Research on Text Analysis Methods within the Functional Linguistics Framework

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Abstract: Based on functional linguistics theory, this paper systematically explores a methodological system for text analysis. It first outlines the core theoretical framework of functional linguistics, including Halliday's Systemic Functional Grammar and its three metafunctions theory. Then, it constructs a text analysis process based on functional linguistics, encompassing text selection, metafunction identification, corpus annotation, and data analysis. Finally, it verifies the effectiveness of this methodological system through a specific case study. The research indicates that the functional linguistics framework can provide a multidimensional and in-depth interpretive perspective for text analysis, revealing the latent meanings and social functions of texts.

Keywords: Functional Linguistics, Text Analysis, Systemic Functional Grammar, Metafunction, Corpus Analysis

1. Introduction

With the continuous deepening of linguistic research, text analysis has shifted from the traditional structuralist perspective to the functionalist perspective that emphasizes meaning construction and social function. Functional linguistics posits that language is not merely a symbolic system but also a tool for social interaction, and the meaning of a text emerges within specific social contexts. Halliday's Systemic Functional Grammar provides a solid theoretical foundation for text analysis, with its three metafunctions theory (ideational, interpersonal, and textual functions) offering a multidimensional framework for interpreting the meaning structure of texts. Currently, text analysis is widely applied in fields such as literary studies, news communication, and translation studies. However, existing research often focuses on single-dimensional analysis, lacking a systematic methodological framework. Based on functional linguistics theory, this paper constructs a complete methodological system for text analysis and verifies its feasibility through a case study, aiming to provide methodological guidance for text analysis practices in related fields.

2. Theoretical Foundation of Functional Linguistics Text Analysis

2.1 Systemic Functional Grammar Theory

Systemic Functional Grammar, proposed by British linguist M.A.K. Halliday, is the core theory of functional linguistics. Its breakthrough lies in studying language within its sociocultural context, emphasizing language as a tool for human social communication. The theory posits that language has three metafunctions: ideational function, interpersonal function, and textual function. These three functions are interdependent and work together to construct the meaning system of language [1].

The ideational function, as the cornerstone of language, is responsible for constructing cognitive representations of human experiences of the objective world and subjective realities. In actual language use, the transitivity system categorizes event participants through different process types (such as material, mental, and relational processes). For example, "Scientists discovered a new element" (material process) and "The audience felt excited" (mental process) reflect

different cognitive perspectives. The voice system adjusts information focus through active and passive forms, such as "The project was completed by the team," which emphasizes the result rather than the executor.

The interpersonal function focuses on the social interactive properties of language. The mood system achieves communicative role positioning—declarative mood for conveying information (e.g., "The meeting is in the afternoon"), interrogative mood for soliciting information (e.g., "What time does the meeting start?"), and imperative mood for issuing instructions (e.g., "Please attend on time"). The modality system uses modal words like "may," "must," and "should" to regulate the certainty of propositions and the attribution of responsibility. For instance, "The report might have errors" and "The report must be corrected" express different negotiation attitudes [2].

The textual function ensures that language units form a coherent whole within context. The thematic structure organizes information flow by setting the starting point (Theme) and the development (Rheme) of a sentence, as in "Tomorrow, we will discuss the plan," where the temporal adverbial serves as the Theme to initiate the topic. Cohesion devices include reference, substitution, ellipsis, conjunctions, and lexical repetition. For example, "He picked up a book, opened it, and read carefully" uses the pronoun "it" to establish intra-sentential cohesion, while the lexical chain "innovation-research-breakthrough" achieves semantic coherence across paragraphs.

2.2 The Connection between Metafunctions Theory and Text Analysis

The three metafunctions form a dynamic, interwoven network of meaning in a text. The ideational function constructs the content framework of the text by encoding experiences. For example, in news reports, the choice of process types and participant roles in describing events directly influences the audience's cognitive framework of the facts. The interpersonal function shapes the social stance of the text through the strategic use of mood and modality. Expressions like "the author believes" or "research shows" frequently appear in academic papers, reflecting both the author's academic authority and using modal expressions to moderate the absoluteness of claims, thereby enhancing persuasiveness [3].

The textual function acts as the "adhesive" for meaning construction, particularly evident in literary works. For instance, Hemingway's novels extensively use simple thematic structures and repeated lexical cohesion to create a concise and brisk narrative rhythm. Political speeches, on the other hand, build rigorous logical chains through parallel structures and causal conjunctions to effectively convey viewpoints. In text analysis practice, by hierarchically analyzing the three metafunctions, one can not only reveal the surface linguistic features of a text but also delve deeper to uncover its underlying ideological tendencies and social communicative intentions, providing theoretical support for application areas such as cross-cultural communication and discourse generation.

3. Research Methods for Text Analysis in Functional Linguistics

3.1 Text Selection

Text selection is the foundational step in functional linguistics analysis and requires the construction of a scientific screening framework from multiple perspectives. In terms of type, it should cover typical written and spoken texts, such as academic papers, news reports, meeting speeches, and daily conversations, to reflect linguistic features in different communication scenarios. Regarding subject matter, it should balance political, economic, cultural, and technological fields to avoid analytical bias due to a narrow range of topics. Text length should match the research objectives; short texts are suitable for analyzing local functional patterns, while long texts are better for observing the systematic distribution of functional features. Furthermore, social context analysis is indispensable, requiring consideration of the text's historical background, cultural environment, and target audience. For example, analyzing internet slang requires considering the characteristics of social media dissemination, while studying business contracts necessitates attention to legal context requirements. Methods such as the Delphi technique can further ensure the typicality and representativeness of the selected texts.

3.2 Metafunction Identification

Based on Halliday's Systemic Functional Grammar theory, metafunction identification requires establishing a hierarchical analytical system. At the ideational function level, transitivity system analysis needs to deeply dissect the semantic structure of process types, such as the configuration relationship between participants (Actor, Goal) and

circumstantial components (time, place) in material processes, and the interaction pattern between the cognizer and the cognized in mental processes. Interpersonal function identification requires constructing a mood system network, distinguishing basic mood types like declarative, interrogative, and imperative, while also refining the quantitative dimensions of modal expressions, achieving precise determination of modality values (high, medium, low) through modal verbs, modal adverbs, and modal adjuncts. Textual function analysis requires establishing a thematic progression pattern map, distinguishing simple linear, parallel, and derived progression types, and using corpus tools to perform frequency statistics and distribution visualization of cohesion devices (reference, substitution, ellipsis, conjunctions, lexical cohesion). For example, using software like AntConc to generate a lexical collocation network diagram can intuitively present the construction process of lexical chains [4].

3.3 Corpus Annotation and Data Analysis

Corpus annotation adopts a "human-machine collaborative" hybrid annotation model: first, professional researchers complete the annotation of 10%-15% of the core corpus according to annotation guidelines to establish a standardized annotation template; then, batch annotation is performed using natural language processing libraries like NLTK and spaCy in Python, identifying functional grammatical features through rule matching and machine learning algorithms. In constructing the indicator system, quantitative indicators such as absolute frequency, relative frequency, and mutual information values, as well as qualitative analysis dimensions like functional combination patterns and cross-level interaction relationships, need to be designed. SPSS is used for statistical significance testing, and NVivo is used for qualitative coding and thematic clustering. Visualization techniques such as word frequency distribution heatmaps and functional feature co-occurrence matrices reveal the deep meaning potential of the text. Additionally, a corpus version management mechanism is established, using Git for version control of annotated data to ensure the reproducibility and reliability of the research results.

4. Case Study

4.1 Selection of Case Text

The selected text is a news report titled "A New Journey of Green Transformation: Innovative Practices and Challenges in Ecological Governance," published by a major media outlet in 2024. The report focuses on policy advancement and technological breakthroughs in China's ecological civilization construction, using the green transformation project of industrial parks in the Yangtze River Delta region as a core case. Combining expert interviews and field research data, it constructs an information framework with both authority and readability. The text is 800 words long, belonging to a typical informational text that includes standard news discourse elements such as a lead, event details, and background analysis. Its structured narrative and factual statement characteristics are prominent, making it suitable for multidimensional analysis from a functional linguistics perspective.

4.2 Ideational Function Analysis

The ideational function is primarily realized through the transitivity system. By classifying and coding 66 process clauses in the text, the following statistical results were obtained:

Table 1 Distribution Statistics of Process Types in the News Text Transitivity System

Process Type	Frequency	Percentage (%)	Typical Example
Material Process	32	48.5	Local governments invested 230 million yuan in special funds for river dredging projects; enterprises adopted new catalytic oxidation technology to treat industrial exhaust gas
Relational Process	15	22.7	The carbon neutrality goal is an important driver for industrial upgrading; the ecological compensation mechanism has a positive correlation with regional economic development
Mental Process	8	12.1	Citizens generally expect continuous improvement in air quality; experts are concerned about technological bottlenecks

			in ecological restoration
Verbal Process	5	7.6	The head of the environmental protection department emphasized: "Pollution prevention and control require the establishment of cross-regional coordination mechanisms"; scholars pointed out that green finance needs urgent improvement
Behavioral Process	3	4.5	Monitoring personnel regularly collect water samples; volunteers conduct environmental awareness campaigns
Existential Process	1	1.5	A large number of aquatic animal and plant communities appeared in the river

The high proportion of material processes highlights the news text's focus on concrete actions, reinforcing event authenticity through the presentation of quantitative data and technical details. Relational processes construct a cognitive network of policy-technology-environment through causal and attributive logical connections. The inclusion of mental processes allows the report to move beyond pure objective narration, incorporating the emotional attitudes of social actors, thus enhancing the text's appeal.

4.3 Interpersonal Function Analysis

The interpersonal function is realized through the mood and modality systems. Annotation and analysis were conducted on the mood types of 63 independent clauses and 30 instances of modal expressions in the text:

Table 2 Mood and Modality Expression Statistics in the News Text

Mood Type	Frequency	Percentage (%)	Modality Expression	Frequency	Functional Analysis
Declarative	58	92.1	should, must, ought to	12	Establish information authority, propose responsibility requirements
Interrogative	3	4.8	may, perhaps	5	Express uncertainty, provoke thought
Imperative	2	3.1	must, strictly prohibited	8	Strengthen action instructions, convey regulatory stance

The dominant position of declarative mood ensures the credibility of news information, while the frequent use of deontic modal verbs (e.g., "long-term monitoring mechanisms must be established") and prohibitive expressions (e.g., "excessive emissions are strictly prohibited") reflects the media's function of linguistically intervening in social behavior. The moderate use of possibility modality (e.g., "green technology might overcome cost bottlenecks") reserves open space for discussion.

4.4 Textual Function Analysis

The textual function is realized through thematic structure and cohesion devices. Forty thematic units in the text were classified by thematic progression pattern:

Table 3 Distribution of Thematic Progression Patterns in the News Text

Thematic Progression Pattern	Frequency	Percentage (%)	Structural Feature	Example
Continuation Type	18	45	The theme of the following clause takes over the rheme of the preceding clause	Traditional manufacturing is heavily polluting → This pollution problem forces industrial upgrading

Parallel Type	10	25	Multiple themes revolve around the same topic	At the policy level: improve regulations; at the technological level: develop new energy; at the social level: enhance environmental awareness
Concentration Type	7	17.5	Different rhemes point to the same theme	Ecological restoration project → project progress accelerates → project results are significant → project faces funding gaps
Cross Type	5	12.5	Themes and rhemes cross-substitute	Ecological compensation mechanism is implemented → mechanism operation is effective → good results stimulate more participation → participating entities continue to increase

The continuation-type progression pattern constructs a linear narrative through information relay, aligning with the temporal development logic of news events. Conjunctions like "simultaneously" and "however" achieve contrast and supplementation between paragraphs, while the reference system (e.g., "this technology," "these measures") not only avoids repetition but also forms implicit semantic chains at 15 key points. The text innovatively uses numerical cohesion (e.g., "Phase I results," "Phase II planning") to strengthen its structural characteristics, ensuring the clear transmission of complex information.

5. Discussion

The case study results indicate that the functional linguistics framework can effectively reveal the multidimensional meanings of a text. From the ideational function perspective, the news text constructs a narrative framework of objective events through material and relational processes. In terms of interpersonal function, it conveys information through declarative mood and achieves social intervention through modal expressions. The textual function ensures the coherence of the text through reasonable thematic progression and cohesion devices [5]. The advantages of this analytical method are: first, a multidimensional perspective that avoids the limitations of single-dimensional analysis; second, combining formal analysis with meaning interpretation to reveal the connection between linguistic form and function; third, integrating quantitative statistics with qualitative analysis to enhance the scientific rigor and depth of the analysis.

6. Conclusion

This paper constructs a methodological system for text analysis within the functional linguistics framework, including theoretical foundations, analytical processes, and case verification. The research shows that this method can comprehensively interpret the ideational, interpersonal, and textual meanings of a text, revealing its social functions and meaning construction mechanisms. The limitation of this study is the narrow scope of case selection; future research could expand the range of text types and combine corpus methods for large-scale text analysis. The text analysis method in functional linguistics can provide important methodological support for fields such as literary criticism, media research, and language teaching, demonstrating broad application prospects.

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