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Making Implicit Relations Explicit: Logical Reconstruction in the Chinese Translation of Energy Science and Technology Texts

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ABSTRACT
Energy science and technology texts are characterized by high information density, precise concepts, and complex logical structures. To achieve conciseness and objectivity, English technical texts often employ implicit participants, contextual references, and compressed logical relations, which may cause difficulties in Chinese translation. Based on explicitation theory, cohesion theory, and communicative translation theory, this study examines how explicitation contributes to logical reconstruction in the Chinese translation of energy science and technology texts. Through qualitative analysis of representative translation cases, the study identifies three major patterns of reconstruction: subject explicitation, referential explicitation, and logical explicitation. The findings show that explicitation is not merely the addition of linguistic elements but a process of reorganizing implicit information relations. By clarifying hidden participants, reference chains, and logical connections, translators improve textual coherence and facilitate the accurate communication of scientific information. This study demonstrates the important role of explicitation in reconstructing textual logic in technical translation.

KEYWORDS
Explicitation; Logical reconstruction; Technical translation; Energy science and technology texts; Cohesion

1 Introduction

Energy science and technology texts play an important role in disseminating scientific knowledge and promoting international cooperation in the energy sector. Characterized by high information density, conceptual precision, and rigorous logical organization, these texts often employ compressed structures, implicit references, and non-explicit logical relations to achieve conciseness and objectivity. However, such implicitness may cause difficulties in Chinese translation, where clearer information organization and more explicit semantic connections are often preferred.

The difference between English and Chinese in organizing information contributes to this problem. English scientific texts frequently rely on grammatical structures, contextual inference, and cohesive devices to express relations, whereas Chinese technical discourse tends to present participants, references, and logical connections more explicitly. Therefore, translation is not merely a process of transferring linguistic forms but also involves reconstructing the implicit relations embedded in the source text.

Since Blum-Kulka (1986) proposed the explicitation hypothesis, explicitation has been widely studied in translation research. Previous studies have mainly examined it as an increase in linguistic explicitness, such as the addition of cohesive devices or lexical elements. However, less attention has been paid to how explicitation functions as a means of reconstructing implicit logical relations, especially in scientific and technical translation.

This study combines explicitation hypothesis, cohesion and coherence theory, and communicative translation theory, and it identifies three reconstruction patterns through qualitative analysis of representative cases. Specifically, this study addresses two questions: (1) What types of implicit relations are commonly found in English energy science and technology texts? (2) How are these relations reconstructed through explicitation in Chinese translation?

2 Theoretical Framework

2.1 Explicitation Theory

Explicitation refers to the tendency that translated texts become more explicit than their source texts. Blum-Kulka (1986) first proposed the explicitation hypothesis, arguing that translators often make implicit meanings more visible by strengthening cohesive relations and logical connections in the target text.

Later studies expanded this concept beyond simple linguistic addition. Séguinot (1988) pointed out that explicitation can also be achieved through restructuring expressions within the target language. Klaudy (2009) further classified explicitation into obligatory, optional, pragmatic, and translation-inherent types, showing that explicitness may result from both language differences and communicative needs. Klaudy and Károly's (2005) asymmetry hypothesis further suggests that explicitation is not merely a consequence of language transfer but a general tendency in translation.

In this study, explicitation is understood as a process of reconstructing implicit relations rather than simply adding linguistic elements. In energy science and technology translation, translators often need to make hidden participants, unclear references, and implicit logical relations explicit in order to improve coherence and ensure accurate communication. Therefore, explicitation provides a theoretical basis for analyzing how translators reconstruct textual logic in Chinese translations of energy-related technical texts.

2.2 Cohesion and Coherence Theory

Cohesion and coherence provide a framework for analyzing how textual meanings are connected. Halliday and Hasan (1976) define cohesion as the semantic relations that link elements within a text, including reference, substitution, ellipsis, conjunction, and lexical cohesion. Among these devices, reference and conjunction are particularly relevant to technical translation because they contribute to the identification of entities and the expression of logical relations.

Baker (1992) argues that languages differ in their preferred ways of achieving cohesion, and translators often need to reorganize cohesive patterns rather than directly transfer them. This difference is especially evident between English and Chinese: English technical texts frequently rely on contextual inference and implicit cohesive relations, while Chinese technical discourse tends to favor clearer reference chains and more explicit logical connections.

Therefore, cohesion theory helps explain why explicitation occurs in technical translation. When implicit references or logical relations in English are difficult to recover in Chinese, translators may strengthen cohesive links to improve coherence.

2.3 Communicative Translation Theory

Newmark's (1988) communicative translation theory emphasizes that translation should produce an effect on target readers similar to that produced by the original text on its readers. Unlike approaches that focus mainly on formal correspondence, communicative translation allows translators to adjust linguistic forms when necessary to achieve effective communication.

This theory is particularly relevant to technical translation, where the primary goal is to ensure that scientific information and logical relations are accurately understood by target readers. When differences between English and Chinese information organization cause implicit meanings to become unclear, translators may modify expressions, clarify references, or add logical markers without changing the original content.

In this study, communicative translation theory supports the view that explicitation is a necessary means of improving communication rather than a departure from the source text. It explains why translators reconstruct implicit subjects, reference relations, and logical connections in Chinese translations of energy science and technology texts.

3 Explicitation-driven Logical Reconstruction

3.1 Subject Explicitation

In energy science and technology texts, processes are often emphasized while human or institutional participants are backgrounded. This feature is closely related to the objective style of scientific discourse, where passive constructions and impersonal expressions are frequently used to highlight technological procedures rather than the actors involved. However, when translated into Chinese, excessive suppression of participants may weaken causal relations and reduce textual clarity. Therefore, translators may need to reconstruct implicit participants through subject explicitation.

Case 1:

Source Text: In the Weyburn project, the carbon dioxide when pumped into the oil reservoir increased the pressure and brought more oil to the surface. It increased the field's production by 10,000 barrels a day and demonstrated the technical and economic feasibility of permanent carbon sequestration.

Translation: ……该项目使油田产量每日增加一万桶，并证明了永久封存二氧化碳的技术和经济可行性。

In this sentence, the pronoun "It" appears to refer grammatically to the preceding noun phrase "carbon dioxide." However, from a logical perspective, carbon dioxide itself cannot increase oil production or demonstrate the feasibility of carbon sequestration. The actual participant performing these actions is the Weyburn project, which involves CO_2 injection and geological storage operations. If translated literally as "It increased the field's production by 10,000 barrels a day and demonstrated the technical and economic feasibility of permanent carbon sequestration.", the pronoun "It" may cause ambiguity because Chinese readers could interpret it as referring to carbon dioxide rather than the project. Therefore, the translation replaces the implicit pronoun with the explicit subject "The field".

This adjustment does not simply replace a pronoun with a noun; rather, it reconstructs the participant structure of the sentence. By making the actual actor explicit, the translation restores the logical relationship between the technological project and its outcomes, preventing possible misunderstanding and improving textual coherence.

Case 2:

Source Text: After the capture unit is shut down, the filters are removed and replaced regularly to maintain system efficiency.

Translation: 捕集装置停机后，工作人员会定期拆卸并更换过滤器，以维持系统效率。

In this sentence, the passive structure "the filters are removed and replaced regularly" emphasizes the maintenance procedure while omitting the performer of the actions. In English technical writing, such passive constructions are frequently used to highlight the process rather than the operator. However, in Chinese translation, directly retaining the passive structure as "The filters are removed and replaced regularly" would sound unnatural and fail to clearly present the operational process.

The omitted participant can be recovered from the context because the actions of removing and replacing filters in an industrial maintenance process are normally performed by maintenance personnel rather than by the filters themselves.

Therefore, through subject explicitation, the translation reconstructs the relationship between the operator and the maintenance actions, making the procedure easier for Chinese readers to understand.

The two cases demonstrate that subject explicitation functions as a means of recovering implicit participants rather than adding unnecessary information. By identifying and expressing participants that are hidden in English grammatical structures, translators reconstruct the logical relations between actions, actors, and results, thereby improving the coherence and accuracy of Chinese translations of energy science and technology texts.

3.2 Referential Explicitation

Reference is an important cohesive device that helps establish connections between different parts of a text. In English energy science and technology texts, pronouns and demonstrative expressions are frequently used to avoid repetition and maintain conciseness. However, these expressions often depend heavily on contextual interpretation. When translated into Chinese, unclear or distant references may affect the accuracy of information transmission, especially when multiple technical entities are involved. Therefore, translators often reconstruct reference chains through referential explicitation.

Case 3:

Source Text: Once a tanker reaches its destination, it offloads its cargo, and the natural gas is either stored or distributed through pipelines.

Translation: 当 LNG 运输船抵达目的地后，运输船将卸下所携带的液化天然气，随后天然气会被储存或通过管道进行输送。

In this sentence, the pronouns "it" and "its" establish a reference relationship with the preceding noun "tanker". For English readers, the intended meanings can be easily recovered from context: "it" refers to the tanker, while "its cargo" refers to the cargo carried by the tanker. However, if these pronouns were directly translated into Chinese, the sentence would become unnatural and potentially ambiguous. A literal translation such as "Once it reaches its destination，it offloads its cargo…… " would not clearly identify the entities involved and would not conform to Chinese technical writing conventions.

The translation therefore replaces the implicit pronouns with explicit technical nouns, using "a tanker" to clarify the subject and "The natural gas is either stored " to specify the relationship between the vessel and its cargo. This adjustment reconstructs the reference chain in the target text and allows readers to clearly understand the connections among the transport vessel, the transported material, and the subsequent storage or distribution process. The translator is not merely improving fluency but restoring information relations that are compressed in the source text.

Case 4:

Source Text: A common drilling problem is that something breaks in or falls down the well during drilling.

For example：the drillstring twists off and falls into the bottom. A cone can break off the tricone bit or a tool such as a pipe wrench falls from the rig floor into the well. This is called a fish or junk and cannot be drilled with a normal drill bit.

Analysis: In this example, the expressions "This" contain more implicit reference than ordinary pronouns. "This" does not refer to a single noun but summarizes the entire situation described previously, namely the occurrence of unwanted objects entering the well.

A literal translation such as "This is called a fish or junk" would preserve the ambiguity of the original text and make the classification relationship unclear. The translation uses "Falls from the rig floor into the well" to explicitly identify the category being discussed and clarify the relationship between the described objects and the technical term "fish or junk".

This case shows that referential explicitation involves more than replacing unclear pronouns. It also requires translators to reconstruct conceptual relationships and make implicit categories understandable to target readers. By clarifying reference chains, translators transform context-dependent meanings into explicit information structures, thereby improving coherence and accuracy in Chinese technical translation.

3.3 Logical Explicitation

Logical relations determine how different pieces of information are connected and interpreted within a text. In English energy science and technology texts, these relations are not always expressed through explicit conjunctions. Instead, they are often embedded in grammatical structures, such as participial clauses, coordinated verb phrases, and compressed descriptions of procedures. Although this implicit organization contributes to conciseness, it may increase the difficulty of comprehension for Chinese readers. Therefore, translators often reconstruct these implicit relations by making logical connections more explicit.

Case 5:

Source Text: Global wind power installations increased by 35,800 megawatt (MW) in 2010, bringing the total installed capacity up to 194,400 MW, a 22.5% increase on the 158,700 MW installed at the end of 2009.

Translation: 2010 年，全球风电装机容量增加 35800 兆瓦，因此全球总装机容量达到了 194400 兆瓦，较 2009 年底的 158,700 兆瓦增长了 22.5%。

In this sentence, the participial structure "bringing the total installed capacity up to 194,400 MW" expresses a result relationship between the increase in wind power installations and the growth of total installed capacity. However, this logical relationship is not marked by an explicit conjunction; instead, it is conveyed through the grammatical form of the

participle. English readers can understand that the increase in installations leads to the growth of total capacity through contextual reasoning.

If the original structure is translated directly as "Global wind power installations increased by 35,800 megawatt (MW) in 2010, bringing the total installed capacity up to 194, 400 MW…… ", the causal-result relationship remains relatively implicit. The translation adds the connector "因此" to clearly indicate the relationship between the two propositions. This addition does not introduce new information but makes the semantic connection already contained in the source text more visible to Chinese readers.

Case 6:

Source Text: The operator places the device in the system, gives the command, removes the component, and then checks the result.

Translation: 首先，操作人员将设备放入系统中，然后输入指令，随后移除组件，最后检查运行结果。

In this example, several actions are arranged through coordinated verb phrases. Although the sequence of operations can be understood in English, the temporal relationship mainly depends on the order of the verbs rather than explicit markers. In technical procedures, however, the correct understanding of sequence is essential because an unclear order of operations may affect practical application.

The translation therefore adds explicit temporal markers, including "首先" "然后" "随后" 和 "最后", to reconstruct the procedural logic of the original text. These expressions make the order of actions clearer and guide readers through the development of the process. Rather than changing the scientific content, the adjustment reorganizes the presentation of information according to Chinese technical discourse conventions.

The two cases illustrate that logical explicitation is not limited to adding conjunctions. It involves identifying implicit semantic relations and presenting them in a clearer way for target readers. The wind power example focuses on the clarification of a result relationship, while the operating procedure example emphasizes the reconstruction of a temporal relationship. In both cases, translators make hidden logical structures explicit in order to improve textual coherence and ensure accurate communication.

Therefore, logical explicitation can be regarded as an important mechanism of logical reconstruction in energy science and technology translation. By transforming implicit relations into explicit structures, translators preserve not only the scientific information of the source text but also its internal organization and communicative function.

4 Conclusion

This study has examined how explicitation contributes to logical reconstruction in the Chinese translation of energy science and technology texts. It argues that explicitation is not simply the addition of linguistic elements but a process through which translators identify and reconstruct implicit relations in the source text.

The analysis shows that logical reconstruction in technical translation mainly involves three aspects. Subject explicitation restores implicit participants hidden in passive structures and pronouns, referential explicitation clarifies ambiguous reference relations, and logical explicitation makes implicit semantic connections, such as causal and temporal relations, more explicit. Through these adjustments, translators improve textual coherence and help target readers understand scientific information more accurately.

The study demonstrates that explicitation plays an important role in adapting English technical texts to Chinese discourse conventions. By reconstructing implicit relations, translators preserve not only the content of scientific information but also its logical organization and communicative function.

References

[1] Baker M. (1992). In other words: A coursebook on translation. Routledge.

[2] Blum-Kulka S. 1986). Shifts of cohesion and coherence in translation. In J. House & S. Blum-Kulka (Eds., Interlingual and intercultural communication: Discourse and cognition in translation and second language acquisition (pp. 17–35). NarrGunter.

[3] Halliday M. A. K., & Hasan R. (1976). Cohesion in English. Longman.

[4] Klaudy K. (2009). Explicitation. In M. Baker & G. Saldanha (Eds.), Routledge encyclopedia of translation studies (2nd ed., pp. 104 – 108). Routledge.

[5] Klaudy K., & Károly K. (2005). Implicitation in translation: Empirical evidence for operational asymmetry in translation. Across Languages and Cultures, 6(1), 13–28.

[6] Newmark P. (1988). A textbook of translation. Prentice Hall.

[7] Séguinot C. (1988). Pragmatics and the explicitation hypothesis. TTR: Traduction, Terminologie, Rédaction, 1(2), 106–113.