Translation Methods of Petroleum Science and Technology Term from the Perspective of Terminology

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Abstract: As the core vocabulary of specialized fields, accurate translation of petroleum science and technology terms is crucial for promoting the communication of petroleum knowledge. Based on the perspective of terminology, the paper analyzes the characteristics of the term, and puts forward the corresponding translation methods. It is hoped that the research in the paper can provide positive reference for the translation of petroleum science and technology term.

Keywords: Terminology; Petroleum Science and Technology Term; Translation Method

1. Term and Terminology

Regarding the definition of term, there have been studies in academic circles for a long time. The definition of term in the international standard ISO 1087-1:2000 is "set of designation belonging to one special language", and in the national standard GB/T 10112 is: "the linguistic designation of concepts in a specialized field". The article Terms, Terminology and Standardization of Term in the CNTERM defines term as "a collection of denotations used to represent concepts in a particular subject area, and is a conventional symbol that expresses or qualifies a scientific concept by means of phonetics or words." Some scholars have also presented their views. Meng believes that term is "the words or phrases that express the concepts of a certain field of expertise." Liang believes that term is "the use of words, phrases, or alphabetic and numeric symbols by people engaged in a specific professional and technical discipline to express a concept in the field of expertise."

Terminology, as a discipline specializes in the formation, establishment and standardization of term in various disciplines, has developed both at home and abroad. The founder of terminology, Eugen Wüster, first described terminology in a paper published in 1931, laying the theoretical foundation for its subsequent development. Although he never really quoted the word "Terminology", it was he who first began to study it in a systematic way (Qiu, 2001). Wüster conducted extensive research, created a comprehensive library of term, developed a national standard for the principles of terminology. At the end of the 1860s, he set the Introduction to Terminology, which allowed terminology to exist as an independent discipline.

The development of terminology in China can be traced back more than two thousand years to the dictionary Erya, a book that covers a great deal of terms about humanity and nature. Later, with the emergence of the Western Learning at the end of the Ming Dynasty, western concepts and technologies were introduced into China, resulting in a large number of literature that needed to be translated. In the process of translation, the name that can accurately reflect a certain concept is the term.

Although there are different views on terminology at home and abroad, they all focus on "concept". Concept is the foundation of term, and without it, term will no longer make sense.

2. Characteristics of petroleum science and technology term

As a special branch of scientific and technological English, petroleum English has distinctive industry characteristics, which also endows petroleum scientific and technological term different characteristics. It is mainly reflected in two aspects: one is the meaning characteristics, petroleum scientific and technological term is specialized, figurative and interdisciplinary; the other is the word formation characteristics, petroleum scientific and technological term is characterized by multiple compounds, multiple abbreviations and multiple derivatives. The following are based on these two aspects.

2.1 Meaning characteristics

2.1.1 Specialization

petroleum science and technology term is specialized as it reflects industry expertise and accurately conveys the information contained therein. For example, borehole（钻孔）, drilling mud（钻井泥浆）, combination trap（复合圈闭）, syncline（向斜）, anticline（背斜）and so on. In addition, the specialization is also reflected in the fact that they do not carry any positive or negative meanings.

2.1.2 Figurativeness

There are some petroleum science and technology terms that are identical in appearance to familiar objects but convey different meanings, which is due to the metaphorical phenomenon of words. Some terms are related to animals, such as gooseneck(鹅颈管), named for the curvature of the derrick hose that resembles the neck of a goose, and dogleg(狗腿度), named for the similarity between the changing angle of the borehole and the angle of a dog's leg. Also there are terms related to plants, such as christmas tree(采油树), rose curve(玫瑰线), and daisy chain(菊花链).

2.1.3 Interdisciplinarity

The whole process of petroleum from exploration to processing not only involves a single petroleum discipline, but also includes geology, engineering, chemical engineering and other related disciplines, which allows the petroleum science and technology term has interdisciplinary characteristic. Geological terms such as lithosphere(岩石圈), asthenosphere(软流层), taphrogeosyncline(软流层) are widely used in petroleum exploration, and chemical terms such as fractional distillation(分馏), cracking proces(干馏法), extraction(萃取)are widely used in petroleum processing.

2.2 Constructional characteristics

2.2.1 Multiple compound words

Compound word refers to the new word formed by the combination of two or more meaningful words. It is one of the major word formation characteristics of scientific and technological term, accordingly, petroleum scientific and technological term also has the characteristic. Compound words can be distinguished by hyphens. A word with a hyphen is called a split compound word, such as sweet-gas(无硫气), gas-tight(气密的), eye-hole(观察孔). A word without hyphen is called a combined compound word, such as hairline(细测量线), pipeline(管线), washout(冲蚀). Compound words are not combined randomly, but follow the corresponding combination form, commonly combined in the form of "noun + noun", "noun + verb" and "noun + adjective", which are reflected in the above examples.

2.2.2 Multiple derivative words

Derivatives are words that are formed with the help of prefixes or suffixes, which mostly contain Latin, Greek and French roots and affixes (Wei, 2014). The affixes of derivatives usually have fixed meanings, such as the prefix "de-", which means " 脱 "" 去 ", and terms with this prefix are often found in the petroleum processing stage, such as desulfurization(脱硫), decoking(除焦), and the prefix "pre-", which means " 预先 ", such as prevulcanization(预硫化), preadmission(预进气). The same applies to the suffixes of derivatives, the common ones being "-ant" or "-ent", means "... 剂 ", such as lubricant(润滑剂), adsorbent(吸附剂), but also "-ize", which means " 使成 ... 状态 ", such as liquidize(液化), standardize(标准化).

2.2.3 Multiple abbreviations

Abbreviations have a compact word structure, and most of them in petroleum technology term are initialism, such as DP (Drill Pipe 钻杆), MWD (Measure While Drilling 随钻测量), WOB (Weigh On Bit 随钻测量), ROP (Rate of Penetration 钻速). Generally speaking, abbreviations are fixed expressions that serve to simplify communication between professionals and reduce information errors.

3. Translation of petroleum science and technology terms from the perspective of terminology

Petroleum is a comprehensive discipline involving many fields such as chemical industry, geology, machinery, etc., and its terms are also all-encompassing. From the perspective of terminology, the essence of term translation is the cross-linguistic matching between concepts and denotations, and it can adopt either the searching translation or the creative translation, depending on whether there is an equivalent term

in the translated language or not (Lu & Zhang, 2022). Among them, the creative translation contains literal translation, free translation, form translation and so on.

3.1 Searching translation

When translators translate terminology, in most cases, they will choose to use tools to find the translated terminology matching the original terminology first to realize the language conversion, which is the searching translation. When translating equivalent terms for which translations already exist, translators can adopt three main methods: 1) searching for bilingual resources such as dictionaries and terminology databases; 2) using online corpus, search engines and other network tools; 3) reading and searching for specialized literature. The advantage of the searching translation is that it can save the translator's time and improve the translation efficiency as well as having important terminological normative significance.

3.2 Creative Translation

3.2.1 Literal translation

Literal translation refers to a method of retaining both the form and content of the original text in the translation process, the advantage of which lies in the ability to express the original meaning completely, which is consistent with the purpose of the petroleum scientific and technical term itself. Common terms that use the literal translation are drilling techniques(钻井工艺), directional drilling(定向钻井), gas-oil ratio(气油比), inside diameter(内径)and so on.

3.2.2 Free translation

Free translation refers to a method of translating according to the English meanings of original texts, combination with Chinese grammatical principles. Normally, when the translation of petroleum scientific and technological terms fails to find the corresponding Chinese words, the free translation can be used. For example, open-hole(裸眼、没有套管的井眼), lost circulation(井漏), and terms used in offshore drilling to indicate wind direction, such as fresh gale(八级风), strong gale(九级风), and whole gale(十级风).

3.2.3 Form translation

Form translation refers to a method of translating with the help of the shape of the translated object in the process of translation, which mainly has two forms. One is to use Chinese characters to indicate its shape, such as I-column (工字柱), because "I" and " 工 " are similar in shape, and T-beam (丁字梁) because "T" and " 丁 " are similar in shape. The other form is to keep the original letters of the word and add the word " 形 " or " 型 " after it to reflect its shape, such as U-pipe(U 形管), D-valve(D 形阀), etc.

4. Conclusion

From the perspective of terminology, the key point of translating petroleum science and technology term is to ensure a good match between concepts and denotations. When translating, a translator should firstly analyse the characteristics of the term and choose the appropriate translation method accordingly. Besides, the translator should also take the improvement of his own professional quality as a goal to be pursued continuously, so as to improve the translation quality.

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