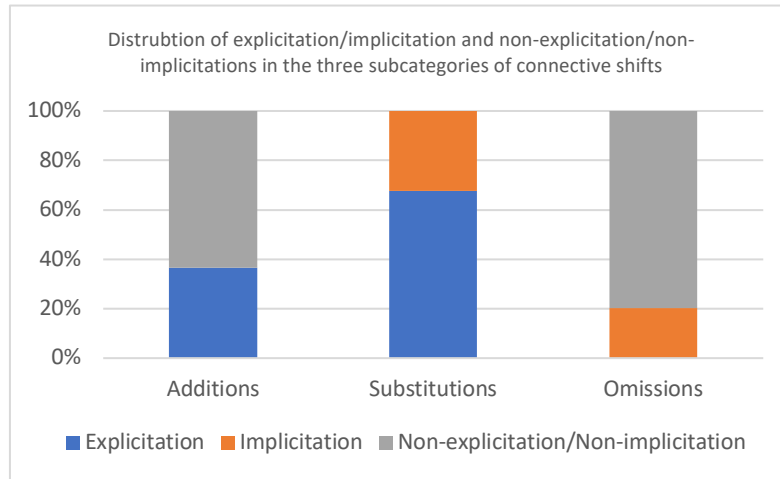
they emphasise specific semantic value. In contrast, only 241 instances (175 additions, 11 substitutions and 55 omissions), accounting for 22.87 % of 1054 instances, are motivated by the intention of rephrasing phrases in the TL.

Chart 7-1 Distribution of explicitations/implicitations and non-explicitations/non-implicitations during the translation process



(2) Chart 7-2 shows the frequency of explicitations/implicitations and non-explicitations/non-implicitations in the form of additions, omissions and substitutions. As illustrated in the chart, most of the additions (63.41%, 175 out of 276 instances) are motivated by the rephrasing of the original text and only a small portion of additions (36.59%, 101 out of 276 instances) are motivated by providing extra information about specific logical-semantic relations. Furthermore, 67.65% of substitutions (23 out of 34 instances) are used to clarify inferred semantic relations, and 32.35% of substitutions (11 out of 34 instances) are used to convey the ST original messages into the TL, without explicitating or implicitating. Finally, 20.29% of omissions (14 out of 69 instances) are correlated to packing specific semantic relations, while 79.71% of omissions (55 out of 69 instances) have no such function.

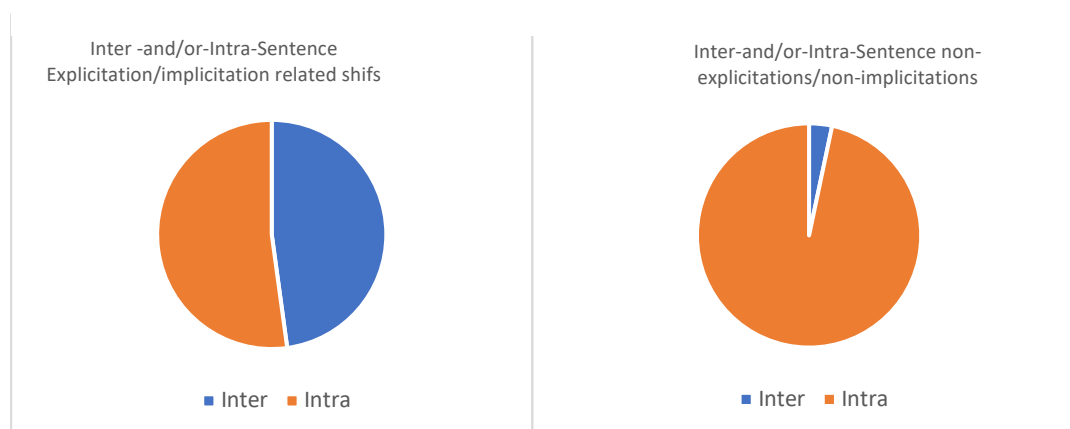
Chart 7-2 Frequency of explicitations/implicitations and non-explicitation/non-implicitations in the three subcategories (additions, omissions, and substitutions)



(3) Chart 7-3 illustrates that whether for explicitations/implicitations or non-explicitations/non-implicitations, intra-sentence shifts occur more frequently than inter-sentence shifts. The Chart also demonstrates that the difference between intra-sentence and inter-sentence shifts is remarkable if the shifts are only correlated to the rephrasing messages from the SL to TL (viz. non-explicitations/non-implicitations). Specifically, 47.84% of explicitations/implicitations (66 out of 138 instances) are made by the translators inter-sententially, and 52.17% of explicitations/implicitations (72 out of 138 instances) are made by the translators intra-sententially. In contrast to this, the distributions of intra-sentence and inter-sentence shifts can counterbalance each other when they alter the original semantic information (viz. implicitations/non-implicitations). Specifically, most non-explicitations/non-implicitations ³⁴ occur between intra-sentence units (96.98%, 233 out of 241 instances), and only a small proportion of non-explicitations/non-implicitations occur between inter-sentence units (3.32%, 8 out of 241 instances).

³⁴ Intra-and/or-inter-sentence preservations are not included in this calculation.

Chart 7-3 Frequency of explicitations/implicitations and non-explicitations/implicitations above and below the sentence level



Based on the findings discussed above, it is evident that the shifts in translation occur at two levels. On the one hand is the intra-sentential level, whereby languages often differ in their optional and obligatory rules of sentence formation. On the other hand, stylistic shifts are likely to occur at the inter-sentential level, whereby the TL may exhibit substantial differences in text formation and message organisation rules. The investigated corpus shows that both explicitation/implication-related shifts and non-explicitation/implication-related shifts occur at the two levels. The difference between the two types of shifts is that the frequencies of explicitations/implicitations are equal at the inter-sentential level, but the frequency of non-explicitations/non-implicitations is dominant at the intra-sentential level.

The distribution difference can be predicted by various syntactic modifications when the ST is transferred into the TT. As examined in Chapter 6, the frequent occurrence of syntactic modifications and the consequent connective shifts below the sentence can be plausible solutions for translators when rendering the ST content successfully in the TL within the given genre, which in many cases leads to no obvious semantic relation effects. According to previous studies (cf. Al-Zoubi and Al-Hasnawi 2001), the phenomenon of such shifts can be redefined as a consequence of the translator's effort to operate at the syntactic level to ensure the translation is acceptable for target readers.

The occurrence of stylistic shifts can be predicted by referring to the rhetorical and stylistic conventions of each language in question and is what is described as "idiosyncrasy" by Toury (1995), including individual translators' preferences, choices, and abilities. According to the

working definitions, the present study's explicitations and implicitations are closely related to stylistic shifts. As the qualitative and quantitative analyses have been conducted in the previous chapters, the following sections of this chapter will focus on discussing the distributions of explicitations/implicitations and their underlying triggers.

7.2 Explicitations and Implicitations

The previous section has discussed the distribution of all the connective-based patterns during the translation process. By contrast, this section will examine explicitations and implicitations that can trigger a gain or loss of semantic relations in translations. Section 7.2.1 will review the distribution of connective-based explicating shifts and implicating shifts in the corpus. Additionally, Section 7.2.2 will reveal how some triggers may result in an explicitation or implication of connectives in the E-C translations of the given genre.

7.2.1 The Distribution of Explicating Shifts and Implicating Shifts

Table 7-2 provides an overview of the distribution of shifts identified as explicitations (in the form of additions) in the corpus. Furthermore, the additions are listed and classified according to their encoded semantic relations below:

Table 7-2 Addition of each semantic relation for explicitation

	Semantic relation	Inter-sentence (occurrences)	Intra-sentence (occurrences)	Total
Addition	Conjunction	也 ye[also](10) 而 er[and](6) 还 hai[also] (4) 同时 tongshi[at the same time](2) 此外 ciwai[moreover](1) 亦 yi[also](1) 而且 erqie[and](1)	也 ye[also] (7) 然后 ranhou[and then] (2) 进而 jiner[and then] (1) (随着) 亦 yi[also] (1) 而 er[and] (1)	37
Adversity	Contrast/Concession	则 ze[whereas](12) 而...则 er...ze[whereas](6) 相反 xiangfan[in contrast](1) 然而 raner[but](1)	而...则 er...ze[whereas](3) 则 ze[whereas](1) 但 dan[but](6)	43

		但 dan[but](3) 不过 buguo[however](2) 然而 raner[however](1) 却 que[but](1)	但是 danshi[but](3) 虽然...可是 suiran...keshi[although...(but)](1) 虽然...但 suiran...dan[although...(but)](1) 然而 raner[however](1)	
Causation	Cause/Inference	因此 yinci[therefore](3) 因为 yinwei[because](1) 因为...所以 yinwei...suoyi[because...so](with)(1)	从而 conger[and therefore](7) 由于 youyu[because](1) 因为 yinwei[because](4) 因此 yinci[therefore](1) 所以 suoyi[so](with)(1)	19
Condition			倘若 tangruo[if] (1) 倘若...则 tangruo...ze[if...(then)] (1)	2
Total		57	44	101

Table 7-3 illustrates the explicating substitutions identified in the corpus. The table also demonstrates that the E-C translators use semantically specific connectives to replace the unspecific ones in the original texts.

Table 7-3 Explicating substitutions of each semantic relations

Semantic relation	Inter-sentence (occurrences)	Intra-sentence (occurrences)	Total
Conjunction-> Inference	-	And-> 从而 conger[and therefore] (2) and ->因此 yinci[therefore] (1) And->因而 yiner[and therefore] (1)	3
Conjunction-> Contrast/Concession	-	And -> 而...则 er...ze[whereas] (6) And-> 但 dan[but] (3) Or -> 但...也 dan[but...also] (1) Or-> 而...则 er...ze[whereas] (1) And-> 则 ze[whereas] (1)	12
Total	-	15	15

Table 7-4 shows that the E-C translators also omit certain connectives in the corpus, which may result in a loss of semantic information compared to STs.

Table 7-4 Implicitating omissions in the corpus

Semantic relation	Inter-sentence (occurrences)	Intra-sentence (occurrences)	Total
Addition-> null	Also-> null (2) And -> null(1)		3
Causation -> null	Therefore -> null (1)	So that-> null (2) Hence -> null (1) As-> null (1) Because -> null (1)	6
Condition -> null		When -> null(3)	3
Adversity-> null		But-> null(1)	1
Total	4	9	13

The following observations can be made from the table results illustrated above:

Observation 1: Explicitating connective additions are considerably more frequent in additive and adversative relations compared to other relations.

Observation 2: The number of explicitating substitutions of adversative connectives for additive connectives is disproportionately high.

Observation 3: The number of implicitations (in the form of omissions) cannot counterbalance the number of explicitations, and there is also no apparent recurrent high frequency of implicitations.

Instead of directly reviewing the reasoning of these observations, the following section will focus on analysing the triggers and motivations of explicitations and implicitations in the corpus as they are closely related to the observations mentioned above.

7.2.2 Motivations of Explicitations and Implicitations

Although induced from the connective-based explicitation-related phenomenon (including explicitation and implication) of a bidirectional English-German business text corpus, the five factors proposed by Becher (2011a, p.180) are highly recapitulative to be generalised for the present corpus and to summarise the motivations behind explicitations and implicitations. The argument posits that Becher 's factors, as proposed in his study on English-German business text corpus, may not be readily applicable or comprehensive enough to generalize and

summarize the motivations behind explicitations and implicitations in the present corpus. The justification for this claim lies in the bidirectionality of the English-German corpus, which may introduce specific dynamics and contextual nuances distinct from the unidirectional nature of the current corpus. Additionally, the specific characteristics and norms of the translation community in the TL might differ, necessitating a more tailored understanding of why translators choose to add, replace, or omit connectives. Therefore, the claim underscores the need to contextualize and validate the proposed factors through an examination of examples within the current corpus to better elucidate the motivations underlying explicitation and implication phenomena. Therefore, the five factors will be discussed using the examples identified in the corpus to explain when and how the translators add, replace, and omit connectives to comply with the norms of the TL community.

(i) Complying with the Communicative Norms of the TL Community

The explicitations of causal connectives evidenced in this section may be a result of the language-pair-specific differences in communicative norms. According to the findings discussed in Section 5.1, the CCTC demonstrates a higher degree of explicitness conventional in the use of causal connectives, viz, there is a heavier reliance on causal connectives in the CCTC (25.81%) than in the ESTC (15.04%). In other words, the causations are often more strongly expressed in Chinese non-translations of the given genre in the corpus. Thus, the E-C translators are expected to add causal connectives, making the encoded causal relations explicit in the translations. Cf. The following example:

Example 7-1

EST: It does not matter where the freshwater is added, as long as...

CTT: 因此, 淡水输入在哪增加并不是非常重要, 只要...

Back-translation: **So**, it does not matter where the freshwater input increases, as long as...

The added 因此[so] in the CTT of Example 7-1 is used as a connective expressing inference. Thus, the connective explicitates a causal reading between the sentence where the connective is located and the previous discourse.

The explicating use of additive connectives is also strongly associated with Chinese communicative conventions. As reviewed in Chapter 5, the CCTC features higher connective

explicitness in additive relations than in other semantic relations. Furthermore, Chapter 6's discussion revealed that some English constructions and devices (e.g. *ing*-adjunct, *with* construction, relative clauses) are not counted as connectives in the present study mainly due to their vague or unclear semantic relation encoded. However, the quantitative data in Chapter 6 indicate that these semantically vague constructions have cohesive functions and often lead to connectives in the TT. Therefore, although the ESTC uses additive connectives more frequently than the CCTC (see Chapter 5), the frequency of the use of additive connectives would decrease in the ESTC and increase in the CCTC if all the English conjunctive devices are involved. That is to say, apart from the SL interference, Chinese non-translations themselves demonstrate a strong tendency to use connectives to engender the expansion of meanings. Thus, it is not surprising that the E-C translators tend to accentuate the encoded semantic relation of *Expansion* between pieces of discourses of the TT by inserting additive connectives. As illustrated in Example 7-2 below, by adding an inter-sentence connective adverb 也 [also], the sentence has expanded on the discourse to which it is attached by expressing the same state of affairs from an additive perspective.

Example 7-2

EST: Although this points towards the need for caution in the interpretation of our results, we note that[...].

CTT: 这提醒我们, 在结果解释中需要格外谨慎, 不过我们**也**注意到[...].

Back-translation: This reminds us of the need for extreme caution in interpreting the results, but we **also** note that...

(ii) Dealing with Specific Restrictions of the Target Language System

The quantitative and qualitative analyses in Sections 6.2 and 6.3 have illustrated that the E-C translators in the corpus may upgrade an SL structure to a higher unit in the TL syntactical rank (e.g. from an SL adjunct to a TL standard, finite clause). Furthermore, such upgrades are often associated with the preceding discourse using a TT connective when there is a lack of a construction semantically and syntactically equivalent in the TL to the SL structure. Some English structures, such as *ing*-adjunct and *with* construction, feature semantically unspecified meanings ranging from Similarity to Causation (cf. Quirk et al. 1995, p.564, 1124). In the investigated corpus, English structures sometimes involve informative reading (i.e. Causation and Adversity) in the translations, which motivates a connective-based explicitation. This explicitation is demonstrated in the following examples:

Example 7-3

EST: ... external factors may induce global cooling, causing the ice sheet to surge.

CTT: 也许是一些外部因素引发了全球变冷, 从而导致冰川倾泻而出。

Back-translation: ...maybe some external factor triggered the global cooling, (and) **therefore** causing the ice sheet to surge.

Example 7-4

EST: **With** only one reversal simulated we cannot yet say anything about the statistical behaviour of reversals in our model.

CTT: 因为出现了一次倒转, 所以在我们的模型中, 我们不能讨论任何地磁倒转的统计行为。

Back-translation: **Since** there is a reversal, we cannot discuss any statistical behaviour of geomagnetic reversal in our model.

Example 7-5

EST: Warmer periods in the past that resulted in peat accumulation in the Canadian sub-arctic and Alaskan arctic, where there is no evidence of current carbon accumulation, are thought to reflect the combination of warmer and wetter conditions.

CTT: 过去的一些温暖时期导致加拿大的副极地地区和北极圈内的阿拉斯加地区出现泥炭堆积, 这些温暖时期被认为是暖湿组合环境的反映, 但并未在这两个地区发现近期的炭堆的证据。

Back-translation: The past warm periods, which led to peat accumulation in the Canadian sub-arctic and Alaskan arctic, are thought to reflect a combination of warm and wet conditions, **but** there is no recent evidence of carbon accumulation in either region.

In Example 7-3, the Chinese-English translators reproduce the potential clausal reading of the *ing*-adjunct by adding the causal/instrumental connective 从而[*thus, in this way*]. In Example 7-4, the translators fix the semantic relation as Causation using the paired causal connectives 因为...所以[*because...(so)*]. In Example 7-5, the translators upgrade the embedded relative clause (viz. *where there is no evidence of current carbon accumulation*) into a coordinating clause introduced by 但[*but*]. This example emphasises the adversative relation between arguments, with 但, which is interpreted in its concession sense.

If other possible Chinese translation solutions of the *ing*-adjuncts are proposed as *with*-clauses in English, the following questions can be answered: what else could the translator have done? Why do the shifts in the TT seem to be explicating options? Although this may not be the most plausible text, the *ing*-adjunct of the English ST in Example 7-3 may be interpreted as the

semantic relation of Conjunction by choosing a paratactic connection with the additions of connectives, i.e. 并 [and] (see Example 7-3*³⁵).

Example 7-3*

CTT*: 外部因素可能引发了全球变冷, (并)导致冰川倾泻而出。

Back-translation*: External factors may have triggered global cooling and caused the glaciers to pour out.

A coordinating construction without the means of connectives is another translation solution that can act as a TT correspondence of the English *with*-clause in Example 7-4. Although the two asyndetically connected clauses in Example 7-4* may not be plausible translation solutions, they may be interpreted in different senses, such as Conjunction, Causation, Instrument and Condition.

Example 7-4*

CTT* 只模拟了一个反转, 我们还不能说我们模型中反转的统计行为。

Back-translation*: With only one inversion stimulated, we cannot yet say the statistical behaviour of the inversion in our model.

As shown in Example 7-5* below, the ST sentence in Example 7-5 can be paraphrased into coordinating clauses linked with an additive connective (which can also be omitted), such as 并[and] and 且[and]. Additionally, the semantic relation in the example below is inferred as conjunction senses.

Example 7-5*

CTT: 过去的暖期导致了加拿大亚北极和阿拉斯加北极地区的泥炭堆积, (并[and]/且[and]/而[and]/null) 目前没有证据表明那里有炭堆积, 这被认为反映了温暖和湿润条件的结合。

Back-translation: Past warm periods have led to peat accumulation in the Canadian sub-arctic and Alaskan arctic, **and** there is currently no evidence of carbon accumulation (and) this is thought to reflect a combination of warm and wet conditions.

Regardless of what TL connective is used, the precise meaning of these structures in English cannot be reproduced in Chinese, as the above-mentioned Chinese connectives are less vague than the *with* and *ing*-adjunct. Nevertheless, these translation solutions would be “weaker”

³⁵ For the examples marked by * in this section, the translations of the TT are the ones proposed by the author and do not appear in the corpus.

compared to a translation that uses 从而, as additive connectives or asyndeton are less informative than causal connectives.

Another category that this trigger may explain is the substitutions for *and* in English. According to a study by Becher (2011a), *and* in English is the least explicit connective as it covers a wide spectrum ranging from similarity, temporal, and causality. In an ST unit linked with the previous discourse by *and*, the reader or listener must determine the semantic relation from the context inferentially, and the relation may be “over-interpreted” as more informative ones. cf. the following examples:

Example 7-6

EST: The first term on the right is the inverse of the dependence of $\delta^{18}\text{D}$ on temperature observed for this sector of East Antarctica, **and** the $\delta^{18}\text{Osw}$ term corrects for the variation of $\delta^{18}\text{D}$ with ice volume.

CTT: 等号右边的第一项为东南极研究区域对温度依赖性的倒数, 而表达式 $\delta^{18}\text{Osw}$ 则是以冰体积对 $\delta^{18}\text{D}$ 的变化进行校正。

Back-translation: The first term on the right is the inverse of the dependence on temperature observed for this sector of East Antarctica, **whereas** the $\delta^{18}\text{Osw}$ term is corrected for the variation of $\delta^{18}\text{D}$ with ice volume.

Example 7-7

EST: [...], large enough to account for the ‘missing’ carbon injected into the atmosphere **and** not accounted for in oceanic uptake or atmospheric storage.

CTT:[...], 大到足以达到进入大气中的“遗失碳汇”的量, 但还不足以释每洋吸收和大气储存中的那部分“碳汇”的量。

Back-translation: [...], large enough to account for the ‘missing’ carbon injected into the atmosphere **but** not enough for the amount in oceanic uptake or atmospheric storage.

Example 7-8

EST: Some strong zone must exist within or beneath the crust to support short-wavelength topographic features **and** prevent buried loads from achieving local isostatic balance by deforming the surface.

CTT: 地壳中或地壳下存在刚性层来支撑短波长的高程特征, 从而使下部负载无法通过地表形变达到局部均衡。

Back-translation: Strong zones within or beneath the crust support short-wavelength topographic features, so buried loads cannot achieve local isostatic balance through surface deformation.

In Example 7-6, the translators’ use of the connective for *and* makes the semantic relation encoded in the TT more explicit as contrastive reading is the most plausible for the connective. However, the connective can sometimes be interpreted as encoding a concession or conjunction. In Example 7-7, the translators use 但[*but*] to alter the semantic relation in question exclusively to a concessive reading. In Example 7-8 that uses 从而[*so that*], there is no other potential semantic relation than a causal reading between the TT statement and the preceding discourse. In the present corpus, the E-C translators use a less vague connective to highlight the ST’s

potential logical-semantic relations encoded in the text as these relations are highly informative. Furthermore, the connective is especially used when there is a potential Causation or Adversity.

Overall, the discussion highlights that specific regular connective shifts in the corpus are strategies used to compensate for Chinese morphosyntax's limitations. That is to say, it is challenging to precisely replicate the linguistically encoded meaning of (i.e. English phrases of *with*) present particles of the connective *and* in Chinese due to the cohesive vagueness of the SL structures. The translators in the present corpus often adopt the most plausible and informative reading of the potential semantic relation between units by making an explicitation (in the form of additions or substitutions) with causal or adversative connectives to prevent losses of potential semantic meanings.

(iii) Optimizing the Cohesion of the Target Text

According to Pym's (2005, 2008) theory, translators are "risk-avoiding mediators between cultures", and they are expected to be highly concerned about the quality of their product, including the cohesion of the translational text (cf. also Becher 2011a, p.184). Pym delves into the idea that translators act as "risk-avoiding mediators between cultures." To elaborate on this, Pym (2008) emphasizes the role of translators in navigating potential pitfalls and challenges that arise during the translation process. The term *risk-avoiding* suggests that translators make strategic decisions to minimize the potential negative impacts of cultural differences, linguistic nuances, and other challenges inherent in cross-cultural communication. Explicitating a cohesive relationship with overt markers is a skilled translation strategy that improves text cohesion in different types of corpora, i.e. a corpus of English-German and German-English translation of business texts (cf. Becher 2011a, 2011b) and a corpus of E-C and Chinese-English CI (cf. Tang 2018). Similarly, the present corpus' addition of connectives is a recurrent translation choice performed by the translators to compensate for the potential loss of cohesion. This use of connectives is demonstrated in the following example:

Example 7-9

EST: To determine [...], additional discrete samples [...] were size-fractionated by selective filtration and measured with the FRR fluorometer.

CTT: 为了确定..., 我们~~还~~选取了额外的离散样品[...], 利用选择性过滤装置对样品做了尺寸分选后, 以 FRR 荧光剂进行测量。

Back-translation: To determine, we **also** selected additional discrete samples, used selective filtration, and measured them with the FRR fluorometer.

In Example 7-9, *additional discrete samples* is the first subject in the linear ordering of the little ST discourse statement. In contrast to this, the subject of the TT sentence is the implied subject *we* which is used to identify the writer(s). When reviewing the text context of the ST-TT sentence pairs, the discourse topic of Example 7-9 is assumed to be *how we measured changes in photochemical energy conversion efficiency with a fast repetition rate (FRR) fluorometer*. This discourse topic is written at the beginning of the ST paragraph, with each of the following sentences addressing a part of the topic, including how the instrument is operated and what the FRR fluorometer measures. The ST sentence in Example 7-9 continues the discourse topic by using the previous sentence's object as the subject. However, the E-C translators do not only use this pure linear information organisation in the text, as they mark the implied *we* and also insert a connective *也* (paraphrase: *also*) to prevent a loss of cohesion -à-vis the vis source text. Therefore, it is plausible to assume that the connectives, especially the additive ones, are regularly employed at inter-sentence boundaries by the translators in the present corpus to strengthen cohesion. This is illustrated in Examples 7-10 and 7-11 below:

Example 7-10

EST: To test this assumption in a rigorous way would require signal estimated from both types of experiment performed with the same model. These were not available here.

CTT: 为了能够严格检验该设想，需要有来自相同模式的两类实验得出的信号评估结果。而这一条件在这里我们无法达到。

Back-translation: To test the assumption rigorously, estimating signals from both types of experiments with the same model is required. **Moreover**, that is a condition we cannot meet here.

In Example 7-10, the English ST is written without an explicit connective. The cohesive management mainly lies in the anaphoric reference indicated by 'these'. In contrast to the ST, the TT uses an additive connective 而 (paraphrase: *and, furthermore*) to emphasise that the sentence topic continues to address part of the overarching discourse topics stated previously.

Example 7-11

EST: As one would expect from the short period, this oscillation is local to the North Atlantic; it is **also** deep the flow oscillates in a region[...]

CTT: 正如短期变化一样，该震荡也仅限于北大西洋。而且该震荡也很深，在[...].

Back-translation: Like short-term changes, the oscillation is **also** confined to the North Atlantic. **Moreover**, the oscillation is **also** deep, in a region of ...

At the beginning of the second ST argument in Example 7-11 (viz. *it is also deep [...]*), the connective is not used to signal the cohesion; instead, the semicolon is used as a cohesive

device – akin to additive connectives that emphasise the conjunction relation between arguments. In the TT, the argument is rendered as a new independent sentence. The translators use an additive connective 而且[and] at the beginning of the new sentence to signal that the new sentence relates to the previous discourse topic, thus preventing a potential loss of cohesion due to an upgrade of the sentence.

To conclude, the text often forms large complex lists to address a topic. The connective, especially the one within sentence boundaries, can be used to signal that the current sentence topic continues to address the previous topic or part of the overarching discourse topic. This function can strengthen the discourse's internal thread. Therefore, translators are expected to use inter-sentence connectives to ensure text cohesion in English-Chinese version. Translators may choose alternative strategies based on the nature of the text, the desired effect, or adherence to specific conventions. Therefore, the prescriptive expectation may be valid in cases where maintaining a strong internal thread and text cohesion align with the conventions and communicative goals of the given translation context.

(iv) Avoiding Stylistically Marked Ways of Expression

The connectives used to explicitate exhibit a sharper tendency to be “homogenous”, “conventional”, or “standardised” (Baker 1996, p.185). Firstly, the explicating connectives “gravitate towards the centre of a continuum” (Baker 1996, p.185) as the range of explicating connectives is more limited than the connective used in TTs. Secondly, the use of explicating connectives “moves away from extremes” (Baker 1996, p.185) because the translators in the present corpus use high-frequency connectives to make explicitations. For example, the connectives 也[also], 而...则[whereas], 但[but] and 从而[therefore] seem to be particularly popular among authors of Chinese non-translated RAs (see Chapter 5) to express Conjunction, Contrast, Concession, and Causation, respectively. They are persistently used here as explicating connectives and can be regarded as conforming to communicative preferences. It is reasonable to assume that the standardised usage of connectives in translations to explicitate the semantic relations makes the TT more conventional, thus minimising the risk of TL commissioners and readers rejecting the TT.

(v) Exploiting Specific Features of the Target Language System

Apart from the examples of adding a connective to explicitate the meaning of some vague English structures, there are also cases where the Chinese lexicogrammar also provides an opportunity for the E-C translators to implicitate the discourse meaning by omitting the connectives. However, such cases are rare in the present corpus.

As discussed in Chapter 6, Chinese grammar provides an option that English lacks because a discourse marker is often not grammatically required in Chinese. The majority of omissions of discourse markers are associated with intra-sentence *and* in English, and such omissions are not identified implicitations as they have few influences on semantic relations vis-à-vis the ST. Therefore, it can be argued that in some cases, the translators in the present corpus have made an implicitation as they believe that they can exploit Chinese lexicogrammar's discourse marker option. Example 7-12 shows this unique feature of Chinese grammar:

Example 7-12

EST: During the Holocene, when climate and the ECM are relatively stable, insolation decreases from $523 \text{ W}\cdot\text{m}^{-2}$ to $475 \text{ W}\cdot\text{m}^{-2}$, indicating that insolation alone does not control climate stability.

CTT: 全新世时, 气候和 EMC 均相对较稳定, 太阳辐射由 $523 \text{ W}\cdot\text{m}^{-2}$ 降至 $475 \text{ W}\cdot\text{m}^{-2}$, 说明仅仅太阳辐射本身不足以影响气候的稳定性。

Back-translation: During the Holocene, both climate and EMC are relatively stable, (and) solar radiation decreases from $523 \text{ W}\cdot\text{m}^{-2}$ to $475 \text{ W}\cdot\text{m}^{-2}$, indicating that solar radiation alone is not enough to affect climate stability.

The ST sentence in Example 7-12 comprises subordinated clauses. Like other subordinated conjunctions, *when* predicates a temporal or conditional semantic relation between the two arguments, *climate and the ECM are relatively stable* and *insolation decreases*. In the Chinese translation, more than one clause is juxtaposed into the same sentence without marked discourse markers. Although the TT sentence, in either case, is grammatically correct, the encoded condition has been weakened, and the arguments may be interpreted as *Conjunctions*.

It is vital to note that the present analysis only investigates the recurrent types of explicitations and implicitations, which allow researchers to capture a wide range of features that may be universal in translations. Nevertheless, there still exist cases with no apparent motivations or triggers. This should not be surprising because individual translators have differing writing voices and styles. As a result, the translations may feature an individual translator or a group

of translators' linguistic habits. These specific translator differences are demonstrated in the following examples:

Example 7-13

EST: The high ECM values during these times indicate that it was **also** less dusty.

CTT: 这些时段上出现的高 ECM 之说明当时大气中的粉尘含量较少。

Back-translation: The high ECM at these times indicates that there was less dust in the atmosphere at the time.

Example 7-14

EST: [...]the effect of small amounts of additional dust on the magnitude (**but** not the frequency) of the ECM signal may be disproportionately large.

CTT: [...]少量额外粉尘即可能对信号的大小(不会影响频率)产生巨大影响。

Back-translation: [...]a small amount of additional dust can have a significant effect on the ECM signal ((it) does not affect the frequency).

In general, addition and concession relations are explicitated in translations for a specific and practical purpose. However, in Examples 7-13 and 7-14, implicitations whereby ST *also* and *but* are omitted in the TT result in a weakened inter-sentence additive and intra-sentence concession relation, respectively. These shifts are assumed to be specific to the individual translator or group of translators as they are rare in the present corpus and are only found in a particular TT.

To conclude, although it can be difficult to determine and distinguish between triggers and motivations, it can be argued that triggers and motivations can explain the observations made at the beginning of Section 7.2.

Observation 1 is the observation that explicitations of additive and adversative connective additions occur more frequently in E-C translations. This observation can be explained by the translators' tendency to comply with the norms of the TL community and to improve textual cohesion. Furthermore, in many cases, the translators' effort to overcome the TL lexicogrammar restrictions also explains the occurrence of adversative connective explicitations.

The translators' effect of dealing with Chinese lexicogrammar restrictions often accounts for **Observation 2**, viz. the disproportionately frequent occurrence of explicitating substitutions of adversative connectives for additive connectives. Due to the vagueness of English *and*, there

is not a perfect semantical equivalent of *and* in the TT. Therefore, this causes the translators in the corpus to use a TL connective with a less semantically specific meaning. In particular, when the potential semantic relation is highly informative and inherently strong (e.g. Causation, Inference and Contrast), the translators make explicitations by adopting the TL connectives that only allow for restricted reading.

Observation 3 states that infrequent implicitations are closely linked to the fact that “translators are risk-avoiding mediators between cultures” (Pym 2005, 2008). Increasing the cohesion of the TT is always an excellent risk-avoiding strategy for translators because informational losses and potential misunderstanding of the text can result in dissatisfaction from the clients and potential readers of the TL community (cf. Pym 2005, 2008; Becher 2011a). Thus, it is not unexpected that the translators of the corpus tend to add and substitute connectives to improve textual cohesion and to prevent the loss of semantic information, making the translation more readable for TL readers, even when there is no apparent trigger or motivation to do so. In some cases, the translators use implicitating shifts if they are in a position where they can exploit TL’s unique lexicogrammar features or their translation style. However, they may avoid implicitations that can negatively affect their careers.

7.3 Summary of the Findings of Research Question 4 and the Discussion

Findings. This chapter has analyzed connective shifts on two parallel levels: the axis of various syntactic modifications, which do not lead to changes in semantic relations, and semantic relation modifications, which may or may not be accompanied by syntactic modifications. This distinction aids in differentiating between non-explicitations/non-implicitations and explicitations/implicitations. Furthermore, the qualitative analysis results have illustrated that Becher’s (2011a, 2011b) triggers are correlated to the addition and omission of connectives and motivate the use of connective explicitations and implicitations in the investigated corpus. The main findings of this chapter are summarised below:

- On the one hand, there are more non-explicitations/non-implicitations than explicitations/implicitations at the intra-sentential level, where the language pair differs in lexicogrammatical resources, and connective shifts are often used to recode the ST content in the TL. On the other hand, connective explicitations are more likely to occur

at the inter-sentential level, where the language pairs may exhibit differences in the stylistic preferences in text formation and message organisation.

- The translators use connectives for explicitation and implicitation to comply with the communicative norms of the TL community, exploit specific features of the TL system, deal with specific restrictions of the TL system, avoid stylistically marked ways of expression, and optimise textual cohesion.

Discussion. Nida and Taber are inclined to make the original implicit meaning more explicit, and emphasize that the content of the ST must be preserved in translations (Nida & Taber 1969, p.1056). However, in many cases, the form of the ST cannot and does not have to be held due to the differences between the SL and the TL. The term "form" typically encompasses grammatical structures, sentence construction, and overall linguistic expression. On the other hand, Nida and Taber's emphasis on preserving "the content of the ST" is concerned with maintaining the meaning, message, or information conveyed by the source text. This recognition allows translators to prioritize conveying the content effectively in a manner suitable for the TL audience, considering linguistic, cultural, and stylistic variations between the two languages. Therefore, the statement suggests a pragmatic approach where the preservation of content takes precedence over rigidly maintaining linguistic form in the translation process. This chapter's qualitative analysis has evidenced such dichotomy between the content and form as it is often difficult to convey the same content from English to Chinese of the given genre in a form which resembles that of English. Additionally, excessive effort is required to preserve the form, which may result in a distortion of the ST content and misunderstandings for TL readers. More often, the ST content is conveyed precisely in an acceptable way for TL readers. This statement underscores the translator's commitment to delivering a translation that not only captures the essence of the ST content but also does so in a manner that is both linguistically and culturally appropriate for the TL readership. This approach aligns with the dynamic and communicative nature of translation, where the ultimate goal is effective cross-cultural communication. In other words, English ST and their Chinese translations represent two distinct manifestations of a congruent communicative content. During the translation process, translators are expected to preserve the balance between form and content using connective shifts. This expectation arises from the acknowledgment that strict adherence to the form of the ST might sometimes conflict with the linguistic structures

and expectations of the TL, necessitating judicious connective shifts for effective communication in the target language. Although syntactic shifts do not have a significant role in the present analysis, the investigation of the ST and TT at the syntactical level sheds some light on the connective explicitation-related phenomenon in Chinese translations. This investigation can increase the attention to investigate explicitation and implicitation in a more comprehensive perspective as analysing and comparing both syntactic modifications and semantic relation modifications in the use of connectives can lead to a more comprehensive understanding of Chinese structure and the stylistic and lexicogrammatical differences between English and Chinese. The dichotomy between form and content is indeed a useful concept in translation studies, as it helps analyze the challenges and choices translators face when rendering a ST into a TL. One theoretical basis for this dichotomy is found in Nida and Taber's (1969) concept of dynamic equivalence, which suggests that the translator's primary goal is to convey the meaning and message of the ST in a way that is natural and meaningful in the TL cultural and linguistic context. This implies that while the content must be preserved, the form may need to be adjusted to achieve naturalness and acceptability in the TL. The aspect of information gain or loss is intricately linked to this dichotomy. In the analysis of translation shifts, especially connective shifts as explored in the context of the current study, it is essential to evaluate both the information that is gained or lost (semantic relation modifications) and the alterations in linguistic structures (syntactic modifications). The challenge involves finding an optimal balance between these elements to achieve a translation that is both effective and culturally resonant. Furthermore, similar to the previous chapter's quantitative analysis where both omissions and additions are analysed, it is impossible to investigate the number and frequency of explicitations without investigating implicitations. Otherwise, the results can be highly misleading as there is a higher frequency of implicitations compared to the other connective shifts.

This chapter seeks to demonstrate that explicitations and implicitations are not merely inherent to the translation process (cf. Blum-Kulka 1986) but can be more accurately attributed to language-pair-specific lexicogrammatical, stylistic, and pragmatic factors. These pragmatic considerations encompass factors related to the practical use of language in real-life contexts, emphasizing the importance of the communication setting (cf. Becher 2011a, 2011b). The discussion of Chapters 6 and 7 suggests that the main reasons for the corpus' connective additions, substitutions, and omissions are the SL's interference and the TL's conventions (which can be further divided into Becher's five triggers). Specifically, language interferences,

viz. some English-specific constructions (i.e. participles, relative clauses, *with* structure) are often rendered with “cross-rank equivalence” (Krein-Kühle 2003, p.160) in the Chinese translations and motivate a frequent occurrence of certain connectives (i.e. intra-sentence additive connectives) in the Chinese TT. However, some of the connective shifts in the TT do not constitute a case of explicitations or implicitations due to the TT’s limited content modifications which refers to changes made to the information conveyed in the SL text during the process of translation. This can include both additions and reductions of information value, compared to the ST which is illustrated in the previous chapter’s investigation. ‘*TL conventions*’ refers to the variety of motivations of connective modifications of the ST when transferred into the TL. This study has demonstrated that the occurrence of these shifts is more predictable or better explained when referring to the stylistic conventions of the investigated TL’s non-translated texts. The identified trend is consistent with the expectation that crafting a high-quality translated text largely hinges on meeting the expectations and preferences of the TL community, including both commissioners and readers. Therefore, this explains why the syntactic constructions or stylistic preferences of the SL of the given genre are often superseded by the TL ones.

8 Chapter 8 Conclusion

This chapter first summarises the main findings of the present study. This is followed by a discussion of the study's implications and findings. Lastly, this chapter concludes the study by providing suggestions for future studies.

8.1 Major Findings in Summary

(i) The Findings Regarding Research Questions

Research Question 1. *Do English texts tend to have a higher degree of connective explicitness than Chinese texts of scientific research articles due to the more frequent use of connectives?*

Table 8-1 illustrates the number of connectives used in Chinese and English non-translated texts of scientific RAs in the present corpus. As shown in the table below, Chinese non-translated texts have a total of 837 connectives and 13.50 connectives per one thousand tokens. Furthermore, English non-translated texts have a total of 778 connectives and 13.90 connectives per one thousand tokens. Although Chinese texts use more connectives per one thousand tokens than their English counterparts, the result is not statistically significant and has a $p\text{-value} > 0.05$.

Table 8-1 Number of connectives in CCTC and ESTC

	CCTC	ESTC
Occurrences in total	837	778
Occurrences per 1000 tokens	13.50	13.90

Overall, the results do not indicate differences in the degree of connective explicitness in originally produced English and Chinese texts of the given genre. This finding differs from previous contrastive studies of conjunction in Chinese and English literary texts, which found that there are more cases of conjunctions in English texts than Chinese texts. However, as discussed in Chapters 5 and 6, academic writing in both languages requires a higher degree of cohesion and coherence. In addition, compared to English, Chinese features a limited range of conjunctive devices and heavily relies on connectives to realise logic-semantic relations (see

Section 6.3). Consequently, it is not surprising that authors of Chinese texts of the given genre realise a comparatively high level of connective-based explicitness to ensure text cohesion.

The present study's findings also reveal similarities and differences in the distributions of connectives in the two non-translational corpora. On the one hand, additive, adversative, and causal connectives are used more frequently than conditional ones, and intra-sentence connectives are used more than inter-sentence connectives in ESTC and CCTC. On the other hand, Chinese texts feature a slightly higher frequency of intra-sentence connectives, partly because English features a broader range of devices (i.e. present participle and prepositional phrases) which are not identified as connectives in the present study. In many cases, such English devices have a cohesive function; however, the semantic relation encoded by these devices is often unclear. In contrast to English, Chinese relies more on connectives to link arguments within sentence boundaries (cf. the findings of RQs 3 and 4). Moreover, Chinese texts also feature a wider variety of connectives than English texts due to the flexible construction of paired connectives and the specific lexicogrammar option that Chinese offers.

Research Question 2. *Do Chinese translated texts have a higher degree of connective explicitness than Chinese non-translated texts due to the more frequent use of connectives?*

Table 8-2 shows the number of connectives used in Chinese translations and non-translations of scientific RAs in the present corpus. The table indicates that 837 connectives are used in Chinese non-translated texts and 985 in Chinese-translated texts. The table also demonstrates that CTTC has more frequent connectives per one thousand tokens than CCTC (13.50 for CCTC and 22.30 for CTTC). Thus, CTTC has a slightly higher degree of connective explicitness than CCTC (with a $p\text{-value} \leq 0.05$).

Table 8-2 Number of connectives in CCTC and CTTC

	CCTC	CTTC
Occurrences in total	837	985
Occurrences per one thousand tokens	13.50	22.30

Despite certain subtleties (e.g. the increased proportion of connectives in Contrast, Inference and Cause relations compared to ESTC), CTTC and ESTC have the same distribution of relations expressed by connectives whereby additive relations are the most represented by connectives, followed by adversative, causal and conditional relations. Although CTTC features the same distribution as ESTC, such distribution is likely to be due to the influence of the source texts in that the proportion of connectives in CTTC for each semantic relation is similar to that in ESTC. Additionally, this implies that the CTTC translators tend to use connectives to retain the English source texts' semantic relations. The empirical results also illustrate that CTTC relies more heavily on connectives to mark Conjunctive, Adversative and Concessive semantic relations than CCTC (with a $p\text{-value} \leq 0.05$). Furthermore, although there are differences in the number and frequency of connectives in Cause, Inference and Condition relations between CTTC and CCTC, the differences are statistically insignificant (with a $p\text{-value} \geq 0.05$). This reflects the similar reliance on connectives in three semantic types between the two Chinese sub-corpora.

The research results also demonstrate that intra-sentential connectives are used more frequently than inter-sentential connectives in the two Chinese corpora. However, inter-sentential and intra-sentential connectives are slightly more prevalent in CTTC than in CCTC. This demonstrates that the translators are more likely to mark the semantic relation with connectives within or above sentence boundaries. Furthermore, the results indicate a difference between CTTC and CCTC's range of connectives. Compared to CCTC, CTTC has a smaller variety of connectives below the sentence level, a more comprehensive range of high-frequency connectives and a higher frequency of paired connectives. CTTC's characteristics, to some extent, differ from the norms of native Chinese within the investigated genre and may reflect the interference of the SL or translators' styles.

Research Question 3. *If there is a difference in the degree of connective explicitness between the Chinese translations and non-translations in the corpora, to what extent are the connectives in Chinese translations retained from the English source texts and to what extent are connectives added, omitted, or substituted during the translation process?*

Based on the parallel comparison of English source texts and their Chinese translations, Table 8-3 illustrates the occurrences of the different types of connective-based translational patterns (viz. connective-based preservations, additions, substitutions, and omissions) during the E-C

translation process. The table demonstrates that most process-based translational patterns of connectives are in the form of preservations from the ST. The term *process-based translational patterns of connectives* can be understood as the recurring trends or regularities observed in the way connectives are handled or translated during the process of translating a text from the SL to the TL. These patterns may include preservation (keeping the same connective), addition (introducing new connectives), substitution (replacing one connective with another), or omission (leaving out connectives). Specifically, 64.04% of the connective translation patterns are associated with ST connectives translated into Chinese equivalent connectives in the translations. In comparison to preservations, there is a smaller proportion of additions, substitutions, and omissions, as 6.55% are ST connectives which are not translated in TT, 3.22% are substitutions (ST connectives replaced by less or more explicit TT connectives), and 26.19% connectives are added in the translation process.

Table 8-3 Occurrences of each type of connective-based translational pattern during the ST-TT translation process

Type of translational patterns	Instances	%
Preservations	675	64.04
Additions	276	26.19
Substitutions	34	3.22
Omissions	69	6.55
Total	1054	100

Table 8-4 illustrates the extent to which connectives in the TT are retained from the ST or added during the E-C translation process. As illustrated in the table below, 71.98% of the total 985 connectives in the Chinese translations reflect a carry-over from the ST. Furthermore, 68.53% of the carry-overs are verbatim translations from an equivalent ST connective, and 3.45% are substitutions, related to the use of a more explicit connective in the TT compared to the ST. The results demonstrate that the TT connectives are more semantically specific than the ST connectives. By contrast, 28.02% of connectives in the TT are added during the translation process. The table results reveal the contributions of ST connectives and the translation process, because in approximately every four instances of connectives in the translations, three connectives are retained from the ST connectives (either in the form of preservation or substitution), and one connective is added.

Table 8-4 Contribution of carrying-overs from the ST and additions during the translation process to the occurrences of connectives in the TT

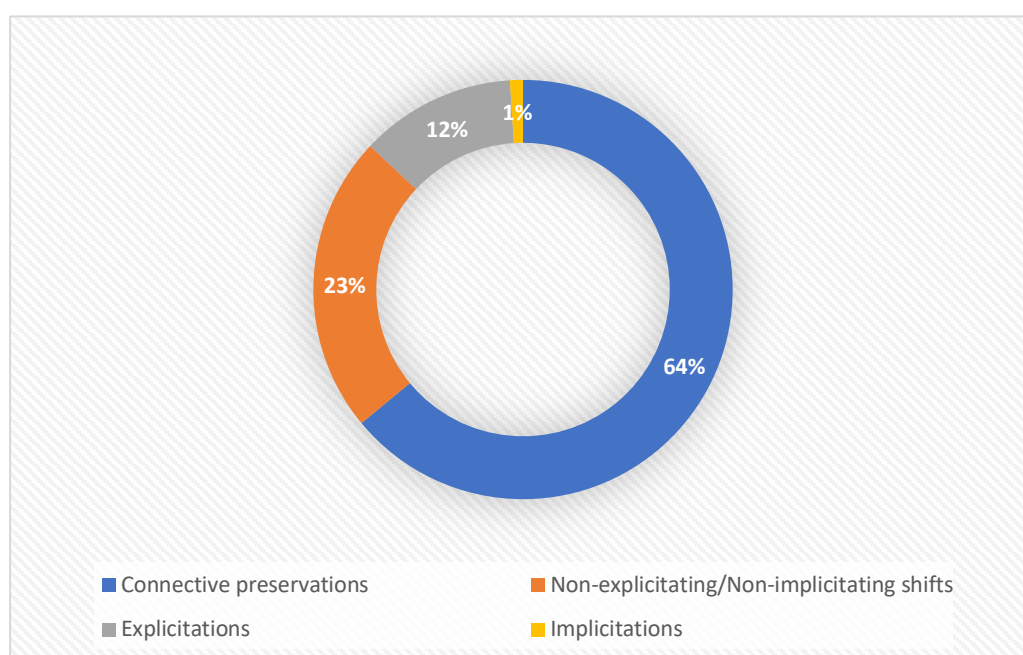
Carrying-overs or additions		Instances	%
Carrying-overs from the ST	Preservations (literally translated from equivalent connectives in the ST)	675	68.53
	Substitutions (translated from a less explicit connective in the ST into a more explicit connective in the TT)	34	3.45
Additions during the translation process	Without semantic explicating effect	175	17.77
	With semantic explicating effect	101	10.25
Total		985	100

The quantitative and quantitative analysis demonstrates that connective additions often coincide with upward structure shifts in the TT, which are unmarked syntactical shifts in the E-C translation process. Specifically, two broadly defined SL syntactic patterns, namely post-modifications and juxtapositions (i.e. coordinative constituents, relative clauses, prepositional phrases, and participles), are often upgraded into a higher unit in the TL structure rank and usually in the form of TL clauses. Additionally, the frequent use of clauses in the TT increases the likelihood of the occurrences of TT connectives as connectives are the main resource in Chinese used to strengthen cohesion between clauses. However, Table 8-4 illustrates that a significant proportion of the additions of connectives (175 instances, approximately 63.41% of the total 276 additions) are identified as strategies for rephrasing the ST message into the TL rather than explicating shifts. This identification is because the realisation of clauses mainly reflects the differences between the language pair, such as sentence structure differences, and the parataxis and dynamic expression features in Chinese versus the hypotaxis and stative expression features in English. Furthermore, the identification is because the additions of connectives in the TT do not significantly change the semantic relations vis-à-vis the ST.

Research Question 4. *To what extent can the shifts, viz. connective additions, omissions, and substitutions during the translation process, be identified as explicitations or implicitations; can they be explained by Becher's five triggers (2011a, 2011b)?*

Figure 8-1 illustrates the distribution of explicitations/implicitations and non-explicitations/non-implicitations in the total translational patterns during the ST-TT translation process. Furthermore, Figure 8-1 shows that 64% of the total translational patterns are primarily attributed to connective preservations, which are not related to explicitations or implicitations according to the definition of the present study. The remaining 36% of the total translational patterns are connective-based shifts in the form of substitution, addition, or omission. Although in the form of connective-based shifts, 23% of the translational patterns are identified as non-explicitations or non-implicitations, 13.09% of the translational patterns are identified as explicitations or implicitations, with 11.76% as explicitations and 1.33% as implicitations.

Figure 8-1 Distribution of explicitations/implicitations and non-explicitations/non-implicitations during the ST-TT translation process



As discussed previously in Research Question 3, the distribution illustrated in Figure 8-1 provides support for the SL interference and the cross-linguistic or language-pair specific effects hypothesis, considering that i) a majority of the connective translational patterns reflect the direct transfer of the corresponding ST connectives, which demonstrates the SL interference, and ii) compared to explicitations or implicitations affecting the encoding of the semantic relations, more connective-based additions, omissions and substitutions are accompanied by

the reformulation of the SL sentences into the TL due to language-pair specific effects without added or omitted semantic relations.

While Becher's (2011a, 2011b) identification of triggers for explicitation and implicitation may not be unequivocally distinct across all instances, they align well with observed patterns of these phenomena within the corpus. These triggers highlight two critical factors: (1) the significance of language-pair specific differences, emphasizing the strategic exploitation of the TL system's unique features and addressing its constraints; and (2) the vital role of communicative purposes, underscored by the risk-aversion hypothesis. This hypothesis suggests that translators, aiming to minimize potential miscommunication, tend to adhere closely to the communicative norms of the TL community. This involves avoiding stylistically marked expressions that might seem unnatural or confusing in the TL and striving to enhance textual cohesion for clearer, more effective communication. The risk-aversion hypothesis is not merely a side note but a foundational concept that influences translators' choices, advocating for a cautious approach that prioritizes clarity, norm-adherence, and cohesion. Understanding this principle is essential for appreciating how it shapes the decisions behind explicitation and implicitation in translation, suggesting that these are not arbitrary choices but strategic ones informed by a deep understanding of the communicative context.

(ii) Final Remarks

The focus of this study is to examine both explicitation and the degree of explicitness in the translated Chinese texts of the given genre in relation to both the corresponding STs and respective TL non-translations. The explicitation-related features in the translations of the present corpus are summarised as follows:

- Cross-Linguistic Effects and Language-Pair Specific Differences: SL Interference in the TL language and TL Text Communicative Purpose

Analysis results indicate that translations feature a higher degree of connective explicitness than both the STs and non-translated texts produced in the same TL. This is primarily due to the cross-linguistic effects and language-pair-specific differences manifested as SL interferences in the TL language and TL text communicative purpose.

James (1980, p.117) noted that translated texts “can show signs of interference from the source language”. Higher levels of connective explicitness in translated texts, especially compared to non-translated texts, are partly due to SL influence. In the language pair involved, the higher connective explicitness can also be due to the direct transfer of most of the ST semantic relations using equivalent target-text connectives. Additionally, it can be attributed to the frequent use of specific English structures in the examined genre. These structures are translated into clauses with connectives in the TT due to the lack of syntactically equivalent structures and the heavier reliance on connectives to realise semantic relations in the TL. This also explains why the translations have a higher number of intra-sentential connectives than the TL non-translations because the original intra-sentence structures in the STs are often upgraded and reformulated using TT connectives.

Additionally, the TL commutative purpose may be a possible causality of higher levels of connective explicitness as well as the higher ratio of explicitation than implicitation. This indicates the genre-specific factor and risk-aversion hypothesis, namely that i) academic writing requires a high degree of clarity and cohesion; thus, connective-based explicitations might be a preferred option by translators to optimise their translations and meet the recognised model and norms of the genre (cf. Section 6.3), ii) translators, as mediators of communication, tend to avoid any risks of being criticised by commissioners and potential readers; hence, are more likely to explicitate to avoid potential informational losses, and iii) the implicitations are more likely to appear in a specific case in which implicitation might be suitable and/or appropriate in Chinese lexicogrammar.

- A General Explicitating Trend in Translations and the Existence of the Translation-Inherent Explicitation

The occurrence of connective shifts with explicitating functions and the differences in the frequency of the use of connectives between translated and non-translated texts contribute to the previous literature that found that being more explicit is a general tendency in translated texts (e.g. Olohan and Baker 2000; Mutesayire 2004; Huang 2007).

In terms of translation-inherent explicitation, the present study has found that translations use connective additions, and the use of such connectives is significantly higher than the use of

connective omissions. As explained previously in Research Question 4, where there is an option to use explicitation or implicitation, the former is preferred over the latter. According to Jiménez-Crespo and Sánchez (2021, p.85), translation-inherent explicitation is the shift that emerges “due to the specific communicative nature of the translation process itself”. Following this argument, the findings in the present corpus provide strong support for the presence of translation-inherent explicitations. Nevertheless, as discussed in Chapter 6, this study follows Becher’s (2011a, 2011b) approach and uses more concrete factors to explain when explicitations or implicitations occur in the present corpus. Specifically, as mentioned in Section 8.1, this study has found that explicitation or implicitation strategies go hand in hand with the interference from the SL and the communicative purpose of complying with the TL’s norms, which can be further categorised into Becher’s (2011a, 2011b) five proposed factors.

- The Contextualized Choices Concern the Given Genre

Although the present study only examines one text genre, viz. research articles in geoscience, the study results highlight the importance of text genre on the explicitation-related phenomena under investigation. Firstly, the frequent appearance of English clause-reducing structures in the given genre, such as prepositional phrases and participles, is closely associated with the frequent clauses introduced by intra-sentential connectives in the TT. Secondly, the review and comparison of the findings from various studies of different text genres (e.g. Krein-Kühle 2003; Huang 2007) has revealed that the academic genre analysed in this study contains a higher number of connectives than other genres. This supports the finding that the analysed genre requires a higher logical and semantic relation degree. Correspondingly, the translations of the given text genre also have a preference for a higher level of logical-semantic relations and cohesion, which shapes the strategies adopted by the translators. For example, in the present corpus, the translators would preserve most of the logical-semantic relations expressed in the ST by translating the original ST connectives into the TT. The translators also tend to add connectives and use more explicit connectives; thus, have a stronger preference for explicitations over implicitations due to their more frequent use of explicit connectives.

8.2 Implications of the Study

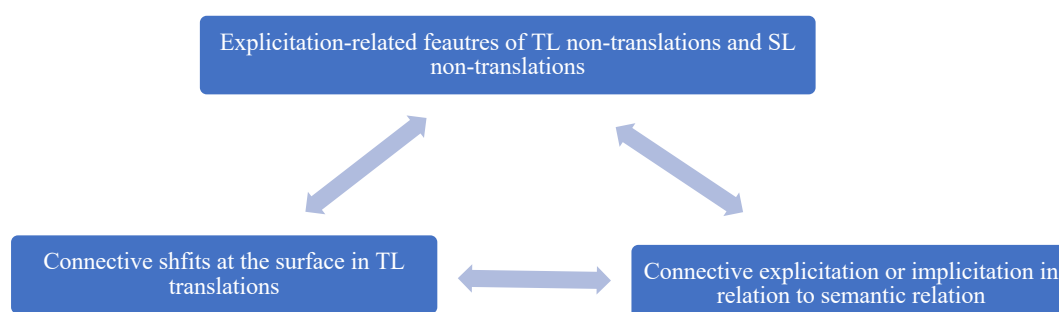
(i) From the Theoretical Perspective

Detailed working definitions of the connective-based and explicitation-related phenomena (viz. explicitness/implication and explicitness/implicitness) are proposed in the present study. the proposed definitions can also be used to create a clear distinction between connective-based explicitation and connective-based explicitness, which can facilitate a more detail-oriented approach for further explicitation investigation. Furthermore, different from previous studies, the present study has allocated equal status to implication and explicitation to examine how these two different types of shifts are interwoven in the investigated genre (scientific research articles). In addition, the present study has provided a typology and explanatory framework for the explicitation-related shifts in translations. Although the present thesis only focuses on examining connectives, the framework can be further extended to other linguistic features. Additionally, the framework can be used to investigate different types of text genres and language-mediated activities.

(ii) From the Methodological Perspective

The analysis of data in this study can be viewed as a process model that examines the phenomena related to connective explicitation through both the product-based (explicitness/implicitness) and process-based (explicitation/implication) channels. Figure 8-2 presents the three primary stages of the process model derived from Research Questions 1 to 4.

Figure 8-2 Three general phases of the model of the process model



The initial phase of the process model (Research Questions 1 and 2) focuses on the quantitative analysis at the macro-level. It assesses 1) whether the SL non-translations are more or less explicit in the use of connectives (concerning the specific aspects of interest, namely global statistics, connectives for different semantic relations, inter-sentential and intra-sentential connectives, and the range of connectives) than is typical in the TL non-translations from the same text genre, and 2) whether TL translations are more or less explicit (concerning the four specific linguistic features of interest described in Chapter 5) than is typical in the TL non-translations from the same register. Phase 2 of the model assumes that there is no one-to-one correspondence between ST and TT at the surface level. The connective-based shifts identified in the second phase indicate the inseparability of structure shifts (often in the form of upward or downward shifts) and the addition, omission, and substitution of connectives. The final phase of the process model (Research Question 4) can be conducted in parallel with Phase 2. It determines the status of each identified connective shift with respect to the semantic relation realized vis-à-vis the ST. Specifically, the shifts can be classified as [+ semantic relation content] (=explicitation), [– semantic relation] (=implication) or [= semantic relation relation] (=non-explicitation/implication) shifts compared to the ST. The final phase of the process model also determines the motivations behind the explicitation or implication shifts by considering the conventions of SL and TL non-translations identified in Phase 1.

(iii) From the Empirical Perspective

As proposed in the typology framework of explicitations (see Chapter 3), the wide range of linguistic features or forms can be regarded as an eclectic and workable machinery for corpus-based empirical work on explicitation-related phenomena. This is because (i) these linguistic data are highly likely to be relevant to explicitation or explicitness and (ii) they are perceptible and feasible for quantitative or qualitative analysis. The empirical results of the present study include wide-ranging overviews of contrasts in connective-based cohesion in the different sub-corpora and focused accounts of the degree, frequency, semantic type, and variation of connectives. Additionally, the annotations of the texts can facilitate empirical tests, such as counting frequencies and distributions of certain linguistic features, by retrieving relevant taggers. Correspondingly, the empirical data can be used to produce statistically refined evaluations. Furthermore, the results can also demonstrate text features and show how

connective explicitations are used. The following linguistic forms that are susceptible to empirical investigation are used in the present study:

Connective-Related Shifts as Evidence of Explicitation or Implication. As mentioned in the literature review, many text features have been considered to provide evidence for the widespread explication-related phenomenon in translation studies. For example, Becher's study (2011a) has classified and linked various linguistic forms, including pronoun-based shifts, noun-based shifts, and conjunctive-based shifts, with the corresponding types of explicitations. Tang (2018) has listed several linguistic forms, such as modifier-based shifts and circumstantial-based shifts, that can drive the explicating outcomes SFL (see Chapter 2). The present study also follows such approaches by identifying and classifying perceptually linguistic features, including various connective-based shifts, which are responsible for producing different kinds of explicating functions. As discussed previously, the study's empirical results, including the higher ratio of connective frequency and the occurrences of connective explicitations, confirm the general tendency found in previous studies.

Upward and Downward Shifts in Structure Interacted with Connective-Based Shifts. The appearance of shifts is pervasive in any translational activity (Al-Zoubi and Al-Hassnawi, 2001). Al-Zoubi and Al-Hassnawi (2001) highlighted that there is no model that can identify and analyse shifts. Thus, they proposed a model for shift analysis in translations by categorising foregrounding elements according to different linguistic and paralinguistic levels, including grammatical, textual, pragmatic, and stylistic descriptions. The present study has used parts of the model to conduct the structure-based shift analysis in the ST-TT translations. As discussed previously, the model demonstrates how some linguistic forms, viz. upward and forward shifts in structure, contribute to the generation of connective-based shifts in the translations. This shows that although it is important to examine the lexicon and terminology translation of the given genre, it is also crucial to investigate linguistic forms and related shifts as structure shifts might interact with these connective-based shifts.

Connective-Based Stylistic Shifts in Translations within a Linguistic Framework in Relation to the Conventions of the SL and TL. The large volume of research on explication in translation studies has emphasised the need to create a linguistic framework based on TL and SL norms. For example, Jiménez-Crespo and Sánchez (2021) argued that the explicitations emerged from the translational process cannot be identified with only a comparable corpus.

However, Krein-Kühle (2003) noted that a limitation of the parallel corpus is that it only identifies the distortions affected by the source texts. Following this, the present study has combined comparable and parallel corpora to analyse the translators' stylistic patterns of the use of connectives in the corpus by entailing the TL or SL norms. The present study's results show that the existing contrastive differences between both languages and communicative purposes are identified as the triggers and sources of connective-based explicitations and implicitations.

(iv) From the Pedagogical Perspective

The present study's findings, such as the exploration of mapping the use of connective (frequency, distribution, and semantic relation functions), can shed light on two pedagogical areas, which are improving the teaching and learning of academic writing and improving translational practice.

For example, the results may feed into language teaching methodologies that can allow for more discourse-oriented teaching and increase communicative competence, especially in the case of scientific discourse. Considering that conventionality is a critical element of written work of academic genres, an article may lose credibility if the English or Chinese used in the publications do not sound conventional to the academic discourse community. The ESTC and CCTC are composed of research articles published in high-impact journals; thus, the use of connectives tends to represent the language considered conventional by the discourse communities of the specific discipline (viz. geoscience). The data collected from the two non-translated corpora may be useful to individuals or groups that aim to publish their work but do not have academic English or Chinese expertise. Moreover, the wordlists generated from the ESTC and CCTC, especially those of the high-frequency connectives, reflect the conventional preferences of connectives shared in the two discourse communities. Furthermore, comparisons can also be made between writers that aim to improve their academic writing and authors of ESTC and CTTC in terms of the high frequency of connectives realised. Similarly, the concordance lines and collocations of connectives extracted using corpus linguistics wares, such as AntConc and CQL, can be further explored and compared with the writers' choice of connectives to make their writings more conventionally acceptable by the communities.

The results also provide input for translation modelling and teaching whereby skills in creating target-culture-adapted text production are highly desirable. For example, as the present study has identified the explicitation-related patterns and factors that lead to translations, part of the present study's findings can also be used for student translators' training to improve their performance in E-C translations. Student trainees can do more EST-CTT retranslation exercises and compare their translations with the findings extracted from the CTTC (which reflect the preferences of the professional translators in the community when translating the given genre and discipline). Through such comparisons, trainees can identify their translation weaknesses in terms of the use of connectives and connective-related explicitation patterns. The finding of "the use of connective with upward shifts as a strategy of rephrasing" illustrates that the corpus' professional translators often utilise upward shifts associated with addition connectives to rephrase the ST sentences into the TL, trainers can devise exercises which require trainees to suggest translation solutions for some English construction (i.e. relative clauses, *with*-construction, and participles, which often occur with upward shifts and connective additions in translations). Furthermore, the finding of "the tendency of explicating certain highly informative semantic relations" shows that the corpus' professional translators often perceive the implied semantic relationships and tend to explicitate certain relations with more "strong-tone" connectives. Trainers can use this finding to devise exercises for trainees which require them to identify the implied logical relations between clauses or sentences. By referring to the present study's finding that professional translators in the corpus tend to use high-frequency connectives when explicating, trainers can remind trainees that they should make conventional connective choices.

8.3 Limitations of the Study

The present study has analysed connective explicitation/explicitness from different composite aspects by conducting quantitative and qualitative analysis, semantic relation analysis, product- and process-oriented analysis, and identifying language-pair specific and stylistic differences of the parallel contents in the corpus. Nevertheless, improvements are required to provide a more concrete understanding of the notions of *explicitness/explicitation* as well as *implicitness/implicitation*. The primary limitations are summarised below:

(i) Corpus Size and Unidirectional Parallel Texts

A small-scale corpus is used in the present study to conduct a process-oriented investigation of every connective shift. Specifically, three sub-corpora are compiled for the study, one in original English (56,478 words), one in original Chinese (93,767 characters), and one in translated Chinese (68,229 characters). One of the limitations of the study is that the data sample is relatively small. Firstly, the scope of the present study is restricted to scientific research articles, and the compiled texts are all the same subject matter, viz. geoscience. However, there are different scientific and technical texts, such as technical and popular science texts, that are not examined in the present study. Apart from text types, subject matters and domains also need further exploration to investigate the explicitation/explicitness patterns in Chinese and English, both above and below the sentence level. Therefore, it is crucial to build a more heterogeneous large-scale corpus by including more texts of distinct domains and from different sources to avoid bias.

Another corpus-related limitation is that the present study used unidirectional parallel texts, viz. English source texts and their Chinese translations, due to limited adequate language resources for Chinese-English translations of the given genre. Although investigating monodirectional parallel texts can illustrate signs of interference from the SL and features of the TL's translational norms, the present study cannot determine the influence of translation direction. For example, if the present study turns the translation direction to Chinese-English, the quantitative and qualitative analysis results may show that the translators may substitute more explicit connectives for less explicit ones, which further confirms the conclusion of the present study. Alternatively, the analysis results may demonstrate that the translators may perform in a somewhat "questionable" way by implicating the ST's linguistically encoded meaning to the TL in a position where an explicitation is expected. This example highlights the importance of translation direction and the other pragmatic factors that are not investigated and discussed in the present study. Therefore, it is critical that future studies use a bilingual directional corpus for explicitation analysis when Chinese-English translations of the investigated genre are available.

(ii) Automatic Segmentation and Annotation

One of the crucial steps for the present study is the segmentation of Chinese characters. As mentioned in Chapter 4, CKIP is used for the segmentation of the Chinese part. However, frequent uncommon geoscience-related lexicons in the texts may affect segmentation accuracy.

Thus, the present study conducted a two-round review to check and make corrections to reduce bias. Though, it is important to highlight that this review is not completely accurate, and there may still be bias. Future research can use upgraded segmentation functions of the module and include more text in the corpus to conduct a more efficient and reliable investigation.

Another important step in the present study is the tagging and annotation process of texts in the investigated corpus. The automatic POS tagging are efficient to annotate the two examined languages. Nevertheless, the software package has a limitation in the automatic recognition of connectives for both English and Chinese, especially from the semantic relation level. Due to the restricted definition of connectives (which are closely related to the function of encoding logical-semantic relation), a large amount of manual retrieval and classification is required to exclude non-selective cases and identify the paired construction of connectives in Chinese, which can be time-consuming. Future studies can analyse a larger corpus if more efficient software modules for logical-semantic relation retrieval with the connective information and the retrieval of paired connectives for English and Chinese are available.

The present study also lacks comments and suggestions from Chinese and English semanticists concerning the semantic meaning encoded by every instance of connective. The classification of connectives is based on Hallidayan semantic relations (Halliday and Matthiessen 2004), which is feasible for empirical study. However, more specific tagsets of semantic relations can be analysed in the future. Furthermore, participation from discourse analysis and semantic experts would be useful for compiling a corpus for the academic community in future studies.

(iii) Indices of the Degree of Connective Explicitness

As highlighted in the Section 5.1, there is not a 1:1 ratio between Chinese characters and English words, and more often, there are more Chinese characters than English words. For example, the token ‘*granite*’ can be expressed as a one-word noun in English and as a three-character-noun 花岗岩 in Chinese. Thus, the frequency of connectives in the selected texts was measured as ratios per one thousand tokens. However, this measurement index may not fully reflect the differences between Chinese and English languages as there are some obligatory function words in one language but not in the other (i.e. Chinese classifiers). These differences may affect the accuracy of “fair” counting of the corpus size in terms of token count terms,

which may further impact the degree of the connective explicitness index. Other indices that increase the emphasis on quantitative analysis, including the ratio of connective tokens per one thousand clauses (tokens/clauses) and the percentage of connective tokens per one thousand sentences (tokens/sentences), can be used as complementary indices in future studies.

8.4 Suggestions for Further Studies

Although different aspects of the explicitation-related phenomenon in the given genre have been addressed, the scope of the present study is still limited, and a new set of lines of research has been realised for future studies. The distinct new lines of research are as follows:

(i) Connective-Based Explicitation from Different Genres

As noted previously, the source material used in this study only focuses on research journals in geoscience. Thus, the present study's findings only reflect explicitation patterns within a restricted genre and domain. However, there might be different features of the explicitation-related phenomena in different text types and various language-mediated communication activities. As a result, a comparative study of explicitation-related phenomena from different genres (as well as different registers and domains) can be conducted in the future.

(ii) Explicitation of Other Linguistic Features

The Theoretical Framework Chapter (cf. Section 3.1) has illustrated that the explicitation typology model is not only designed for connectives but can also be used for other linguistic phenomena. For example, for experiential explicitation, the related shifts, which should be identified, are adding or substituting 1) modifiers, 2) processes, and 3) circumstantial adjuncts and participants. According to the specific linguistic phenomenon of interest in each study, more refinement is required in the future. For example, when process-based explicitations are investigated, the verbal groups in any clause are the linguistic forms expected to be analysed (Halliday and Matthiessen 2004, p.176), and correspondingly the analysis should be extended to the addition, omission, and substitution of verbal groups during the ST-TT translation process.

Another critical point is that different kinds of explicitations may be interwoven during the analysis process. Hence, a clear distinction is required when overlapping instances are identified. To determine an individual or separate explicating case, whether an instance is independent of one another can be regarded as the prime criterion (cf. Tang 2018). A case in the present corpus is used as the illustration below:

Example 8-1

EST: To determine [...], additional discrete samples [...] were size-fractionated by selective filtration and measured with the FRR fluorometer.

CTT: 为了确定..., 我们~~还~~选取了额外的离散样品[...], 利用选择性过滤装置对样品做了尺寸分选后, 以 FRR 荧光剂进行测量。

Back-translation: To determine, we **also** selected additional discrete samples, (and) after using selective filtration to size-fractionate the samples, (we) measured them with the FRR fluorometer.

In Example 8-1, the ST *additional discrete samples were size-fractionated* is rendered into 我们还选取了额外的理样品, 利用...后[*we also selected additional discrete samples, (and) after using...*], which is a substitution of the process and participant. The substituted information can be inferred from the situation, where the implied subject of the process is *we*. Since the process substitution here is for the collocation with the participant substitution, it is not labelled as a separate explication case. In contrast, adding the participant *we* inferred from the context and situation constitutes an experiential explication case.

(iii) Other Factors Such as the Translator's Individual Style, the Guidelines of Different Publishers or Regions...

The findings of the present study do not clearly illustrate the impact of other factors, such as the translator's individual style and the differences in communicative norms between different publishers or different regions, on the explication-related phenomena. An investigation of such factors can be an objective of future studies.

The present study offers some evidence of the translator's individual style, with similar distributions of connective shifts in the translation process. As illustrated in Figures 8-3 and 8-

4 below, connective preservations are adopted more frequently by translators than other types of shifts, with 37-82% of connective-based shifts being preservations, and connective additions are also more frequently used than omissions. Furthermore, the analysis results demonstrate that the translators prefer connective explicitations over implicitation as there are dominant cases of explicitations and few or even zero implicitations in each E-C translation.

Figure 8-3 Percentage of each type of connective shift in each E-C Translations

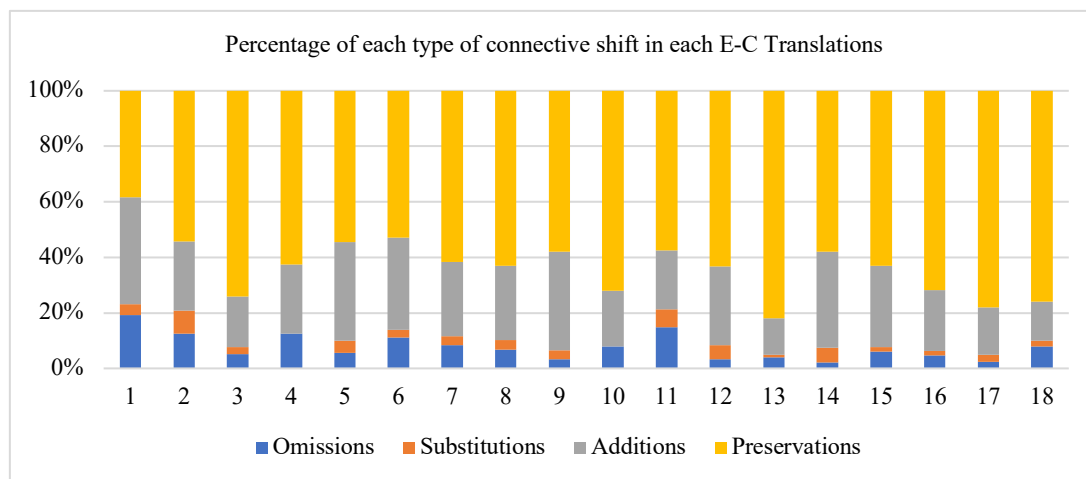


Figure 8-4 Percentage of explicitations, implicitations, and others in each E-C Translations

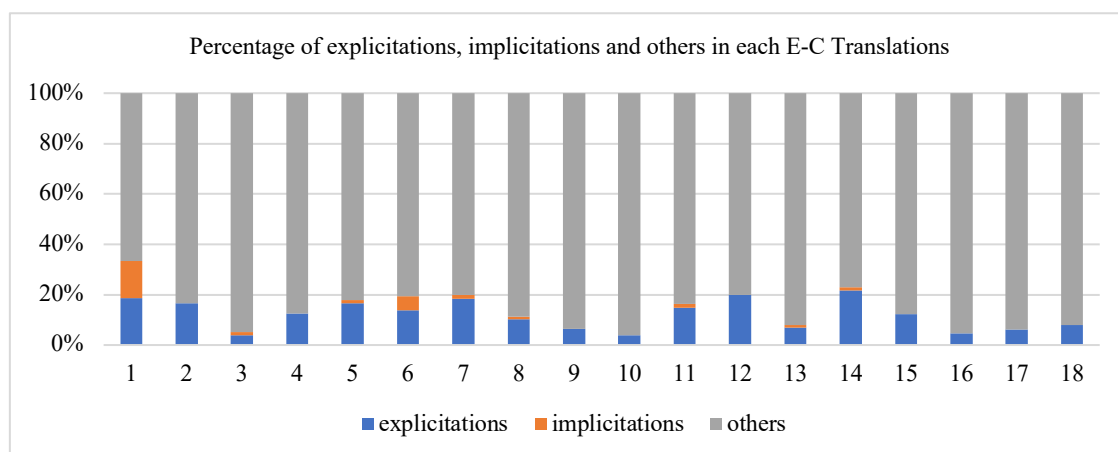
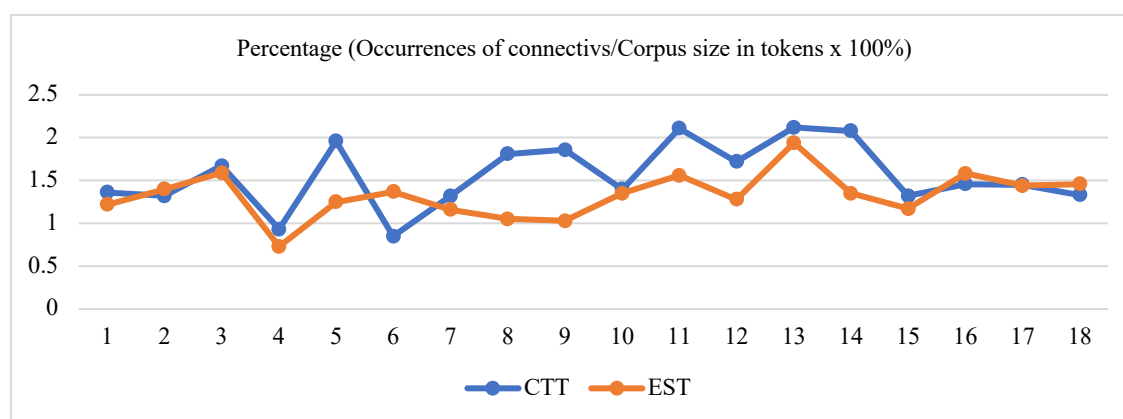


Figure 8-5 illustrates the explicitness ratios in each EST-CTT pair and shows that the tendency in the ST and translations are not fully aligned. The tendency differences may be due to the

translators' styles. Nevertheless, the results do not provide a clear answer for such tendency and whether a higher or lower frequency of specific ST structures (such as the previously discussed structures which have a logical function but encode an unclear semantic relation), which may be associated with the appearance of TT connectives, influence the explicitness ratio in each translation.

Figure 8-5 Degree of connective explicitness of each EST and CTT



The present study does not investigate whether different publishers or regions influence the explicitation-related phenomenon in translations due to the limitations of the corpus. However, Chen's (2006) study of the different translations published in Taiwan and Mainland China of the same popular English science texts illustrated the significant impact of different regions' communicative norms on translators' explicitation behaviour (cf. Beche 2011a, pp.39-42). The results of Chen's (2006) study showed that Taiwanese translations have more connectives vis-à-vis the source texts than the translations published in Mainland China, and a larger percentage of connectives is added during the translation process of Taiwanese translations. The differences between the Taiwanese and Chinese translations may be due to differences in translation norms, assumed stylistic/reading preferences of the target audience, register conventions, or the likes of the different publishers. Therefore, future studies can explore the causes of such differences in their research.

(iv) Connective-Based Explicitation as a Result of the Translator's Decision

Although the preference for explicitations over implicitations in the corpus can provide support for the risk-aversion hypothesis, this finding requires more exploration and analysis in future studies. Thus, another interesting research topic is to analyse translators' cognitive and metacognitive processes in making connective-related explicitation or implicitations during the translation process. This research can help determine whether risk aversion "can be confirmed using only one possible strategy out of many possible factors" (Jiménez-Crespo and Sánchez 2021, p.84). For instance, do translators deliberately clarify the encoded logical-semantic relation through connective explicitations? Or do they deliberately weaken specific semantic relations through connective implicitations? If yes, what motivates them to make such explicitation or implicitation? If not, when and where do the "unconscious" or connective explicitations or implicitations occur? To answer such research questions, a questionnaire with translators can be conducted to examine translators' cognitive patterns in decision-making (cf. Tang 2018). Questions used in the questionnaire may include "you added the connective A in the translation..., why?", "you substituted connective A with B; what was the thinking behind this?", "you omitted connective A; is there an intended purpose behind the omission?" and "are such shifts a result of your translational habit or choice when translating English texts into Chinese texts?".

Appendix I Text Information in the Corpus

A. Information of ESTs

1. Bond, G., Broecker, W., Johnsen, S., McManus, J., Labeyrie, L., Jouzel, J. and Bonani, G. (1993) 'Correlations between climate records from North Atlantic sediments and Greenland ice', *Nature*, 365(6442), pp. 143-147.
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B. Information of CTTs

- The CTTs are from:

Maddox, J., Campbell, P. and Lee, T. (eds.) (2017) 《自然》百年科学经典 (VIII 1993-1997) [Nature: The Living Record of Science (VIII 1993-1997)]: Beijing: Foreign Language Teaching and Research Press.

- Information of the translators and reviewers of CTTs are:

Text	Translator	Reviewer(s)
CTT1	Hongyan, Qi	Keqin, Duan
CTT2	Hongyan, Qi	Yongfu, Xu
CTT3	Lin, Chen	Zhonghai, Li
CTT4	Zujing, Yuan	Jing, Wu
CTT5	Hongyan, Qi	Lide, Tian
CTT6	Hongyan, Qi	Lide, Tian
CTT7	Hongyan, Qi	Lide, Tian
CTT8	Hongyan, Qi	Lide, Tian
CTT9	Hongyan, Qi	Song, Sun
CTT10	Hongyan, Qi	Song, Sun
CTT11	Yu, Jin	Erqi, Wang
CTT12	Hongyan, Qi	Tiegang, Li
CTT13	Zenhua, Wang	Liao, Chang; Baochun, Huang
CTT14	Hongyan, Qi	Tiegang Li
CTT15	Hongyan, Qi	Wen, Chen
CTT16	Guiping, Yu	Xiaofeng, Liang
CTT17	Guiping, Yu	Xiaofeng, Liang
CTT18	Lei, Qian	Juan, Li

D. Information of CCTs

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Appendix II Tables of Tags

(A) Part-of-Speech Tagset of ESTC

Based on the CLAWS7 Tagset developed by UCREL

POS Tag	Description (Examples)
APPGE	possessive pronoun, pre-nominal (e.g. my, your, our)
AT	article (e.g. the, no)
AT1	singular article (e.g. a, an, every)
BCL	before-clause marker (e.g. in order (that), in order (to))
CC	coordinating conjunction (e.g. and, or)
CCB	adversative coordinating conjunction (but)
CS	subordinating conjunction (e.g. if, because, unless, so, for)
CSA	as (as conjunction)
CSN	than (as conjunction)
CST	that (as conjunction)
CSW	whether (as conjunction)
DA	after-determiner or post-determiner capable of pronominal function (e.g. such, former, same)
DA1	singular after-determiner (e.g. little, much)
DA2	plural after-determiner (e.g. few, several, many)
DAR	comparative after-determiner (e.g. more, less, fewer)
DAT	superlative after-determiner (e.g. most, least, fewest)
DB	before determiner or pre-determiner capable of pronominal function (all, half)
DB2	plural before-determiner (both)
DD	determiner (capable of pronominal function) (e.g any, some)
DD1	singular determiner (e.g. this, that, another)
DD2	plural determiner (these,those)
DDQ	wh-determiner (which, what)
DDQGE	wh-determiner, genitive (whose)
DDQV	wh-ever determiner, (whichever, whatever)
EX	existential there
FO	formula
FU	unclassified word
FW	foreign word
GE	germanic genitive marker - (' or's)
IF	for (as preposition)
II	general preposition
IO	of (as preposition)

IW	with, without (as prepositions)
JJ	general adjective
JJR	general comparative adjective (e.g. older, better, stronger)
JJT	general superlative adjective (e.g. oldest, best, strongest)
JK	catenative adjective (able in be able to, willing in be willing to)
MC	cardinal number, neutral for number (two, three..)
MC1	singular cardinal number (one)
MC2	plural cardinal number (e.g. sixes, sevens)
MCGE	genitive cardinal number, neutral for number (two's, 100's)
MCMC	hyphenated number (40-50, 1770-1827)
MD	ordinal number (e.g. first, second, next, last)
MF	fraction, neutral for number (e.g. quarters, two-thirds)
ND1	singular noun of direction (e.g. north, southeast)
NN	common noun, neutral for number (e.g. sheep, cod, headquarters)
NN1	singular common noun (e.g. book, girl)
NN2	plural common noun (e.g. books, girls)
NNA	following noun of title (e.g. M.A.)
NNB	preceding noun of title (e.g. Mr., Prof.)
NNL1	singular locative noun (e.g. Island, Street)
NNL2	plural locative noun (e.g. Islands, Streets)
NNO	numeral noun, neutral for number (e.g. dozen, hundred)
NNO2	numeral noun, plural (e.g. hundreds, thousands)
NNT1	temporal noun, singular (e.g. day, week, year)
NNT2	temporal noun, plural (e.g. days, weeks, years)
NNU	unit of measurement, neutral for number (e.g. in, cc)
NNU1	singular unit of measurement (e.g. inch, centimetre)
NNU2	plural unit of measurement (e.g. ins., feet)
NP	proper noun, neutral for number (e.g. IBM, Andes)
NP1	singular proper noun (e.g. London, Jane, Frederick)
NP2	plural proper noun (e.g. Browns, Reagans, Koreas)
NPD1	singular weekday noun (e.g. Sunday)
NPD2	plural weekday noun (e.g. Sundays)
NPM1	singular month noun (e.g. October)
NPM2	plural month noun (e.g. Octobers)
PN	indefinite pronoun, neutral for number (none)
PN1	indefinite pronoun, singular (e.g. anyone, everything, nobody, one)
PNQO	objective wh-pronoun (whom)
PNQS	subjective wh-pronoun (who)
PNQV	wh-ever pronoun (whoever)

PNX1	reflexive indefinite pronoun (oneself)
PPGE	nominal possessive personal pronoun (e.g. mine, yours)
PPH1	3rd person sing. neuter personal pronoun (it)
PPHO1	3rd person sing. objective personal pronoun (him, her)
PPHO2	3rd person plural objective personal pronoun (them)
PPHS1	3rd person sing. subjective personal pronoun (he, she)
PPHS2	3rd person plural subjective personal pronoun (they)
PPIO1	1st person sing. objective personal pronoun (me)
PPIO2	1st person plural objective personal pronoun (us)
PPIS1	1st person sing. subjective personal pronoun (I)
PPIS2	1st person plural subjective personal pronoun (we)
PPX1	singular reflexive personal pronoun (e.g. yourself, itself)
PPX2	plural reflexive personal pronoun (e.g. yourselves, themselves)
PPY	2nd person personal pronoun (you)
RA	adverb, after nominal head (e.g. else, galore)
REX	adverb introducing appositional constructions (namely, e.g.)
RG	degree adverb (very, so, too)
RGQ	wh- degree adverb (how)
RGQV	wh-ever degree adverb (however)
RGR	comparative degree adverb (more, less)
RGT	superlative degree adverb (most, least)
RL	locative adverb (e.g. alongside, forward)
RP	prep. adverb, particle (e.g. about, in)
RPK	prep. adv., catenative (about in be about to)
RR	general adverb
RRQ	wh- general adverb (where, when, why, how)
RRQV	wh-ever general adverb (wherever, whenever)
RRR	comparative general adverb (e.g. better, longer)
RRT	superlative general adverb (e.g. best, longest)
RT	quasi-nominal adverb of time (e.g. now, tomorrow)
TO	infinitive marker (to)
UH	interjection (e.g. oh, yes, um)
VB0	be, base form (finite i.e. imperative, subjunctive)
VBDR	were
VBDZ	was
VBG	being
VBI	be, infinitive (To be or not... It will be ..)
VBM	am
VCN	been

VBR	are
VBZ	is
VD0	do, base form (finite)
VDD	did
VDG	doing
VDI	do, infinitive (I may do... To do...)
VDN	done
VDZ	does
VH0	have, base form (finite)
VHD	had (past tense)
VHG	having
VHI	have, infinitive
VHN	had (past participle)
VHZ	has
VM	modal auxiliary (can, will, would, etc.)
VMK	modal catenative (ought, used)
VV0	base form of lexical verb (e.g. give, work)
VVD	past tense of lexical verb (e.g. gave, worked)
VVG	-ing participle of lexical verb (e.g. giving, working)
VVGK	-ing participle catenative (going in be going to)
VVI	infinitive (e.g. to give... It will work...)
VVN	past participle of lexical verb (e.g. given, worked)
VVNK	past participle catenative (e.g. bound in be bound to)
VVZ	-s form of lexical verb (e.g. gives, works)
XX	not, n't
ZZ1	singular letter of the alphabet (e.g. A,b)
ZZ2	plural letter of the alphabet (e.g. A's, b's)

(B) Part-of-Speech Tagset of CTTC and CCTC

Based on the tagset developed by Taiwan's Academia Sinica

POS Tag	Description	Example
A	Non-predicate adjective	天然 tianran [natural]
Caa	Coordinating conjunction	和 he [and], 或 huo [or]
Cab	Listing conjunction	等 deng [etc.]
Cba	Clause-final subordinating conjunction	的话 dehua [if]

Cbb	Correlative conjunction	因为 yinwei [because], 故 gu [so]
D	Adverb	再 zai [again]
Da	Measure adverb	只 zhi [only]
Dfa	Pre-verb degree adverb	最 zui [most]
Dfb	Post-verb degree adverb	许多 xuduo [a lot]
Di	Tense marker	着 zhe [-ing]
Dk	Sentential adverb	就是说 jiushishuo [that is to say]
DM		
I	Exclamation mark	喂 wei [hey]
Na	General noun	水 shui [water]
Nb	Proper noun	林伍德石 shiwudeshi [ringwoodite]
Nc	Place noun	中国 zhongguo [China]
Ncd	Position noun	东部 dongbu [east]
Nd	Temporal noun	早期 zaoqi [early phase]
Nep	Referential determinative	这 zhe [this]
Neqa	Quantifier	一些 yixie [some]
Neqb	Post-quantifier	
Nes	Specific determinative	同 tong [same], 各 ge [every]
Neu	Numeral determinative	三 san [three], 第一 diyi [first]
Nf	Measure word	个 ge [piece], 层 ceng [layer]
Ng	Postfix	之间 zhijian [between]
Nh	Pronoun	我们 women [we]
Nv	Verb nominalization	碰撞 pengzhuang [crash]
P	Preposition	在 zai [in]
T	Particle	而已 eryi [only]
VA	Motional intransitive verb	下降 xiajiang [decline]
VAC	Motional causative verb	波动 bodong [fluctuate]
VB	Motional-like transitive verb	相比 xinagbi [compare]
VC	Motional transitive verb	采用 caiyong [adopt]
VCL	Motional verb followed by locative object	经过 jingguo [go through]
VD	Double objective verb	分配 fenpei [allocate]
VF	Motional predicate-objective verb	继续 [continue]

VE	Motional objective verb	公布 gongbu [announce]
VG	Classificatory verb	称为 chengwei [be named as]
VH	Intransitive verb (state)	适合 shihe [fit]
VHC	Causative verb (state)	减弱 jianruo [be weaken]
VI	Transitive verb (state-like)	取决 qujue [depend on]
VJ	Transitive verb (state)	包含 baoohan [include]
VK	Sentential-object verb (state)	显示 xianshi [show]
VL	Predicate-object verb (state)	持续 chixu [last]
V_2	Special verb	有 you[have or there is]
DE	Associative, nominaliser, or complex stative construction	的 de[de], 之 zhi[zhi], 得 de[de], 地 di [di]
SHI	Copular be	是 shi [be]
FW	Non-Chinese marker	Km
COLONCATEGORY		:
COMMACATEGORY		,
DASHCATEGORY		—
DOTCATEGORY		.
ETCCATEGORY		...
EXCLAMATIONCATEGORY		!
PARENTHESISCATEGORY		() 《》
PAUSECATEGORY		、
PERIODCATEGORY		。
QUESTIONCATEGORY		?
SEMICOLONCATEGORY		;
WHITESPACE		

Appendix III List of Connectives in CCTC

Hallidayan Semantic relation	More specific semantic relations	INTER-Sentence relation (Occurrence)	INTRA-Sentence relation (Occurrence)	Total
Conditional	Contingency. Condition		1. 当...(时) dang...(shi) [when](23) 2. ...时...shi[when] (7) 3. 在...时 zai...shi[when](2) 4. 当...后 dang...hou[when] (1) 5. 如果 ruguo[if](4) 6. 如果...那么 ruguo...name[if...(then)](4) 7. 如果...则 ruguo...ze[if...(then)](4) 8. 若 ruo[if](2) 9. 如...则 ru...ze[if...(then)](1) 10. 若...则 ruo...ze[if...(then)](1) 11. (假设)...则 jiashe...ze[assuming that...(then)](1) 12. 只有(当)...才 zhiyou(dang)...cai[only when](2) 13. 一旦 yidan[once](1)	53
Causal	Contingency. Cause		1. 由于 youyu[because](38) 2. 因为 yinwei[because](28) 3. 由于...因此 youyu...yinci[because...(so)](8) 4. 因为...故 yinwei...gu[because...(so)](4) 5. 因为...因此 yinwei...yinci[because...(so)](3) 6. 因...故 yin...gu[because...(so)](3) 7. 因 yin[because](2) 8. 以致 yizhi[as a result that](2) 9. 因为...所以 yinwei...suoyi[because...(so)](1) 10. 因为...从而 yinwei...conger[because...(so)](1) 11. 由于...可见 youyu...kejian[because...(so)](1) 12. 考虑到...故 kaolvdao...gu[considering that...(so)] (1) 13. 之所以 zhisuoyi[the reason why](1)	216
	Contingency. Inference	1. 因此 yinci[so](37) 2. 于是 yushi[so](3) 3. 因而 yiner[so](2) 4. 由此可见 youcikejian [it follows that](1)	1. 因此 yinci[so](49) 2. 从而 conger[thus](20) 3. 故 gu[so](4) 4. 所以 suoyi[so](3) 5. 因而 yiner[thus](3) 6. 那么 name[so](1)	
Adversative	Comparison. Contrast	1. 而 er[whereas](9) 2. 而...则 er...ze[whereas](3) 3. 则 ze[whereas](2)	1. 而...则 er...ze[whereas](16) 2. 则 ze[whereas](10) 3. 而...却 er...que[whereas](4) 4. 但...则 dan...ze[while](3) 5. 反过来 fanguolai[in contrary] (1) 6. 反而 faner[instead] (1) 7. 反之 fanzhi[otherwise](1)	257
	Comparison. Concession	1. 但 dan[but](22) 2. 然而 raner[but](11) 3. 但是 danshi[but](2)	1. 但 dan[but](75) 2. 尽管...但 jinguan...dan[although...(but)](5) 3. 但是 danshi[but](6)	

		<p>4. 却 que[however](5)</p> <p>5. 却 que[however](5)</p> <p>6. 但是 danshi[but] (1)</p> <p>7. 但 dan[but](6)</p>	<p>4. 虽然...但 suiran...dan[although...(but)](6)</p> <p>5. 然而 raner[but](3)</p> <p>6. 尽管 jinguan[although] (3)</p> <p>7. 即使 jishi[even though](2)</p> <p>8. 虽...但 sui...dan[although...(but)](2)</p> <p>9. 虽然 suiran[although](1)</p> <p>10. 虽然...但是 suiran...danshi[although](1)</p> <p>11. 虽然...但却 suiran...danque[although...(but)](1)</p> <p>12. 尽管...但是 jinguan...danshi[although](1)</p> <p>13. 尽管...然而 jinguan...raner[although](1)</p> <p>14. 尽管如此 jinguanruci [even so](1)</p> <p>15. 尽管...但 jinguan...dan[although...(but)](1)</p> <p>16. 即使...亦 jishi...yi[even though](1)</p> <p>17. 而是 ershi[but(is)](1)</p> <p>18. 然而...却 raner...却[but](1)</p> <p>19. 不过 buguo[nevertheless] (1)</p>	
Additive	Expansion. conjunction	<p>1. 还有 haiyou[also](1)</p> <p>2. 也 ye[also](20)</p> <p>3. 同时 tongshi[at the same time](13)</p> <p>4. 还 hai[also](12)</p> <p>5. 此外 ciwai[moreover](5)</p> <p>6. 另外 lingwai[moreover](2)</p> <p>7. 总的看来 zongdekanlai [in general] (2)</p> <p>8. 总的来说 zongdelaishuo[in general](2)</p> <p>9. 总之 zongzhi[in a word](1)</p> <p>10. 另一方面 lingyifangmian[on the other hand] (1)</p> <p>11. 然后 ranhou[and then](1)</p> <p>12. 而且 erqie[and](1)</p>	<p>1. 也 ye[also](100)</p> <p>2. 且 qie[and](36)</p> <p>3. 并 bing[and](36)</p> <p>4. 而且 erqie[and](12)</p> <p>5. 而 er[and](60)</p> <p>6. 还 hai[also](8)</p> <p>7. 进而 jiner[and then](8)</p> <p>8. 除了...还 chule...hai[besides](4)</p> <p>9. 并且 bingqie[and](4)</p> <p>10. 同时 tongshi[at the same time](6)</p> <p>11. 然后 ranhou[and then](5)</p> <p>12. 其次 qici[then](3)</p> <p>13. 不仅...还 bujin...hai[not only...but also](3)</p> <p>14. 不仅...同时 bujin...tongshi[not only...but also](1)</p> <p>15. 不但...而且也 budan...erqie [not only...but also] (1)</p> <p>16. 不但...而且还 budan...erqie [not only...but also] (1)</p> <p>17. 不但...也 budan...ye[not only...but also](1)</p> <p>18. 不仅...而且 bujin...erqie[not only...but also](1)</p> <p>19. 既...也 ji...ye[not only...but also](1)</p> <p>20. 而且...也 erqie...ye[and...also] (1)</p> <p>21. 那么 name[then](1)</p> <p>22. 而...则 er...ze[and](1)</p> <p>23. 另一方面 lingyifangmian[on the other hand](1)</p> <p>24. 或者 huozhe[or](1)</p>	311
Total		165	672	837

Appendix IV List of Connectives in ESTC

Hallidayan semantic relations	More specific relations	INTER-sentence relation (Occurrence)	INTRA-sentence relation (Occurrence)	Total
Conditional	Contingency. Condition		1. If (44) 2. When (34) 3. If...then (3) 4. Once (3) 5. Assuming that...then (2) 6. Only when (2) 7. Unless (1) 8. As long as (1)	90
Causal	Contingency. Cause		1. Because (42) 2. As (5) 3. So (3) 4. So that (3) 5. In that (2) 6. Such that (1) 7. Since (1) 8. Hence (1)	117
	Contingency. Inference	1. Therefore (25) 2. Thus (14) 3. Hence (1)	1. Thus (10) 2. Therefore (5) 3. Consequently (1) 4. So that (1) 5. Hence (1)	
Adversative	Comparison. Contrast	1. In contrast (3) 2. Whereas (1) 3. By contrast (1) 4. In the contrast (1)	1. Whereas (15) 2. But (7) 3. While (3) 4. Instead (2) 5. Rather than (1) 6. Than (1) 7. But rather (1)	233
	Comparison. Concession	1. However (45) 2. But (21) 3. Nevertheless (2)	1. Although (39) 2. But (83) 3. Even when (2) 4. However (2) 5. Even though (1) 6. Even if (1) 7. Even so (1)	
Additive	Expansion. conjunction	1. Also (64) 2. Then (11) 3. In addition (8) 4. Moreover (8) 5. Additionally (2)	1. And (187) 2. also (22) 3. Then (12)	338
Total		229	549	778

Appendix V List of Connectives in CTTC

Hallidayan semantic relations	More specific relations	INTER-sentence relation (Occurrence)	INTRA-sentence relation (Occurrence)	Total
Conditional	Contingency. Condition		1. 当...(时) [When] (25) 2. 只有当...(时) zhiyou...dang...(shi)[only when](2) 3. 当...那么 dang...name[when...then](1) 4. 如果 ruguo[if](12) 5. 如果...那么 ruguo...name[if...then](10) 6. 如果...则 ruguo...ze[if...(then)](5) 7. 如果...也[ruguo...ye[if](2) 8. 如果...的话 ruguo...dehua[if](1) 9. (假设)...那么 jiashe...name[(Assuming that)...then] (1) 10. 倘使...那么 tangshi...name[if...(so)](8) 11. 倘若...则 tangshi...ze[if...(so)](6) 12. 倘若 tangruo[if](6) 13. 若...则 ruo...ze[if...then] (1) 14. 倘使 tangshi[if](1) 15. 一旦 yidan[Once] (6) 16. 只要 zhiyao[as long as](1)	109
Causal	Contingency. Cause	1. 因为 yinwei[because](2)	1. 因为 yinwei[because] (36) 2. 由于 youyu[as](18) 3. 由于...所以 youyu...suoyi[because...(so)](11) 4. 因为...所以 yinwei...suoyi[because...(so)](11) 5. 由于...因此 youyu...yinci[because...(so)](4) 6. 由于...因而 youyu...yiner[because...(so)](3) 7. 因为...因此 yinwei...yinci[because...(so)](1) 8. 由于...从而 youyu...conger[because...(so)](1)	154
	Contingency. Inference	1. 因此 yinci[therefore] (38) 2. 所以 suoyi[so](4) 3. 因而 yiner[thus](2) 4. 那么 name[so](1) 5. 为此 weici[Therefore] (1)	1. 从而 conger[and therefore](20) 2. 因此 yinci[so](18) 3. 因而 yiner[thereby](6) 4. 所以[so](2) 5. 进而 jiner[and hence, thereby](2) 6. 以致(至)于 yizhiyu[so that](2) 7. 以致 yizhi[so that](1)	
Adversative	Comparison. Contrast	1. 则 ze[whereas](15) 2. 而...则 er...ze [whereas](6) 3. 相反 xiangfan[in contrast](6) 4. 反过来[conversely](1) 5. 相比之下 xiangbizhixia[by contrast](1) 6. 而 er[whereas](1) 7. 然而 raner[whereas](2)	1. 而...则[and, whereas](24) 2. 则 ze[whereas](4) 3. 而 er[whereas](2) 4. 不过 buguo[whereas](1) 5. 然而 raner[whereas](1) 6. 但是 raner[whereas](1)	311
	Comparison. Concession	1. 但是 danshi [However] (26) 2. 然而 raner[however] (24) 3. 不过 buguo[however](18) 4. 但 dan[but](5)	1. 但 dan[But] (43) 2. 但是 danshi[but](31) 3. 虽然...但 suiran...dan[although](19) 4. 虽然 suiran[although](3)	

		<p>5. 然而...则 raner...ze[however](3)</p> <p>6. 而 er[however, but](2)</p> <p>7. 然而...却 raner...que[however...(but)](1)</p> <p>8. 但...却 dan...que[but](1)</p> <p>9. 却 que[but](1)</p> <p>10. 尽管如此 jinguanruci[nevertheless](1)</p> <p>11. 即便如此 jibianruci[even so](1)</p>	<p>5. 虽然...但却 suiran...danque[although...(but)](2)</p> <p>6. 虽然...却 suiran...danque[although...(but)](1)</p> <p>7. 虽然...可是 suiran...keshi[although...(but)](1)</p> <p>8. 而(negative)er(fer, bu)[but not](13)</p> <p>而(是)er(shi)[but rather](9)</p> <p>9. 尽管...但 jinguan...dan[Although...(but)] (6)</p> <p>10. 尽管 jinguan[Although] (8)</p> <p>11. 尽管...但是[Even though...(but)] (6)</p> <p>12. 尽管如此 jinguanruci[neverthelss](1)</p> <p>13. 即使 jishi[even when](7)</p> <p>14. 即便 jibian[even though](1)</p> <p>15. 即使...也 jishi[even though](1)</p> <p>17. 不过 buguo[but](11)</p> <p>18. 但是...却 danshi...que[but](3)</p> <p>19. 但...却 dan...que[but](1)</p> <p>20. 不论 bulun[no matter](3)</p> <p>21. 无论 wulun[no matter](1)</p> <p>22. 然而 raner[but](1)</p>	
Additive	Expansion. Conjunction	<p>1. 也 ye[also] (41)</p> <p>2. 此外 ciwai[moreover](14)</p> <p>3. 此外...也 ciwai...ye[in addition...(also)](3)</p> <p>4. 此外...还 [furthermore...also](1)</p> <p>5. 还 hai[also] (11)</p> <p>6. 同时 tongshi[and;at the same time];(5)</p> <p>7. 同时...也[at the same time...also](1)</p> <p>8. 另外 lingwai[In addition] (5)</p> <p>9. 另外...还 lingwai...hai[in addition...(also)](1)</p> <p>10. 另一方面 lingyifangmian[on the other hand](5)</p> <p>11. 亦 yi [also](5)</p> <p>12. 而 er[and](4)</p> <p>13. 并且 bingqie[and](3)</p> <p>14. 或者 huozhe[alternatively, also] (2)</p> <p>15. 之后 zhihou[then](2)</p> <p>16. 再 zai[then](1)</p> <p>17. 总之 zongzhi[in general](2)</p> <p>18. 而且 eriqe[furthermore](1)</p> <p>19. 那么 name[then, so](2)</p> <p>20. 除此之外 chucizhiwai [in addition](1)</p> <p>21. 然后 ranhou[then](2)</p>	<p>1. 并且 bingqie[and](49)</p> <p>2. 并 bing[and](41)</p> <p>3. 并且还 bingqiehai[and also](1)</p> <p>4. 而 er[and](87)</p> <p>5. 而...也[and...(also)](1)</p> <p>6. 而...亦 yi[and...also](2)</p> <p>7. 也 ye[also](20)</p> <p>8. 且 qie[and](18)</p> <p>9. 且...也 qie[and also](1)</p> <p>10. 而且 erqie[and](9)</p> <p>11. 同时[and](12)</p> <p>12. 同时也 tongshiye[and](4)</p> <p>13. 还 hai[also](7)</p> <p>14. 或 huo[or](6)</p> <p>15. 或者 huozhe[or](6)</p> <p>16. 进而 jiner[and then](6)</p> <p>17. 然后 ranhou[then](6)</p> <p>18. 随后 suiyou[then](2)</p> <p>19. 除了)...还 chule...hai[also](3)</p> <p>20. 同时还 tongshihai(1) [at the same time also] (4)</p> <p>21. 同时...还 tongshi...hai[at the same time(also)](1)</p> <p>22. 另外还 lingwaihai[and also](1)</p> <p>23. 既(不)...也(不)ji(bu)...也(bu)[neither...nor] (1)</p> <p>24. 既...也 ji...ye[not only...but also](1)</p> <p>25. 要么...要么 yaome...yaome[either...or](1)</p> <p>26. 不仅...还 bujin...hai[not only...but also](1)</p> <p>27. 然后再 ranhouzai[and then](1)</p> <p>28. 再 zai[then](1)</p> <p>29. 还是 haishi[or](1)</p> <p>30. 不但...也 budan...ye[not only...but also](1)</p> <p>31. 并同时 bingtongshi[and](1)</p>	
Total		282	703	985

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