

# A Feature Analysis of Clause Complex in Scientific News from China Daily: A Case Study of Clean Energy News Reports

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## Abstract

This paper selected three clean energy news reports from China Daily to analyze the logico-semantic relations and function of the clause complex in the discourse based on Halliday's Systemic Functional Grammar. The study aims to explore the characteristics of logico-semantic relations in the scientific news report, so as to have a deeper understanding of the sentence structure in the text. According to the five categories of logico-semantic relations, the study found that there are 64 clause complexes, with 22 locution projection, 13 enhancement relation, 12 elaboration relation, 9 idea projection and 8 extension relation. Projection clause type is generally used to evaluate the progress and effect of energy development projects; extension clause type usually emphasizes the impact of energy development or energy projects; enhancement clause type indicates when, where and why the energy transition and energy development projects are taking place and elaboration clause type is used to provide additional instruction of the project. In addition, this study also provides a reference for English learners and news writers.

**Keywords:** Clause complex, Logico-semantic relation, Clean energy, Scientific news.

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## 1. INTRODUCTION

The logical function is one of the sub functions of conceptual semantic function in language use, which is closely related to the sequence of communicative events (Halliday & Matthiessen, 2004). The logical function of language is realized by clause complex and logico-semantic relation. Conjunctions and prepositions play a role in realizing logical semantic relationships (Srinivass, 2010), while clause complexes enable people to understand the functional organization of sentences. In addition, meaning can also be embodied in the logical structure of its content (Halliday & Matthiessen, 2004).

Scientific news conveys the latest science and technology events in the world. As far as the characteristics of English scientific news discourse are concerned, objective and convincing are the basic requirements. It is acknowledged that English scientific news is famous for its professionalism, standardization and accuracy, and its sentence structure is strict and complex, together with strong logic (Gu, 2012).

As China Daily website is the largest English information platform in China and one of the national important news websites, this study selects three clean

energy news reports from China Daily on April 22, 2022, with a total of 2,688 words. The purpose of this study is to explore the use of clause complex, its logico-semantic relation and its function in scientific news report. By analyzing the type of clause complex, its function and distribution, this paper summarizes the rules and characteristics of logico-semantic relation in scientific news report, so that English learners can have a deeper understanding of the content structure and characteristics of this kind of discourse. The analysis of the relationship between the clauses in the complex of the clauses in the energy news report is also of great significance to study the discourse from different levels.

## 2. CLAUSE COMPLEX

### 2.1 Semantic Structure and Logico-Semantic Relationship

According to Halliday's Systemic Functional linguistics, a clause complex consists of two or more clauses and can be classified as parataxis and hypotaxis in terms of the interdependency between clauses, in which paratactic clause in the sentence is marked by the numbers "1, 2..." to show their coordinating relation; while hypotactic clause is represented by the Greet letters such as  $\alpha$ ,  $\beta$ ,  $\gamma$ , etc. In general,  $\alpha$  represents the main clause and  $\beta$  represents the subordinate clause. In

terms of the logico-semantic relation, the relation between clause can be divided into expansion and projection. Expansion consists of three types, that is, elaboration (represented by “=”), extension (represented by “+”) and enhancement (represented by “×”). Projection includes locution (represented by double quotation marks) and idea (represented by single quotation marks) (Halliday, 1994; Thompson, 1996). Any clause complex in a discourse may consist of a single or multiple clause, which is based on the needs of semantic expression, so as to form an abstract and interdependent logico-semantic relationship (Chen, 2000). Therefore, from the perspective of function and pragmatics, clause complex is not only a grammatical unit, but also a meaning unit for some specific discourse.

## 2.2 The Study of Clause Complex

Clause complex has been widely studied in various aspects. It has been employed in different types of discourse and contexts, such as academic essay discourse (Rukmini, 2014), court discourse (Setia & Sutjaja, 2009), etc., but it is rarely used in the study of news discourse.

Sinnemaki (2006) selected Finnish newspapers, magazines and prose corpora to analyze the function of subordinate clause. The results showed that the composition and function of all subordinate clauses were similar, while the function of compound sentences was different from that of embedded clauses. In addition, Hidayat (2014) and Eid (2016) also conducted similar research on online newspapers, and their discovery is the same as that of Sinnemaki. Adject and Opoku (2017) explored the expansion relationship between clauses in Ghana Daily newspaper. The research found that the enhancement relation of expansion is frequently used in the news report. However, these scholars only studied the distribution and function of the logico-semantic relation of the clause complex, and did not make a systematic summary of the structure pattern of the clause complex. Therefore, this paper selects scientific news discourse, aiming to explore the logico-semantic relations of the clause complex and summarize the pattern, so as to have a deeper understanding of this kind of discourse.

## 3. Application Analysis of Logico-Semantic Relation between Clauses

### 3.1 Expansion Relationship between Clauses

#### 3.1.1 Elaboration

Elaboration refers to a clause explaining the meaning of another clause through further description, which can be a restatement of another clause, or a more detailed description or further explanation of another clause (Halliday & Matthiessen, 2004). The clause that expresses the elaboration relation can be either paratactic or hypotactic. Semicolons are used to separate the paratactic clause; in hypotactic clause, there exist restrictive or non-restrictive attributive

clauses and non-predicate structures that acts as attributives. However, after the annotation of the selected corpus, there are 12 clauses in the corpus that represent the hypotactic relation, and the pattern is generally presented as “ $\alpha^{\wedge}\beta$ ” and “ $\alpha\ll\beta$ ”.

**Example 1:**  $\alpha$  (The site has become the largest coal liquefaction and coal-based synthetic materials manufacturing facility of its kind in the country),  $=\beta$  (boasting production capacity of 4 million metric tons by 2020). (From China Daily on April 22, 2022)

**Example 2:**  $\alpha$  More than 160 enterprises,  $=\beta$  (including 12 companies with annual output of over 1 billion yuan each), have set up operations in the base. (From China Daily on April 22, 2022)

**Example 3:**  $\alpha$  Hydrogen,  $=\beta$  (seen as a fossil fuel alternative that can be stored more efficiently than solar or wind energy), features prominently in Ningdong’s clean energy push. (From China Daily on April 22, 2022)

The focus of the first sentence is the current situation and status of the energy site, while the following clause is a further explanation of the former clause, which is more detailed to the implication of being the largest production base in China. The second sentence describes that more than 160 enterprises have settled in Ningdong base. The elaboration clause is inserted in the middle of the main clause, so as to explain what kind of enterprises is included in the 160 enterprises, which is a necessary complement to the subject of the main clause. In the third sentence, hydrogen plays an important role in the process of promoting clean energy. The elaborate clause also inserted after the subject in the main clause to prescribe the concept of “Hydrogen” in order to provide a more detailed description of hydrogen’s characteristics, that is, it can also be stored more efficiently as an alternative to fossil fuels than solar or wind energy.

#### 3.1.2 Extension

Extension is when a clause extends the meaning of another clause by adding new content. The addition may be new information, or it may be a substitution or replacement for the content of the previous clause (Halliday & Matthiessen, 2004). Similarly, the clause can be either paratactic or hypotactic when representing extension relation. In general, the connective words “and” will be used to connect the clause complex when they are paratactic; while the clauses will be connected by the connective words “with, in addition to” when they are hypotactic. In the selected news discourse, there are 8 clause complexes expressing extension relation, among which five are paratactic with the pattern of “ $1^{\wedge}+2$ ” and three hypotactic with the pattern of “ $\alpha^{\wedge}+\beta$ ”.

**Example 4:** In Shanxi as a whole, a total of 1,000 coal-mining shafts have launched digitalized upgrades, according to the

Shanxi Energy Administration. + $\beta$ (In addition to upgrading its coal-mining and coal-consuming enterprises),  $\alpha$  (Shanxi has prioritized developing clean energy resources like hydrogen, wind and solar power.) (From China Daily on April 22, 2022)

**Example 5:** + $\beta$ (With coal consumption expected to peak soon),  $\alpha$  (the region is increasingly tapping its strengths in solar, wind and hydrogen energy, among other green sectors.) (From China Daily on April 22, 2022)

**Example 6:** 1(The emphasis is on establishing a clean, low-carbon and circular economy), +2(increasing energy efficiency), +3(raising the share of non-fossil energy consumption), +4(and cutting carbon dioxide emissions through science, technology and innovation.) (From China Daily on April 22, 2022)

Example 4 describes the comprehensive launch of digitalization transformation of relevant mines in Shanxi Province and the importance of developing clean energy in Shanxi Province. The following clause is an equivalent replacement of the content of the preceding clause, which carries on the preceding part of the content through “in addition to”. It then introduces the core of the whole sentence and put the emphasis on the main information in the sentence. Apart from this, the word “with” can also be used to extend a clause. The fifth example presents the impact of green energy on regional development. In this clause complex, the main clause comes after the subordinate one. As the marker of extension relationship, the content after “with” indicates the fact that coal consumption is expected to reach the peak soon. Based on this, the region is making more and more use of its advantages in green energy such as solar, wind and hydrogen.

Example 6 is a paratactic clause complex, which belongs to the extension in the expansion relationship. This clause complex illustrates several key points for China to achieve green goals. The subject of several paratactic clauses in the clause complex is “the emphasis”. The information after this is about what this emphasis includes, which is an extension of the content of the main clause. Therefore, it can be seen that different from clauses that express elaboration relation, the extension relation in paratactic clause is generally used to add new information.

### 3.1.3 Enhancement

Enhancement refers to the supplementary clause supplementing or explaining the main clause in terms of time, place, manner, cause, condition, etc., which is similar to the adverbial clause to indicate subordination (Thompson, 1996). Just like the two semantic relations mentioned above, clause complex under this relation also includes two types, that is, parataxis and hypotaxis. Among the selected corpus, 13

clause complexes express enhancement relation, and they are all hypotactic clauses formed by the pattern like this “ $\alpha^{\wedge}\times\beta$ ”

**Example 7:**  $\times\beta$ (When villager Tian Yanhu arrived at his work site at the Ningdong Energy and Chemical Industry Base, in Northwest China’s Ningxia Hui autonomous region),  $\alpha$  (as a fresh graduate almost two decades ago, he felt lost). (From China Daily on April 22, 2022)

**Example 8:**  $\alpha$  (Resource-rich region, energy hub put sustainability at center stage)  $\times\beta$ (by tapping latest technology, innovations.) (From China Daily on April 22, 2022)

**Example 9:**  $\alpha$  (Coal-mining and energy giant Jinneng Holding Group is another role model in Shanxi)  $\times\beta$ ( $\alpha$  for helping carbon peaking and neutrality  $\times\beta$  through promoting clean production and improving efficiency of its coal mines.) (From China Daily on April 22, 2022)

Example 7 describes the mood of the newly graduated college students when they enter the energy base that is just starting. This clause complex is composed of a main clause and an adverbial clause of time introduced by “when”. Among them, the adverbial clause is a supplement to the main clause “he felt lost”, which makes the connotation of the whole clause complex more complete. At the same time, it also highlighted that this person was confused when he first entered the newly constructed base which looks very barren.

Example 8 illustrates the development center on the road to low-carbon industrial transition. The embedding clause highlights how resource-rich regions and energy hubs have placed sustainable development at the center, that is, through the use of the latest technologies and innovations. Example 9 presents why the energy company has become a model for Shanxi Province and how it can help achieve the goal of peak carbon dioxide emissions and carbon neutrality. There are two enhancement relation in this clause complex. The first one is that the clause introduced by the word “for” is embedded with the main clause, which indicates the reason why coal mining and energy giant Jinneng Holding Group is another example for Shanxi. Then, in the clause introduced by “for”, there is another clause introduced by the word “through”, which is used to explain the way by which the company realized the goal of peak carbon dioxide emissions and carbon neutrality. Therefore, the enhancement relationship between clauses can enrich the meaning of the whole sentence.

### 3.2 Projection Relationship between Clauses

Projection generally refers to reporting or quoting the thoughts or words of other people, i.e. one of the clauses functions not as a direct statement of (non-verbal) experience, but as a statement of (verbal)

representation. Projection consists of two kinds, that is, idea and locution. The projective clause can be either paratactic or hypotactic. In the selected corpus, a total of 31 clauses are in projection relation, among which nine belong to idea and the rest belong to locution.

**Example 10:**  $\alpha$  (The efficiency improvement of coal mines is made possible with digitalization),  $\beta$ (according to executives of the company.) (From China Daily on April 22, 2022)

**Example 11:**  $\alpha$  (Tao Shaohua, deputy secretary of the Party working committee of the Ningdong base and director of the base's management committee, said)  $\beta$ (the area's green transition involves using its natural energy resources more efficiently and sustainably.) (From China Daily on April 22, 2022)

**Example 12:** 1(Tian, the official at the base's economic development bureau, said.)  
2("We've certainly come a long way.") (From China Daily on April 22, 2022)

Example 10 describes the energy enterprise's views on reducing carbon emissions and improving coal efficiency. It belongs to idea in projection relationship because it is a thought process. This kind of projection is generally used to express the thoughts of the speaker in the dialogue, the thoughts of the listener in the dialogue, the thoughts of the characters in the narration, the opinions and beliefs of experts and instructors in scientific papers and news reports, and the attitudes of the speakers in scientific papers. In this example, idea projection is used to reflect the opinions of relevant departments of the energy company. By quoting the opinions of relevant personnel, that is, coal efficiency

can be improved by digitalization; it strongly explains the importance of digitalization to coal mines.

Locution projection is relatively common in news report (example 11 and 12). It is a speech process that can be divided into direct speech (explicit projection) and indirect speech (implicit projection). Example 11 quotes the opinion of Tao Shaohua, director of Ningdong Development Zone, on the green transformation of Ningdong area, which belongs to indirect speech (implicit projection) in locution projection. Example 12 is the evaluation of the environmental protection investment project in Ningdong area by the officials of the Economic Development Bureau of the base, which reflects the difficulty of the development of the project in this area. This clause complex belongs to direct speech (explicit projection) in locution projection. In these two examples, the sources of the words, opinions or facts are specific to certain people, namely Tao Shaohua and officials of the Economic Development Bureau of the base, which can enhance the objectivity and credibility of the news. It can also promote the audience's interaction with the news and increase the authenticity and vividness of the news. Therefore, no matter it is explicit projection or implicit projection, they are more in line with the objectivity requirements of news discourse, and also help to increase the authority of the report.

### 3.3 Distribution of Logico-semantic relation between Clauses

In the three selected discourses, there are 64 clause complexes, in which more than one type of logico-semantic relation exists in a clause complex. The overall distribution of logico-semantic relations is as follows:

Table 1

Logico-semantic relation	Expansion			Projection		Total
	Elaboration	Extension	Enhancement	Idea	Locution	
Parataxis	0	5	0	9	10	24
Hypotaxis	12	3	13	0	12	40
<b>Total</b>	<b>12</b>	<b>8</b>	<b>13</b>	<b>9</b>	<b>22</b>	<b>64</b>

As can be seen from the above table, the number of locution in the news reports accounts for the largest, which reflects that the quotes of figures or experts enhance the credibility and objectivity of scientific news reports. In terms of expansion relation, the number of enhancement takes up the largest, which is also similar to the research results of Adject and Opoku (2017). The enhancement clause is to supplement the project and plan of the enterprise in terms of the reasons and methods of green transformation. Elaboration clause is mainly used for detailed explanation of some energy terms and the number of energy facilities, as well as further explanation of energy-related statements. In the scientific news reports, the employment of

enhancement and elaboration clause can make the content more specific. The extension clause extends the information in terms of the emphasis and influence of energy development through the conjunctions, so as to increase the amount of information in the original sentence. What's more, it also highlights the content of the energy project through the restatement of the previous clause in order to make the content expressed more clearly.

## 4. CONCLUSION

By analyzing the semantic relation and distribution of the clause complex in the scientific news reports in China Daily, this paper finds that there are a

total of 64 clause complexes in the discourses, among which the projective type accounts for the most with the number of 22 clauses, followed by the enhancement type (13 clauses) and the elaboration type (12 clauses), and the extension type takes up the least (8 clauses). Locution projective clauses mainly indicate the views or remarks of some expert or figure, which are generally used to evaluate the process and effect of energy development projects. Extension clause emphasizes the impact of energy development or energy projects; enhancement clause can supplement the content of the preceding clause with information indicating the time, place and reason of the energy transition and energy development project, while the elaboration clause is the supplementary explanation of the energy project. This semantic distribution also accords with the scientific, professional and logical characteristics of scientific news discourse.

In addition, this study also summarizes the logico-semantic structure model of clause complex in scientific news discourse. The elaboration type of clause plays an important role in the interpretation of term specific to professional area. When supplementing sentence information, the connectives can be properly used to extend the clause. Enhancement type of clause can help express the way a particular technique or goal is realized. The use of projective clauses, especially those of the locution type, can help readers understand the specific situation of a science project from multiple perspectives, and also make the project more vividly presented in the news report. These can not only help English learners to better understand the sentence structure in the discourse, but also have certain guiding significance in writing for new editors.

## REFERENCES

- Adject, A. A. & Opoku, K. (2016). The Expansion Relations of Clause Complexing in the Editorials of the Daily Graphic. *The Journal of Environment & Development*, 25(2), 131-158.
- Chen, A. L. (2000). Discourse Function of Clause Complex. *Foreign Languages and Foreign Language Teaching*, 5, 15-17.
- Eid, F. M. S. (2016). Functional Analysis of Clause Complex in the Language of News Websites Texts: A Comparative Study of Two Articles. *International Journal of Scientific and Research Publications*, 6(6), 323-334.
- Gu, F. (2012). Stylistic Features and Translation Strategies of Geological Science and Technology English. *China Science and Technology Translation*, 2, 12-14.
- Halliday, M. A. K & Matthiessen, C. (2004). *Halliday's Introduction to Functional Grammar (Fourth Edition)*. London: Routledge.
- Halliday, M. A. K. (1994). *An Introduction to Functional Grammar*. Great Britain: Edward Arnold.
- Hidayat, Y. (2014). The Ideational Meaning Realized in the Written Discourse in Online Newspaper on Abdul Qodir Jaelani (AQJ). *English Education Journal*, 4(1), 24-30.
- Rukmini, D. (2014). The Quality of Clause Complexes in Article Abstracts Written by Semarang State University Graduate Students. *The New English Teacher*, 8(1), 121-131.
- Setia, E. & Sutjaja, G. M. (2009). Clause Complex and Experiential Realization in Court Texts (Bali Bomb Case I): A Systemic Functional Linguistics Study. *E-Journal of Linguistics*, 3(1), 131-153.
- Sinnemaki, K. (2006). On Halliday's Distinction between Embedded and Hypotactic Clauses. *SK Journal of Linguistics*, 19, 375-384.
- Thompson, G. (1996). *Introducing Functional Grammar (Second Edition)*. London: Arnold.