

Shift in Translation: A Case Study of Translating *NFPA 1 Fire Code* into Chinese

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Abstract: National Fire codes, mandated by government authorities to tackle technical challenges in fire prevention and control, establish fundamental standards for construction practices. International collaboration in fire protection technologies has opened avenues for China to access a wealth of documents and codes, which are crucial in crafting regulations and developing a robust, scientific framework for fire code formulation. However, the translation of these codes into Chinese has been inadequate, thereby diminishing the benefits of technological exchange and collaborative learning. This underscores the necessity for comprehensive research into code translation, striving for higher-quality translations guided by established translation theories. In this study, we translated the initial segment of the *NFPA 1 Fire Code* into Chinese and examined both the source text and target text through the lens of Translation Shift Theory, a concept introduced by Catford. The conclusion culminated in identifying four key shifts across various linguistic levels: lexis, sentences, and groups, to ensure an accurate and precise translation of fire codes. This study offers a thorough and lucid explanation of how the translator integrates Catford's theories to solve technical challenges in *NFPA 1 Fire Code* translation, and establish essential standards for construction translation practices.

Keywords: Fire code; Code document; JC Catford; Translation shift theory

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1. Introduction

This paper presents a case study on the translation of the *NFPA 1 Fire Code*, which is an essential document that provides guidelines for fire safety in various types of occupancies issued by the National Fire Protection Association (NFPA) ^[1]. As a non-profit non-governmental organization (NGO) dedicated to fire protection and control, the NFPA is committed to advancing scientific standards and codes, as well as funding fire-related research and initiatives aimed at creating a safer environment. Since its establishment in 1896, the NFPA has released over 370 codes and standards, offering comprehensive guidance in the field. Among these, the *NFPA 1 Fire Code* is renowned for its

comprehensive scope, encompassing nearly every facet of fire safety. It addresses general safety requirements, outlines the responsibilities of fire departments, provides guidelines for fire-protective building design, and specifies safety requirements for a wide range of occupancies ^[2].

In this paper, the translation process is guided by JC Catford's Translation Shift Theory. The paper is structured into four sections. The introduction establishes the research significance by highlighting the crucial role of code translation in protecting lives and property. The second section provides a detailed description of the theoretical foundation of the Translation Shift Theory and its relevance to the translation of fire protection codes. The third section delves into the translation process, evaluating practical compatibility by analyzing the language features of the source text (ST) and identifying shift discrepancies. These efforts aim to investigate translation shift phenomena in code translation and achieve precise translations guided by the principles of Translation Shift Theory.

With rapid development in China, existing codes have lagged behind evolving safety standards for building systems. Chinese institutions recognized the importance of NFPA codes and mobilized a team of experts authorized by the Ministry of Public Security to translate the *NFPA 101 Life Safety Code* and other regulations in 2006. Despite being outdated and not updated in line with current editions, these references have significantly influenced the development of China's legal and code frameworks. For instance, the introduction of the *Code for Fire Protection Design of Buildings* in 2006, subsequently revised and expanded in 2014 and 2018, integrated numerous new clauses and content from the 2017 NFPA code. NFPA has also established a presence in China to actively participate in fire protection and combustion science research. NFPA codes are instrumental in advancing China's codes and standard system, as well as aiding Chinese fire departments in improving management practices.

In short, code translation plays a crucial role in fostering the mutual development of codes and fire-related knowledge across global regions, encapsulating the essence of this paper. Thus, it is essential to incorporate innovative concepts from cutting-edge literature to enhance our fire protection system, with translation serving as the initial step. The translation of national codes, guided by translation theories, plays a pivotal role in future code translation initiatives. Current translations by machine translation (MT) and professional translators often convey the literal meaning without delving into the nuances of academic discourse, leading to critical omissions or misinterpretations of technical terms. These challenges result from the lack of systematic guidance from specific translation theories and a shortage of scientific expertise. Additionally, the absence of a comprehensive glossary in the field poses another obstacle for translators. China has yet to establish a Chinese-English terminology database focused on fire protection topics, creating an academic void for researchers. Through collaborative efforts, colleagues and translators aim to build a precise and comprehensive terminology database.

2. Literature review

Translation Shift Theory, which emerged in the 1950s, has undergone significant developments through three distinct stages, establishing a robust foundation for contemporary translation practices. The evolution of Translation Shift Theory began with foundational work in General Linguistics by Halliday at the University of Edinburgh, influenced by Firth. Halliday was the first linguist to introduce the concept of language levels, proposing that language consists of three hierarchical categories: units, elements, and classes ^[3]. Specifically, "units" encompass words, phrases, clauses, and sentences; "elements" refer to the structural components within a sentence; and "classes" represent all possible forms of a particular element, known as paradigms. Building on Halliday's research, Catford published *A Linguistic Theory of Translation* in 1965, refining Halliday's model and introducing new classifications of linguistic elements ^[4]. Catford defined essential categories of linguistics, including units, structures, classes, and systems,

and put forth the concepts of textual equivalence and formal correspondence. Importantly, he acknowledged the inherent limitations of translation, illustrating that “translation equivalence does not always conform to formal correspondence.” To address this, he introduced the term “shifts,” defining them as “departures from formal correspondence in the process of translating from the source language (SL) to the target language (TL)”^[4]. This work laid a strong foundation for the evolution of Translation Shift Theory. Following Catford’s initial contributions, the 1970s and 1980s witnessed increased scholarly interest in translation shifts. In 1995, Toury from Tel Aviv University expanded on Catford’s theory, proposing that shifts could be divided into two categories: necessary and unnecessary. Necessary shifts are those required due to differences between the source text (ST) and the target text (TT), while unnecessary shifts are optional and subject to normative constraints^[5]. This distinction provided greater flexibility to Catford’s original theory, broadening its scope and applicability. Collectively, these three stages outline the evolution of the Translation Shift theory, which has become the cornerstone of contemporary translation models. Among the multitude of theories, Catford’s stands out as the most practicable and pragmatic, rendering it an ideal framework for guiding translation practices. Consequently, the author has selected Catford’s theory as the theoretical foundation for this paper.

In his seminal work, Catford provided a comprehensive and insightful definition of translation, describing it as “an operation performed on languages: a process of substituting a text in one language for a text in another”^[4]. His book not only clarified several fundamental concepts in translation studies but also paved a new path for understanding the motives and methods of translation. Specifically, he defined translation as the “replacement of textual material in one language (SL) by equivalent textual material in another language (TL)”^[4]. This definition laid the foundation for his exploration of the concept of “equivalence,” which he emphasized as the core element of translation theory.

According to Catford, equivalence is defined as “the corresponding form of source text material which can realize an equivalence in both form and content”^[4]. For translators, the primary task is to achieve this equivalence when converting source text material into target text. Based on his theory, equivalents are further categorized into two types: textual equivalence and formal equivalence. A textual equivalent is any TL text or portion of text that is observed to be the equivalent of a given SL text or portion of text on a particular occasion. In contrast, a formal correspondent is any TL category (unit, class, structure, element of structure, etc.) that can be said to occupy, as nearly as possible, the “same” place in the economy of the TL as the given SL category occupies in the SL.

Given the inherent differences between language systems, it is widely accepted that absolute equivalence is unattainable in translation. Instead, translators can strive for an approximate formal equivalence. In this context, achieving textual equivalence appears to be a more pragmatic and effective approach for translators, rather than focusing solely on formal equivalence. However, when discussing textual equivalence, it is inevitable that some degree of form-based equivalence may be sacrificed, leading to deviations from the original form. This phenomenon is closely related to what Catford termed “translation shift,” defined as “departure from formal correspondence in the process of going from SL to TL”^[4]. In essence, translation is a process of achieving textual equivalence through various shifts.

Catford’s translation shift theory identifies two main types of shifts: shift of level and shift of category. A level shift occurs when a SL item at one linguistic level has a TL equivalent at another linguistic level. He identified four primary linguistic levels: grammar, lexis, phonology, and graphology. It is clear that translation between the levels of phonology and graphology is impractical, as there are no suitable carriers for these shifts. Consequently, the only feasible level shifts in written translation are those between grammar and lexis, and vice versa. Specifically, this involves transforming grammatical elements in one language into lexical elements in another.

Catford’s analysis places greater emphasis on category shifts, which are further divided into four types:

- (1) Structural shifts: These involve the restructuring of syntax. For example, the English sentence “I like jazz” (subject pronoun + verb + direct object structure) is translated into Spanish as “Me gusta el jazz” (indirect object pronoun + verb + subject structure). Catford described these shifts as the most common, primarily involving changes in grammatical structure.
- (2) Class shifts: These entail shifts in parts of speech. An example provided by Catford is the English phrase “a medical student” and its French equivalent “un étudiant en médecine” (a student of medicine), where the adjective “medical” is translated as the noun “médecine.”
- (3) Unit (rank) shifts: These occur when the translation equivalent in the target language is at a different rank compared to the source text. Here, “rank” refers to the five hierarchical linguistic units: sentence, clause, group, word, and morpheme.
- (4) Intra-system shifts: These shifts happen when the SL and TL have approximately corresponding systems, but the translation involves selecting a non-corresponding term within the TL system. They are commonly observed in languages with similar linguistic contexts.

Catford’s contributions to translation studies have provided valuable insights into the complexities and nuances of the translation process, highlighting the importance of understanding and applying different types of shifts to achieve effective textual equivalence. The literature on Translation Shift Theory encompasses a wide range of studies that investigate the nuances of translation shifts in various contexts and genres, such as speeches ^[6], movie subtitles ^[7], news ^[8], and novels ^[9]. These studies shed light on the nuances of translation shifts in different genres and mediums. These studies contribute to our understanding of how translations are influenced by linguistic, cultural, and contextual factors, highlighting the importance of maintaining accuracy, readability, and fidelity to the original text in the translation process. Further research in this area can continue to explore and analyze translation shifts in different linguistic and cultural settings, providing valuable insights for translators, researchers, and practitioners in the field of translation studies.

3. Discursive features of *NFPA 1 Fire Code*

After assessing the feasibility of applying translation shift theory, it is crucial to further investigate its practical implications. We translate and examine several examples extracted from the *NFPA 1 Fire Code* in order to illustrate the application of Catford’s Translation Shifts Theory in code text translation. The objective of this section is to demonstrate the adaptability of Catford’s Translation Shifts Theory in translating code text and to explore the potential of this theoretical framework in practical translation scenarios. To accomplish this, comprehensive preparatory research is essential in order to comprehend the linguistic characteristics of the original text.

In accordance with the definition given by Wikipedia, “technical code” refers to the documents that state products, processes, or services to meet the technical requirements. In accordance with the function of this code, it should be classified as technical text, which features: (1) formal in mode of speech, (2) objective and accurate in statement, (3) standard in language (4) unadorned in stylistics, (5) strict in logic, and (6) have a large number of technical terms. Undoubtedly, it belongs to technical text.

However, NFPA codes are kind of special. As a member of the American codes and standards family, the NFPA code has no legal force itself. Nevertheless, owing to its special authority in the field of fire safety, it is adopted by many legislative administrations and some federal agencies, who endowed the document with accreditation, and enable the code to be legitimized with the same coercive force as laws and regulations. Therefore, when analyzing the language features of the code, we can easily find that there are many other features: for example, every term of the

code is accurate and has a unique meaning that cannot be substituted by other words, and there are lots of complex sentences in the passage, most of which are subjected to the passive voice. These features indicate the code is not only a technical text, but also subject to the features of legal documents. In short, the code text has the characteristics of both technical texts and legal documents, and all these natures have been classified into three levels—lexical, syntactic, and textual.

3.1. Lexical level

Words, as the smallest units of sentences, play a crucial role in text translation. The code text contains a wealth of technical words and specific terminologies, encompassing both general vocabulary and specialized terms. Technical codes often employ auxiliary verbs and modal verbs (such as “shall” and “must”) to emphasize formality. Moreover, code texts are characterized by accuracy, conciseness, directness, and strictness. Given the code’s dual nature as a legal text, translators must also pay attention to word pairs. The code text contains numerous word pairs, such as “owner/occupant” and “general/detail,” which require precise linguistic conversion to maintain their corresponding relationships.

3.2. Syntactic level

Due to its legal nature, the code text frequently employs declarative sentences, run-on sentences, and imperative sentences, many of which are lengthy and complex. Compared to literary works, code texts use more unemotional sentences in their provisions to emphasize their authoritative nature. Another key feature is the extensive use of the passive voice. According to statistical data, over one-third of the sentences in scientific texts are in the passive voice. In translating these elements, it is essential to utilize level and category shifts guided by Translation Shift Theory.

3.3. Textual level

At the textual level, the code represents a complete system. Firstly, the structure of the code text is characterized by logical consistency and coherence. Secondly, combining the features of both technical and legal texts, the code has a unified structure. For example, the sentence patterns in one chapter of the code are consistent, beginning with an outline followed by detailed information. Additionally, the imperative mood, another hallmark of legal documents, is commonly seen in clauses and sub-clauses. What distinguishes the code from other types of texts is its nominalization, which refers to the process or result of forming a noun or noun phrase from a clause or a verb. To enhance the formality and compactness of the text, code editors often convert verbs into nouns, bringing the target text closer to the style of legal documents.

Given that English is a hypotactic and subject-prominent language, while Chinese is paratactic and topic-prominent, it is necessary to use idiomatic expressions in translation to match the target language with the source language and to translate the source language as completely and objectively as possible.

4. Case study

4.1. Shift of level

Level shifts refer to “a SL item at one linguistic level has a TL translation equivalent at a different level”^[3]. “Level shifts are only possible from grammar to lexis or from lexis to grammar, and translation shifts between these two levels are very common”^[10]. In Chinese, passive voice, tense, and plurality are often expressed through lexical means (i.e., using specific words), whereas in English, these concepts are typically conveyed through grammatical structures.

Example 1 illustrates a translation pattern involving the passive voice. The passive voice is a common grammatical structure in English used to avoid mentioning the agent of an action. However, it is relatively uncommon in Chinese contexts. Therefore, a useful guideline for translators is to employ level shifts to adapt the source text to the target language’s conventions.

Example 1:

ST: A Board of Appeals shall *be established to* rule on matters relating to the fire code and its enforcement.

TT: 成立申诉委员会，旨在裁决消防法规及其实施中产生的相关问题。

Level shift	Shift from English grammar to Chinese lexis
SL: <i>be established to</i>	passive voice structure
TL: 旨在	adverb

Analysis: “A is established to do...” means “sb. establish A, aiming at ...”, which is another kind of level shift. It is nearly impossible to be directly translated as “A 被建立去做某事,” so we use “旨在” to clarify the implied relationship reflected by the grammar. As previously noted, the passive voice is a common grammatical feature in English, particularly in formal documents. However, Chinese translators often avoid using the explicit marker of the passive voice—“被”—due to its less natural usage in Chinese contexts. Given the prevalence of passive sentences in code texts (and indeed in all formal texts), it is essential to handle these constructions effectively by either concealing or replacing the passive marker in translation. This is where level shifts become particularly important.

The following are several strategies for handling passive voice sentences in English-to-Chinese code translation:

- (1) Retaining the original subject and using “被” : Transforming the passive voice into a structure that includes the word “被” while maintaining the original subject.
- (2) Avoiding “被” and using alternatives: Using alternative words to clarify the passive voice, such as “受,” “遭,” “由,” “为……所,” etc., instead of the word “被.”
- (3) Hiding passive forms: Concealing the passive forms in the target text (TT) by rephrasing the sentence.
- (4) Converting passive to active: Converting passive sentences in the source text (ST) into active sentences in Chinese, but only when the subject is known.

These methods are not a comprehensive compilation of translation skills but rather specific transformation strategies summarized by the author during the translation of this code. The first two suggestions represent excellent applications of level shifts, where the passive voice is expressed lexically in the target text but grammatically in the source text. Meanwhile, the third and fourth strategies illustrate category shifts, which will be discussed in a later section.

To further illustrate the application of level shifts, two more examples are provided below.

Example 2:

ST: The AHJ shall have the authority to order an operation, construction, or use stopped when any of the following conditions exist:

- (1) Work *is being done* contrary to provision of this Code.
- (2) Work *is occurring* without a permit required by Section 1.12.
- (3) An imminent danger *has been created*.

TT: 存在下列情况时，主管部门有权叫停施工作业、建造或使用：

- (1) 施工作业中违反本规范的规定。
- (2) 未按本规范第 1.12 节要求取得许可证而擅自进行施工。

(3) 已造成紧迫危险。

Level shift	Shift from English grammar to Chinese lexis
SL: <i>is being done</i>	passive voice structure
TL: 施工作业中	verb + noun + adverb
SL: <i>is occurring</i>	present continuous tense
TL: 进行施工	verb + verb
SL: <i>has been created</i>	present perfect tense
TL: 已造成	adverb + verb

Analysis: the expression of tenses is another distinct feature of the English language, and it is often subject to level shifts during translation. In the example provided, three level shifts occur. The first underlined sense-group, “Work is being done,” which serves as the subject of the first specific provision, employs the present progressive passive voice. The second part, “Work is occurring,” uses the present continuous tense. The third sentence is in the present perfect tense.

Translating these tenses directly into Chinese poses challenges, as Chinese lacks distinct past or present perfect tenses. Therefore, the only way to convey these grammatical nuances in Chinese is by adding specific words such as “中” (indicating an ongoing action), “进行” (indicating progression), or “已” (indicating completion).

In fact, the code text primarily utilizes three common tenses: the present continuous, the present perfect, and the simple present. Most sentences in the simple present tense in this code do not require level shifts, as their tenses can be directly expressed in Chinese. However, sense groups involving the present continuous and present perfect tenses are more likely to undergo level shifts due to the inherent difficulties in conveying these tenses between English and Chinese. This is a critical aspect that translators must be mindful of during translation activities.

The numerous tenses in English often convey important temporal information. Any misunderstanding or omission in translation can lead to significant discrepancies in the interpretation of legal and code texts. Therefore, it is essential to remain vigilant about the accurate representation of these tenses to ensure the fidelity and clarity of the translated text.

Example 3:

ST: A record of *examinations, approvals, equivalencies, and alternates* shall be maintained by the AHJ and shall be available for public inspection during business hours in accordance with applicable laws.

TT: 所有检查记录、申请记录、适用等效技术和更改方案的相关报告应报主管部门留档，并允许公众依照有关法律规定在办公时间内查看。

Level shift	Shift from English grammar to Chinese lexis
SL: <i>examinations, approvals, equivalencies, and alternates</i>	Plural noun form
TL: 所有检查记录、申请记录、适用等效技术和更改方案	adjective + noun

Analysis: The translation of plural nouns constitutes the third level shift in English-Chinese (E-C) translation. In this specific translation program, not every plural noun requires explicit expression or level shift through additional words in the Chinese context. However, in certain circumstances, omitting the plural form may lead to misunderstandings. Therefore, level shifts are necessary to clarify meaning. For example, terms such as “examinations,” “approvals,” “equivalencies,” and “alternates” are plural forms that lack direct grammatical equivalents in Chinese. However, it is crucial to convey that multiple documents are required to be saved for inspection, rather than just one. Thus, the word “所有” (all) is added to clarify the plural forms, adhering to the

principle of level shift.

Unlike other types of shifts, level shifts are deeply rooted in the fundamental linguistic differences between English and Chinese. As such, they are nearly impossible to address or replace with other translation techniques. The three examples discussed here—level shifts involving passive voice, tense, and plural nouns—demonstrate the essential role of level shifts in overcoming translation difficulties. By effectively applying these strategies, translators can ensure that the nuances and complexities of the source text are accurately conveyed in the target language, thereby enhancing the clarity and precision of the translation.

4.2. Shift of category

4.2.1. Structural shifts

According to Catford, structural shifts are the most common type of translation shifts, primarily involving changes in grammatical structure. The following examples illustrate this concept.

Example 4:

ST: The AHJ is authorized to exempt *detached one- and two-family dwellings* and accessory structures from the submittal of plans.

TT: 独立建造的独户住宅或双户住宅及其附属结构无需向主管部门申报设计规划。

Analysis: in the source text, the grammatical structure has been adjusted in its Chinese translation to better align with the target language’s syntactic norms. Specifically, the subject “AHJ” (Authority Having Jurisdiction) becomes an indirect object in the Chinese version, while the original phrase “detached one- and two-family dwellings and accessory structures” is repositioned as the subject and placed at the beginning of the Chinese sentence. This rearrangement reflects a structural shift, which is a common type of translation shift identified by Catford, involving changes in the grammatical structure between the source and target languages.

Structural shifts are essential in translation due to the inherent differences in the syntactic patterns of English and Chinese. English often follows a subject + predicate + object + adverb structure, whereas Chinese typically uses a subject + adverb + predicate + object structure. This difference necessitates adjustments in word order and sentence structure to ensure that the translated text is both accurate and natural in the target language.

Example 5:

ST: When a requirement differs *between this Code and a referenced document*, the requirement of this Code shall apply.

TT: 当本规范与参考性文件要求不一致时，以本规范要求为准。

Analysis: It is evident that the sentence has undergone significant restructuring. Specifically, the phrase “between this Code and a referenced document,” which functions as a complement in the source text (ST), has been moved to the front of the sentence. Meanwhile, “this Code” has been repositioned to serve as the subject of the entire sentence. In the second part of the sentence, the original structure featuring a complete clause with “subject + modal verb + object” has been transformed into a subject-less phrase.

Subject-less sentences and sense groups are common in formal Chinese texts, including the Constitution and other legal documents and codes. Given this linguistic characteristic, translators should pay particular attention to structural shifts when engaging in translation activities. These shifts are crucial for ensuring that the translated text conforms to the syntactic norms of the target language while maintaining the original meaning and intent of the source text.

Example 6:

ST: The AHJ shall have the authority to *limit access* to emergencies or other similar situations.

TT 1: 主管部门有权在紧急情况或其他类似情况下实行限制接近权。

TT 2: 主管部门有权在紧急情况或其他类似情况时限制人员接近。

Analysis: in the source text, the sentence structure has been significantly reorganized to better fit the syntactic conventions of the target language. Specifically, the original structure of “subject + verb + direct object + adverbial phrase of purpose + adverbial part of condition” has been restructured into one of the following patterns in the translation:

(1) “Subject + compound predicate + direct object + condition adverbial + verb + direct object”

(2) “Subject + compound predicate + adverbial clause of time + verb + indirect object + direct object”

In both cases, the subject “AHJ” (Authority Having Jurisdiction) remains consistent, but the arrangement of the other elements has been adjusted. This reorganization is a clear example of a structural shift, which is necessary to ensure that the translated text is both grammatically correct and semantically coherent in the target language. Such shifts are essential in translation practice, especially when dealing with complex sentences that require adaptation to the syntactic norms of the target language.

4.2.2. Class shifts

Following Halliday, the term “class” is defined as “that grouping of members of a given unit which is defined by operation in the structure of the unit next above.” In Catford’s research, “class” refers specifically to the part of speech. Class shift, therefore, occurs when the translation equivalent of a source language (SL) item belongs to a different part of speech compared to the original item. This can be seen as a transformation of the part of speech to better fit the syntactic and semantic requirements of the target language.

Example 7:

ST: Buildings *with* equivalency, alternatives, or modifications approved by the AHJ shall be considered as conforming with this Code.

TT: 任何采用经主管部门批准的等效技术、替代方案或适用修订条文的建筑, 应视作符合本规范要求。

Class shifts	Shift from a proposition to a verb
SL: with	preposition
TL: 采用	verb

Analysis: in the second part of the sentence, the preposition “with” is placed after the subject, implying the meaning of “adopting” or “using.” This usage is further elucidated in the Chinese edition. The shift from a preposition to a verb is a common phenomenon in legal English, which often requires flexible strategies from translators.

Legal English frequently employs prepositions to convey specific meanings, such as “with” indicating possession or association. However, in translation, these prepositions may need to be converted into verbs to better align with the syntactic and semantic requirements of the target language. For example, the phrase “charged with murder” can be translated into Chinese as “被控犯有谋杀罪,” where “with” is transformed into the verb “控告” (accuse) to convey the meaning more clearly.

This type of shift is particularly important in legal texts, where precision and clarity are paramount. Translators must be adept at recognizing when a preposition in the source text can be more effectively expressed as a verb in the target language, ensuring that the translation is both accurate and idiomatic.

Example 8:

ST: This edition may be superseded by a later one, or it may be amended outside of its scheduled revision cycle through the issuance of Tentative Interim Amendments (TIAs).

TT: 当前标准版本有两种更新方式：发行更新版本并取代当前标准，或在非预定修订周期通过“临时修正文件”的形式进行修订。

Analysis: The translation of pronouns poses a significant challenge for translators working with code texts. For instance, the phrase “This edition” could be translated directly as “此版本，” but a more precise and clear expression would be “当前标准版本。” When faced with such choices, translators must consider the reading habits of the target language (TL) audience. Chinese codes rarely employ pronouns, which are often perceived as imprecise and indirect. Instead, formal documents in Chinese typically favor more direct expressions.

In this example, the demonstrative pronoun “This” is replaced with a more detailed modifier, “当前的” (current), to convey the specific meaning of “the current edition of the Fire Code.” Additionally, the rest of the sentence is restructured in Chinese to provide a clearer and more coherent expression for the readers. This approach exemplifies a shift from pronoun to adjective, enhancing the precision and clarity of the translation.

Example 9:

ST: The Board of Appeals decisions shall not be precedent-setting.

TT: 申诉委员会的决议不得作为判例。

Analysis: The sentence “A shall not be precedent-setting” is a common pattern in legal and code texts. Drawing on the official translation of the Civil Code of the People’s Republic of China, the translator has chosen to reclassify the modifier noun “precedent-setting” as a proper noun, thereby aligning with the conventions of the Chinese language. This approach is particularly relevant given that Chinese legal texts often favor specificity and directness over the use of pronouns, which are considered imprecise. By replacing the pronoun with a more detailed modifier, the translation not only adheres to the target language’s norms but also provides a clearer and more precise meaning for the reader.

Example 10:

ST: 1.1.1 The scope includes, but is not limited to, the following:

- (1) *Inspection* of permanent and temporary buildings, processes, equipment, systems, and other fire and related life safety situations
- (2) *Investigation* of fires, explosions, hazardous materials incidents, and other related emergency incidents
- (3) Review of construction plans, drawings, and specifications for life safety systems, fire protection systems, access, water supplies, processes, hazardous materials, and other fire and life safety issues
- (4) Fire and life safety education of fire brigades, employees, responsible parties, and the general public
- (5) Existing occupancies and conditions, the design and construction of new buildings, remodeling of existing buildings, and additions to existing buildings
- (6) Design, installation, alteration, modification, construction, maintenance, repairs, servicing, and testing of fire protection systems and equipment
- (7) Installation, use, storage, and handling of medical gas systems
- ...
- (14) Control of emergency operations and scenes
- (15) Conditions affecting fire fighter safety
- (16) Arrangement, design, construction, and alteration of new and existing means of egress

TT: 本规范的适用范围包括但不限于下列情况：

- (1) 检查临时性建筑和永久性建筑、生产工艺流程、消防器材、消防系统、和其他消防及有关生命安全情况。
- (2) 调查火灾、爆炸和危险品事故和其他相关紧急事故原因

- (3) 审核建筑安全设施、消防系统、疏散通道、消防供水、工艺流程、危险品和其他消防安全事项的建筑方案、图纸和设计说明
- (4) 面向消防队队员、单位从业人员、相关负责人和公众开展消防生命安全教育
- (5) 现有建筑的平面布置和环境、新建项目的设计建造和现有建筑的改建和扩建
- (6) 防火系统的设计、安装、改造、变更、建设、维护和测试，消防器材的维护与保养
- (7) 医疗气体系统的安装、使用、存储和处理
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- (14) 控制应急措施和突发情况
- (15) 影响消防员安全的环境
- (16) 新建疏散通道的平面布置、设计、建造和及原有疏散设施的改造

Analysis: This provision marks the beginning of the main body of the code, stipulating the scope of application of the document. As is well-known, English is a static language that prefers the use of nouns, while Chinese is dynamic, favoring verbs. This difference necessitates the use of class shifts in translation, which involve the conversion of parts of speech, such as prepositions to verbs, nouns to verbs, and adjectives to nouns. In this sentence, the nouns “inspection” and “investigation” are translated into verbs, thereby avoiding rigid and unnatural translation.

Technical English often employs nominalization, which can complicate translation into Chinese. Class shifts serve as a valuable tool for addressing nominalized sense groups by appropriately transforming these sentences into dynamic Chinese expressions. This approach ensures that the translation is both accurate and natural in the target language.

4.2.3. Unit (rank) shifts

Catford’s translation theory identifies five hierarchical linguistic units (ranks): sentence, clause, group, word, and morpheme. Unit shifts are particularly useful for translating long and complex sentences. By adjusting the rank of linguistic units, translators can effectively manage the syntactic and semantic complexities of the source text, ensuring that the translation remains coherent and comprehensible in the target language.

Example 11:

ST: This Code was originally developed as a result of the requests of many members of the National Fire Protection Association for a document covering all aspects of fire protection and prevention that used the other developed NFPA codes and standards.

TT: 起初，应各国家消防协会成员国的要求，美国消防协会起草本规范，旨在制定一部综合性规范，涵盖美国消防协会规范各项现行标准、火灾防护与预防等各方面内容。

Analysis: This sentence is long and complex, typical of legal documents. In this case, shifts are employed across structural, class, and unit dimensions to facilitate translation. Specifically, the phrase “..for a document covering all aspects of fire protection and prevention...” functions as an adverbial clause of purpose in the original sentence. However, in the translation, it is extracted as an independent segment, and the phrase “as a result of” is rendered concisely as “□” (should), which aligns with the directness and conciseness required in code texts.

In this translation, a single sentence is transformed into a clause group, and a phrase is condensed into a single word, demonstrating the application of unit shifts. These shifts are essential for managing the syntactic and semantic complexities of the source text, ensuring that the translation remains coherent and comprehensible in the target language.

Future research will undoubtedly encounter many long and complex sentences in legal texts. These sentences often need to be divided into several parts according to their sense groups to enhance clarity and acceptance by

Chinese readers. This approach will facilitate a more effective translation process, ensuring that the translated text is both accurate and accessible.

Example 12:

ST: A permit shall be predicated upon compliance with the requirements of this Code and shall constitute written authority issued by the AHJ to maintain, store, use, or handle materials; to conduct processes that could produce conditions hazardous to life or property; or to install equipment used in connection with such activities.

TT: 许可证为主管部门签发的书面授权文件，应按本规范要求办理。进行下列活动时，应办理许可证：材料的维修、储存、使用或处理；进行可能危及生命财产安全的生产状况流程，或需安装上述活动中所用到的设备。

Analysis: The source text features a long and complex sentence composed of three clauses and numerous sense groups. To facilitate translation, this sentence has been divided into two complex sentences in Chinese, with three types of unit shifts coexisting within the same sentence. These shifts are essential for managing the syntactic and semantic complexities of the source text, ensuring that the translation remains coherent and comprehensible in the target language.

- (1) Clause-to-sentence shift: The original English sentence is divided into two sentences in Chinese. This shift allows for better clarity and readability in the target language, as Chinese often prefers shorter, more direct sentences.
- (2) Sense group-to-clause shift: The coordinated sense group “A permit shall be ... and shall constitute written authority issued by the AHJ...” is separated into two short clauses linked by a comma. This shift enhances the clarity of the translation by breaking down complex structures into more manageable segments.
- (3) Word-to-sense group shift: The preposition “to” serves as a linkage between the former part and the adverbial of purpose. In the translation, the translator expands the word “to” into a clause, aiming to emphasize the preceding subject while also introducing a new part. This shift highlights the importance of the subject and provides a smoother transition to the next segment.

Example 13:

ST: A *decision* of the Board of Appeals to modify an order of the AHJ shall be *in writing* and shall specify *the manner in which such modification is made, the conditions upon which it is made*, the reasons therefore, and justification linked to specific code sections.

TT: 若申诉委员会决定修改主管部门的指令，应形成书面文件，并载明修改的具体方案、附带条件、修改理由，及修改所依据的具体规范条款。

Analysis: The long sentence is characteristic of the style typically found in code texts. In this example, several types of shifts are employed to facilitate translation. (1) Class shift: The first underlined word undergoes a class shift, transforming from a noun to a verb. This shift helps to align the grammatical structure with the target language’s conventions. (2) Rank shift: The phrase “be in writing” is extracted separately as a short sentence. This can be considered a rank shift, where a phrase in the source text is restructured into a complete sentence in the translation. (3) Clause-to-phrase shift: The clauses “the manner in which such modification is made” and “the conditions upon which it is made” are shifted from clauses to phrases. This is a common technique in code translation, where translators aim to produce a more concise translation by using fewer words while maintaining the original information.

Thirteen examples have been selected to illustrate the translation shifts in this code text, covering nearly every notable key point. In fact, significant efforts have been made to match these linguistic differences between Chinese and English with the examples provided in Catford’s *A Linguistic Theory of Translation*. However, it is important to note that Catford’s work primarily offers case studies from French and Spanish, providing limited insights into the

linguistic differences between Chinese and English. Therefore, it is essential to explore the correlation between shifts and the unique linguistic features of these two languages.

The only drawback identified in this analysis is the absence of intra-system shifts, which occur only when two languages share a fundamentally similar linguistic system. Given the significant differences between Chinese and English, no intra-system shifts were found during the analysis. This highlights the unique challenges and considerations involved in translating between these two languages. The code text exhibits distinct language features that require careful attention during translation. The application of Translation Shift Theory is particularly effective in addressing the linguistic differences between Chinese and English. By employing various types of shifts, translators can ensure that the translated text is both accurate and accessible, bridging the gap between the source and target languages.

5. Conclusion

This study employed Catford's Translation Shift theory as its theoretical foundation, providing a comprehensive and detailed analysis of how translators can integrate code translation with Catford's theory. It explores how the theory can be applied to address various challenges encountered during the translation process. The following sections summarize the major findings and suggest areas for improvement in future code translation research.

5.1. Major findings

The fundamental differences between the source and target languages necessitate the application of various translation shifts. The key findings of this study are as follows:

First, Catford's translation shift theory is suitable for code translation. Code documents exhibit characteristics of both technical and legal texts, requiring precise translation while preserving the original linguistic features. Given the text's features, such as frequent use of the passive voice, formal language, and complex sentences, Catford's theory offers practical solutions to enhance comprehension. It encourages translators to think beyond traditional word-for-word approaches, fostering more flexible and contextually appropriate translations. Additionally, the theory provides a comprehensive framework for understanding various translation techniques. For instance, division can be seen as a form of rank shift at the sentence level; conversion involves class shifts; inversion is a specific type of structural shift; and changes in voice exemplify level shifts between grammar and lexis.

Second, translation skills play a vital role in the process. The author identifies several key translation skills that are crucial for effective code translation:

- (1) Pronoun and conjunction: Pronouns such as "this," "that," and "it" (when used as subjects following adverbial clauses) should be clarified with specific references to avoid ambiguity. In contrast, conjunctions are often omitted in Chinese translations due to the language's paratactic nature. From the perspective of level shifts, these techniques, amplification and omission, can be classified as grammar-to-lexis and lexis-to-grammar shifts, respectively, and are essential for handling pronouns and conjunctions effectively.
- (2) Passive voice: The study identifies four strategies for translating passive voice sentences in English-to-Chinese code translation. The most common approach is converting passive sentences in the source text (ST) into active sentences in the target text (TT). Statistical analysis reveals that out of 198 passive voice sentences in the source text, 113 were restructured into active sentences to align with the conventions of formal documents.
- (3) Long complex sentences: Long and complex English sentences can be effectively broken down into shorter Chinese sentence groups through rank shifts. Although these complex sentences may be unfamiliar to Chinese readers, who are accustomed to shorter clauses and sentences, translators can divide them into sense

groups, achieving equivalence at the sentence level.

- (4) Terminologies: The translation of technical terms presents several challenges. In some cases, terms have direct equivalents in Chinese, such as “facility” (设施) and “equipment” (设备). However, for terms without direct equivalents, two strategies are employed: word-for-word translation and creative recreation. For example, “imminent danger” is translated as “紧迫危险,” while “Authority Having Jurisdiction (AHJ)” is creatively translated as “住房和城乡建设局” to reflect its functional equivalent in the Chinese context. Given the potential for misunderstanding due to the lack of cultural equivalents, a glossary with detailed descriptions is compiled to provide sufficient context for readers.

5.2. Suggestions

Here are also some suggestions for future researchers on code translation:

- (1) Accurate word choice and coherence: The accurate selection of words, maintaining a coherent writing style, and ensuring uniformity in context are essential components of code translation. Translators often face dilemmas between foreignization (preserving the original meaning) and domestication (enhancing readability). Inspired by Catford’s emphasis on the free movement of equivalences across rank scales, translators should aim for correspondence at the level of sense groups rather than individual words. This approach, combined with attention to the writing style and context of the source text, can achieve a higher level of correspondence and produce higher-quality translations.
- (2) Application of shifts: Translators should not be constrained by rigid correspondences but should actively apply shifts of categories, units, classes, or structures to avoid word-for-word translation. This flexibility ensures that the translation is clear, accurate, and contextually appropriate.

In conclusion, Catford’s Translation Shift Theory provides a robust framework for addressing the linguistic differences between English and Chinese in code translation. By integrating this theory with practical translation skills, translators can produce high-quality translations that meet the demands of both accuracy and readability. Future research should continue to explore the application of these shifts and refine translation practices to enhance the quality and acceptance of code translations.

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