

## Translation Methods of Scientific Long Sentences in Science Fiction Novel from the Perspective of Reception Theory: A Case Study of *The Three-Body Problem*

REN Xiaojing<sup>[a]</sup>; ZHAO Yushan<sup>[a],\*</sup>

<sup>[a]</sup>School of Foreign Languages, North China Electric Power University, Beijing, China.

\*Corresponding author.

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### Abstract

Science fiction, as a unique literary genre, science and fantasy are its main characteristics. The description of science fiction scenes is the highlight of the novel. Therefore, scientific long sentences are the difficulty for readers to understand. The Reception Theory holds that the work’s literary value is determined by both the author and the reader. Readers are an important factor in evaluating a literary work. From the perspective of Reception Theory, this paper takes the science fiction *The Three-Body Problem* as the text to analyze the translation methods of scientific long sentences and to explore why the book *The Three-Body Problem* is popular among readers. This paper hopes to provide reference for the translation of scientific long sentences in other science fiction.

**Key words:** Reception theory; Scientific long sentences; Translation methods

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### INTRODUCTION

*The Three-Body Problem* is the first book of his science fiction series written by Chinese writer Liu Cixin. Taking

the Cultural Revolution as the background, it constructs a large-scale and large-field horizon with amazing technical details. It describes how Ye Wenjie uses the technology of the three-body world to destroy human scientific cognition. The novel *The Three-Body Problem* translated by Ken Liu was released in the United States and entered the American market successfully in the year of 2014. At the same time, it has also entered the British and Australian markets, causing great influence in the field of science fiction. He won the Hugo Prize for Best Novel that was awarded by the World Science Fiction Association. This is the first time that Chinese native science fiction novels have entered the international community, and has been recognized by this organization. At the same time, it also affirms that Ken Liu’s translation can be accepted and welcomed by foreign readers. There are great differences between Chinese and Western cultures and between the structure of Chinese long sentences and English long sentences. Therefore, the choice of translation methods based on reader factors will make the translation easier to be recognized by Western readers. From the perspective of Reception Theory, this paper chooses two main concepts of the horizon of expectations, the fusion of horizons to analyze the translation methods of scientific long sentences in the novel *The Three-Body Problem* so as to provide reference for the translation of scientific long sentences in other Chinese science fiction novels to make more Chinese science fiction novels go abroad and be accepted by foreign readers.

### 1. HORIZON OF EXPECTATIONS AND FUSION OF HORIZONS

Reception Theory adopted in this paper is an important literary theory that was put forward by Jauss and Isel in the 1967. It provides a new perspective and approach for translation research. According to Jauss, it explains the relationship among author, text and reader, which

emphasizes on the ability of readers' reception and understanding of the text, and combines the creation process and appreciation process together.

Horizon of expectation refers to a structural pattern which puts complex personal and social reasons as its basis and is the subject of expectations before or during the reading process. According to Jauss, readers have already had a certain framework for pre-understanding based on their previous reading habits before reading a new particular work. This can be called a horizon of expectation in the perspective of literature. For literary works, even if they look like new works, they will never be new information in total, but they will be understood and accepted by readers through various signals, familiar features or hints combined with the reader's prior understanding. It determines the reader's right to receive the selection of the object and the text. It is only when the text is in line with the pre-understanding and framework in the reader's mind, can the reader's attention be drawn into and corresponds to the reader. Therefore, the horizon of expectation is a prerequisite for accepting a new literary work. Without the aesthetic expectation of such empirical knowledge, it is impossible to accept new things. On this basis, all the new things we encounter can be accepted and understood by using our previous experience.

The concept of fusion of horizons offers a new perspective for the translation research studies. It means that in the process of understanding an article, the interpreter's and reader's own thoughts have always been involved. The process of fusion of horizons is the fusion of the interpreter's and reader's horizon and the object's horizon. But the process of interpreting of the work does not use one field of horizon to cover another field of horizon. It is to fuse the fields between all of them. It helps translation researchers break the inherent thinking mode --"how to understand the original text" and bring a new horizon of "how to communicate with the source text."

Therefore, just as Yang Zijian points out that readership is a very complex group. "There are too many factors affecting them, country, race, gender, age, occupation, hobbies, experience pursuit and so on. And even the same reader often has different psychology in different time and space."(Yang, 2002). Thus, a good translator must have the ability to balance the relationship among the original text and the two concepts—the horizon of expectation and the fusion of horizon, which together provide a theoretical support and reference standards for translators in translating original texts.

Because of the cultural and language differences between China and Western countries, there are great differences in sentence structure between English and Chinese. Linguist Eugene Nida points out that "the biggest difference between English and Chinese is hypotaxis and parataxis" (Nida, 1982). English emphasizes hypotaxis. It refers to the cohesion of words or sentences by means of linguistic forms, which include lexical and morphological

means. Liu Miqing pointed out that English sentences have a strict logical structure. Therefore, no matter how long the sentence is and how complex its structure is, we can find out the backbone of the sentence. Chinese emphasizes parataxis. It refers to that the grammatical meaning and logical relationships in sentences are expressed by the meaning of words or clauses rather than the conjunction in form. Grammatical meaning and logical connection can often be implied between words. Most Chinese sentences seem to be simple in structure. Sentences are arranged in a time and logical order or in a narrative way. Therefore, in translating long sentences from Chinese to English, we should focus on the differences between English and Chinese, and choose appropriate translation methods according to the characteristics of sentences. However, in science fiction texts, Chinese long sentences are not only simple sentences, but also involve a lot of professional knowledge such as physical astronomy, context and reader's acceptance ability. Therefore, the translation of scientific long sentences in science fiction cannot be completely equivalent to the translation of simple long sentences. Therefore, this paper takes science fiction novel *The Three Body Problem* as the text to discuss the translation method of Chinese scientific long sentences. It aims to provide some references for the translation of other Chinese science fiction novels into English.

## 2. TRANSLATION METHODS OF THE SCIENTIFIC LONG SENTENCES

There are many scientific long sentences in the science fiction novel *The Three Body Problem*. A large number of technical terms and descriptions of physical processes are difficult points for translator to translate. Most of foreign readers are lack of professional knowledge of astronomy and physics, though they are fond of science fiction novels. So there is certain distance between readers and source text. Ding Huihui explains that the translator's translation methods should consider reader's receptivity and to fill their absence of horizon and fulfill and expanding their horizon of expectations in her thesis (Ding, 2018). Therefore, how to translate such long sentences and make them to be accepted by foreign readers is a very important issue. In this paper, the author mainly discusses the following translation methods commonly used by Ken Liu.

### 2.1 Division

Sometimes a Chinese sentence is too long, and there are too many clauses in it, which will affect the readers' understanding of the novel. When translating, the translator should consider the receptivity of the western readers, and turn the clauses or phrases into sentences to be narrated separately. In order to make the language more coherent, it is necessary to add words appropriately. By using this method, the whole English long sentence can be divided into several independent sentences accordingly.

Eg 1:

从日核反应区发出的能量开始是以高能伽玛射线的形式发出，辐射区通过对这些高能粒子的吸收，再发射实现能量传递，经过无数次这种再吸收再辐射的漫长过程（一个光子脱离太阳可能需要一千年的时间），高能伽玛射线经过X射线、极紫外线、紫外线逐渐变为可见光和其他形式的辐射。（Liu, 2008, p.194）

Energy produced by reaction within the solar core is initially in the form of high-energy gamma rays. The radiation zone, the region of the sun's interior that surrounds the core, absorbs these high-energy photons and re-emits them at a slightly lower energy level. After a long period of successive absorption and re-emission (a photon might take a thousand years to leave the sun), gamma rays become x-rays, extreme ultraviolet, ultraviolet, then eventually turn into visible light and other forms of radiation. (Ken, 2014, p.261)

The original sentence explains the process of energy conversion by gamma rays. In Chinese, it is a whole long sentence, which has several subordinate clauses in it. It is full of physical processes and technical terms. It is even hard for Chinese to understand the physical process. But the English version is easier to understand than the Chinese text. In the translation text, the translator Ken Liu does not take the literal translation method to translate it into a whole sentence, but divides it into three independent sentences to make the logic between the subordinate sentences clearly. For the original sentence, it has three meanings: “从日核反应区发出的能量开始是以高能伽玛射线的形式发出”；“辐射区通过对这些高能粒子的吸收，再发射实现能量传递” and “经过无数次这种再吸收再辐射的漫长过程（一个光子脱离太阳可能需要一千年的时间），高能伽玛射线经过X射线、极紫外线、紫外线逐渐变为可见光和其他形式的辐射。”。By using this translation method, the reader's reading burden is reduced and they can have a clear logic towards the whole process. To some degree, the original sentence is hard for readers to understand. It surpasses reader's horizon of expectations a lot. But translator does not delete it in the translation work for its main role in the story. To translate it in this way makes this original sentence easy to understand and is close to reader's horizon to achieve the fusion of horizon. It also expands the horizon of expectation by providing with the physical terms.

Eg 2:

监听部有套十分先进的电波灵敏接收系统，从巨型天线接收到的信号通过红宝石行波微波激光器放大---为了抑制系统本身的干扰，竟将接收系统的核心部分浸泡于-269℃的液氮中。（Liu, 2008, p.117）

The Monitoring Department had a very sophisticated and sensitive radio receiver. A ruby-based travelling-wave maser amplified the signals received by the gigantic antenna, and in order to minimize the interference, the core of the reception system was immersed in liquid helium at -269 degrees Celsius. (Ken, 2014, p.158)

The sentence mainly explains the condition and operational process of the radio receiver. Ken Liu still divides the long sentence into short sentences. In the original sentence, Liu Cixin uses a dash to explain why the reception system is immerse in liquid helium, but Ken Liu does not take it in the translation work. He divided the original sentence into two parts and translated “监听部有套十分先进的电波灵敏接收系统” into an independent sentence: “The Monitoring Department had a very sophisticated and sensitive radio receiver.” and the second part of the original into another independent sentence, to help readers easier to understand this sentence to achieve the fusion of horizons.

Eg 3:

据一些迹象推测，构成人列计算机的三体人，外表可能覆盖着一层全反射镜面，这种镜面可能是为了在恶劣的日照条件下生存而进化出来的，镜面可以变化出各种形状，他们之间就通过镜面聚焦的光线来交流，这种光线语言信息传递的速度是很快，这就是人列计算机得以存在的基础。（Liu Cixin, 2008: 170）

According to some signs, the bodies of the Trisolarans who formed the computer were covered by a purely reflective surface, which probably evolved as a response to survival under extreme conditions of sunlight. The mirror-like surface could be deformed into any shape, and they communicated with each other by focusing light with their bodies. This kind of light-speech could transmit information extremely rapidly and was the foundation of the Trisolaran-formation computer. (Ken, 2014, p.228)

The original sentence is a typical Chinese sentence which has a lot of short clauses. And these short sentences are not connected by conjunctions. It just tells the story in chronological order simply. In English, most of the sentences have a strict syntactic structure which is arranged by different clauses and conjunctions. This original sentence is full of physical processes and technical terms, which are far beyond the readers' horizon of expectation. Thus, for this original sentence, the translator divides this sentence into three independent clauses according to their meaning. For each independent sentence, it consists of a complete meaning and one or two clauses. For example, the first sentence is “据一些迹象推测，构成人列计算机的三体人，外表可能覆盖着一层全反射镜面，这种镜面可能是为了在恶劣的日照条件下生存而进化出来的”。And the translation text is “According to some signs, the bodies of the Trisolarans who formed the computer were covered by a purely reflective surface, which probably evolved as a response to survival under extreme conditions of sunlight.” In this way, the translated sentence just has one clause that the reader's reading burden is reduced. They can grasp the scientific phenomenon better. For the original sentences --“镜面可以变化出各种形状，他们之间就通过镜面聚焦的光线来交流，这种光线语言信息传递的速度是很快，这就是人列计算机得以存在的基础。”，it tells

two different things in this sentence which are “镜面可以变化出各种形状，他们之间就通过镜面聚焦的光线来交流” and “这种光线语言信息传递的速度是很快，这就是人列计算机得以存在的基础”。If it is translated into one sentence, it will have a more complex meaning which would take a lot of time for foreign readers to understand. Thus dividing it into two clauses will help readers to understand the whole meaning exactly by giving a more easy way to do. It tries to expect to achieve to get close to the reader's horizon of expectations and help them to understand the text.

## 2.2 Explanatory Translation

Different from the translation of scientific long sentences in scientific text, it requires complete accuracy to the original text. But for the translation of scientific long sentences in science fiction novel, the context of the novel and the acceptability of the reader need to be taken into consideration rather than the simple accuracy, the context of the novel and the acceptability of the reader. Therefore, when translating a long sentence with professional knowledge in the scientific fiction novel, it is necessary to add a lot of explanatory content to help readers better understand the sentence.

Eg4:

由于技术不成熟，传送频率较低，所以信息泄露较大，能被红岸系统接收到。由于是试验传送。加密级别较低，能够被破解，这无疑是最重要的监视对象，是了解美国太空侦查系统不可多得的机会。（Liu Cixin, 2008, p.119）

Due to the technology's immaturity, the satellite transmitted at a low frequency, which increased its range of reception sufficiently for it to be interpreted by Red Coast. And because it was only a test, the encryption was not very secure and could be broken.

The KH-9 was without a doubt an important monitoring target, as it presented a rare opportunity to gather more information about American satellite reconnaissance systems. (Ken, 2014, p.161)

The original sentence mainly introduces the test results of the U.S. reconnaissance satellite KH9 which is in the test phase. In the source text, Liu Cixin described the physical process using these words “由于技术不成熟，传送频率较低，所以信息泄露较大”。In this way, it may not be too difficult for Chinese readers to understand, but for foreign readers who are used to think in a logical way, they will have questions about the process. Therefore, when translating, the translator especially adds the explanation of this logical process, that is, “increased its range of reception sufficiently”, in order to make the content better understood. The reading habits of foreign readers and their acceptance level are taken into account and the translation version achieves the fusion of horizon.

## 2.3 Reconstruction

Chinese long sentences pay attention to meaning and flat narration, so its clauses have various grammatical components and complex levels. If the translation uses the original order or the reverse order of the original, it will not be smooth enough or the level of this sentence is in disorder and difficult to understand, so in this case, it is necessary to scramble the original order and make different arrangements.

Eg5:

这就给了智子一个机会，使他可以代替靶标粒子去接收撞击。由于它具有很高的智能，通过量子感应阵列，他们能在极短的时间内精确判断轰击粒子的轨迹，然后移动到适当的位置。（Liu Cixin, 2008: 288）

This gives the sophons an opening. A sophon can take the place of a target particle and accept the collision. Because they're highly intelligent, they can precisely determine through the quantum sensing formation the paths that the accelerated particles will follow within a very short period and move to the appropriate location. (Ken, 2014, p.378)

The original sentence introduces the feature of sophons. For the collision, the sophon needs several conditions prepared which are “具有很高的智能” and “通过量子感应阵列”。And one condition is reason and the other is a mean. For the reading habits of foreign readers, they often use subordinate clauses in one sentence to express the whole meaning, because they tend to use clauses to express the inner logic of the meaning. Therefore, the English long sentences are usually used. So the translator rearranges the order of the three clauses “通过量子感应阵列”，“在极短的时间内” and “精确判断轰击粒子的轨迹”。In English sentence, the sentence order usually begins with the main clause, followed by an adverbial clause of manner, then an adverbial of time followed. So this sentence is translated into “they can precisely determine through the quantum sensing formation the paths that the accelerated particles will follow within a very short period and move to the appropriate location.” The translator obeys the rule of English sentence which considers the horizon of expectations of readers to achieve the fusion of horizon between the original text and readers.

Eg6:

这是一种类似于偏振的现象，使得在太阳超出一定的距离时，从我们的大气层里观察，太阳的气态外层突然变得透明不可见，只能看到他的发光内核，这时，太阳在我们的视野中，就突然缩到内核大小，变成了飞星。（Liu, 2008, p.134）

It's a phenomenon akin to polarization or destructive interference. As a result, when we view the sun from within our atmosphere and it gets a certain distance from us, the gaseous outer layer suddenly becomes completely transparent and invisible, and all we can see is its bright inner core. The sun then appears to be only the size of the inner core, a flying star. (Ken, 2014, p.185)

The original sentence has a lot of short clauses. Ken Liu rearranges the order of the source sentence “使得在太阳超出一定的距离时，从我们的大气层里观察”。If he translates it in the order of the source sentence, it is a little hard for readers to understand and will make readers reread several times to understand it, because the order of Chinese sentences violates the order structure of English sentences. To change the order of the sentence into “when we view the sun from within our atmosphere and it gets a certain distance from us”, it is easy for foreign readers to understand and is in line with the reader’s reading habits. Thus, it takes the reader’s horizon of expectation into account, and makes the translation text more reach the reader’s expectation to achieve the fusion of horizons.

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## CONCLUSION

From the analysis of the translation methods of the scientific long sentences in the book *The Three Body Problem*, we can see that different translation methods are used to translate the scientific long sentences. And to consider the reader’s receptivity ability, the horizon of expectations and other factors, the translator’s translation methods are not limited to the translation methods which are often used in the science and technology text that acquires equivalence and accuracy. He comprehensively uses interpretive translation method, division method and reordered method in order to make sentences more in line with readers’ expectations. For sentences that are more abstract and difficult to understand, translators use interpretive translation method to make them easier to understand the physical process by adding some explanation as far as possible, and the reader can achieve the horizon of the reader’s expectations and achieve the effect of the fusion of horizons. For a sentence that have a

large number of clauses, the translator takes the horizon of expectation of readers into consideration to use division method and reordered method to achieve the fusion of the horizon as much as possible, but it still retains all the information of the original sentence. Therefore, a certain aesthetic distance has been maintained, which has stimulated readers’ interest in reading.

The science fiction of *The Three Body Problem* has successfully gone abroad and won praise from foreign readers. It is a milestone in the development of Chinese science fiction. This is inseparable from Ken Liu’s successful translation. Therefore, the study of the translation methods of scientific long sentences in the book *The Three Body Problem* provides a great reference for other Chinese science fiction to go abroad to better communication between Chinese and Western cultures.

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## REFERENCES

- Ding, H. H. (2018). *A study of the English version of Santi from the perspective of horizon of expectation*. Guangzhou University of Foreign Studies.
- Jauss, H. R. (1982). *Toward an aesthetics of reception*. Minnesota: University of Minnesota Press.
- Ken, L. (2014). *The three body problem*. New York: Tor Books.
- Liu, C. X. (2008). *Three body*. Chongqing: Chongqing Press.
- Liu, M. Q. (2006). *New Chinese-English translation*. Beijing: China Foreign Translation Publishing Company.
- Nida, Eugene A. (1982). *Translating meaning*. San Dimas California: English Language Institute.
- Wang, L., & Chang, Y. (2016). On the translation of the three-body problem from the perspective of Skopos theory. *Journal of Education Modernization*.
- Yang, Z. J. (2002). Some thoughts on translation studies. *Translation Studies for the 21st Century*.