

A Comparative Study of Thematic Structure and Progression Patterns in Political and Science Speeches

Mao Yi* and Lei Xiaolan

Abstract—Taking political and science speeches as subjects, the writer makes an attempt to analyze the similarities and differences between political speeches and science speeches on the basis of Halliday's theme theory and Zhu Yongsheng's thematic progression patterns. The quantitative analysis shows that, as to thematic structure, simple themes are used most in political speeches, whereas multiple themes contain the largest proportion of science speeches, and both of them rarely use clausal themes; in addition, interpersonal themes account for a larger percentage in political speeches, whereas textual themes occur more in science speeches. With regard to thematic progression patterns, both of them consist largely of same Theme pattern and continuous pattern, while same Rheme pattern and crossing pattern are rarely employed. This study expands the scope of research on thematic progression patterns and has implications for speakers and English learners.

Index Terms—Thematic structure, thematic progression pattern, political speech, science speech

I. INTRODUCTION

As a significant way of discourse analysis, the thematic progression pattern contributes to exploring the internal structure of a text and reflecting the information flow by analyzing the theme, rheme, and their relations, and thus it has been widely applied to various discourses, such as news [1, 2] and speech, which is also investigated from the perspective of stylistics [3, 4], translation [5], and teaching [6]. Thereby, analysis of thematic structure and thematic progression patterns has great research and practical value, conducive to clarifying the different stylistic features of the texts as well as facilitating translation research and English teaching.

Public speaking refers to a way of influencing other people by disseminating the speaker's ideas [7], intended to inspire, encourage, persuade, and teach the audience, which can be classified into different categories according to the speech content such as political speech, academic speech, science speech and so on. There is plenty of research on public speech from the perspective of thematic structure and thematic progression patterns. For instance, Lan analyzes the thematic features, effects, and functions that have been achieved in Queen's speech [8], whereas Dou and Zhao investigate the thematic structure and thematic progression patterns in Ivanka Trump's speech [9], both of which conduct detailed analysis and explore the roles of thematic progression patterns in political speeches. However, by reviewing previous research, it can be found that most studies

center on political speech, and the researches on other topics like science and technology are still insufficient.

Therefore, this paper will analyze and compare thematic structure and thematic progression patterns of political speeches and science speeches, intending to investigate their similarities and differences, enrich related research corpus, and further provide a reference point for future research.

II. LITERATURE REVIEW

A. Thematic Structure

Theme is the starting place of the information, indicating the direction of sentence development, and the rest part of the sentence is regarded as rheme [10]. In terms of theme composition, theme was classified into simple theme, clausal theme, and multiple theme [11]. Simple theme refers to the independent element or a single structure without internal structure, only representing ideational function. Clausal theme appears in a sentence with no less than two clauses, in which the first clause acts as the theme and the rest part is the rheme.

Multiple theme is composed of two or more semantic components with ideational, textual, and interpersonal functions, which can occur simultaneously with the typical sequence of textual, interpersonal, and ideational theme. The textual theme consists of three elements: (1) continuative theme, such as "yes", "no", "well", and "now"; (2) structural theme, for instance, "and", "however" and "so"; (3) conjunctive theme including "therefore", "finally", "in that case", etc. Interpersonal theme is composed of vocative, modal, and mood-marking elements. Ideational theme acts as subject, complement, and circumstantial adjunct, which can also be called as topical theme [11].

B. Thematic Progression Pattern

Danes [12] first elaborated on the thematic progression pattern, which referred to the complex relationship between the theme and the rheme in the discourse, including three types: simple linear type, constant type, and derived type, laying a foundation for exploring thematic progression patterns in future research. Subsequently, based on Danes' classification, the scholars discussed and proposed different models, such as the four types proposed by Xu's seven classifications, Huang's six types, and Zhu's four basic types [13–16], which share similarities despite their different taxonomies.

This paper is based on the four thematic progression patterns proposed by Zhu [16], including same Theme, same Rheme, continuous and crossing pattern, which have been adopted in many studies with high practical value. Same Theme pattern, also known as parallel pattern, refers that the

Manuscript received August 11, 2023; revised September 14, 2023; accepted October 30, 2023.

Mao Yi and Lei Xiaolan are with School of Foreign Studies, Northwestern Polytechnical University, Xi'an, CO 710129, China.

*Correspondence: maoyi@mail.nwpu.edu.cn (M.Y.)

clauses share the same theme but differ on rhemes in a discourse, forming a parallel structure with the same theme. Same Rheme pattern is also called the concentrated pattern, where the rheme of the clauses is similar with different themes, which can be viewed as the contrary form of same Theme pattern. Continuous pattern signifies that the rheme or the part of rheme of the preceding clause serves as the rheme of the following one, and thus it can bring new information constantly. Crossing pattern indicates that the theme of the preceding clause becomes the rheme of the latter clause, which helps to reflect the complicated relations among the clauses.

III. RESEARCH METHODOLOGY

A. Research Questions

On the foundation of Halliday's theme theory and Zhu [16] thematic progression patterns, this paper aims to investigate the thematic structure and thematic progression patterns in political speeches and science speeches, and further find their similarities and differences, so this paper will answer the following questions.

First, what are the distribution features of thematic structure in political and science speeches?

Then, how are thematic progression patterns employed in political and science speeches?

Finally, in terms of thematic structure and thematic progression patterns, what are the similarities and differences between political and science speeches?

B. Data Collection

The data for this paper are collected from the official website of TED Talk, which refers to a type of public speech comprising diverse subjects, such as science, anthropology, arts, and so forth. It is acclaimed as one of the most prominent science popularization initiatives in history [17], providing free access to numerous videos through its official website, and hence it serves to offer massive corpus for discourse analysis.

On the official website of TED talks (www.ted.com), there are a large number of speech videos with diverse subjects and different lengths. After analyzing the main idea of these videos, the paper eventually selects ten videos and transcribes them into texts to establish a corpus, including five political speeches with 9065 words and five science speeches with 9190 words, which is feasible to carry out further analysis.

C. Research Procedures

After collecting the data, the research procedures are as follows.

The first step is to identify clauses with theme and rheme in the corpus, remove clauses without thematic structures, mark the valid clauses with the number, and count the total number in each text.

Secondly, mark theme and rheme in each clause with T1, T2, T3, etc., and R1, R2, R3, etc., and in the meanwhile, analyze the themes and classify them into simple theme, multiple theme, and clausal theme. Besides, for further analysis, it is also necessary to label themes as ideational theme, textual theme, and interpersonal theme. Then, count the number of these themes respectively.

Thirdly, analyze the relationship between themes and rhemes in the text so that thematic progression patterns can be identified, after which the number and distribution of the patterns can be obtained.

Lastly, compare and analyze the distribution of thematic structure and thematic progression patterns of political speeches and science speeches with specific examples.

IV. RESULTS

A. Analysis of Thematic Structure

1) The distribution feature of thematic structure

Table I displays the distribution of simple, multiple, and clausal theme in political speeches and science speeches. In political speeches, the simple theme comprises the largest percentage, followed by the multiple theme with a percentage of 30.56%, and clausal theme takes up the least part with a percentage of 22.22%. By contrast, multiple theme and simple theme dominate in science speeches, accounting for 44.05% and 42.26% respectively, whereas clausal theme makes up the smallest proportion.

TABLE I: DISTRIBUTION OF THEMES IN POLITICAL AND SCIENCE SPEECHES

Type	Political Speech	Science Speech
ST	47.22%	42.26%
MT	30.56%	44.05%
CT	22.22%	13.69%

Note: ST=simple theme...

The most salient similarity is that their clausal theme takes up the smallest proportion, with the percentage of 22.22% and 13.69% respectively, which may be attributed to the cause that large amounts of clausal themes in speeches make it more difficult for the audience to comprehend the content. Then, in contrast to political speeches, science speeches have more technical terms, so the speakers tend to use fewer clausal themes, which explains why the percentage of clausal themes in science speeches is lower than that in political speeches.

Simple theme accounts for the largest proportion of political speeches, whereas multiple theme is used most in science speeches, which may be accounted for the different functions and purposes of the two types of speeches. In terms of political speeches, the principal function is to persuade, and hence the speakers are inclined to introduce the topic directly and use plenty of pronouns, which can not only help to arouse the audience's interest but also evoke their feelings and emotions by starting with pronouns such as "I" and "we". By comparison, science speeches in TED talks, with the characteristic of scientific popularization [18], their primary goal is to introduce and explain rather than persuade, and in the meanwhile, to draw the listeners' attention, speakers tend to add some continuative words and conjunctive phrases, such as "well", "yes" and "therefore", making the following topic more accessible to the audience.

2) Analysis of simple, multiple and clausal theme

To understand the function of the three kinds of themes used in the speeches, some specific examples are listed and interpreted as follows.

Example (1): My colleagues and I (ST) //started organizing

Civic Saturdays in Seattle in 2016. (R)

Example (2): Now maybe Civic Saturdays (MT) //aren't for you. (R)

Example (3): Of course, but for me, one of the biggest ones (MT)// is that we haven't upgraded our democratic technology. (R)

Example (4): When we ask them about the things that are important to them, (CT)// they don't have any particular sense of urgency around questions of racial inequality. (R)

The examples above are selected from political speeches. In Example (1), "My colleagues and I" serves as a simple theme, which is easy for the audience to understand. Example (2) covers three semantic functions, namely that "now" is a textual element, "maybe" acts as an interpersonal element, and "Civic Saturdays" introduces the topic and serves as the ideational element, which also reflects the typical sequence of textual, interpersonal and ideational element. Similarly, in Example (3), "of course" is a continuative element in textual theme, "but for me" functions as a conjunctive element in textual theme, and "one of the biggest ones" is ideational theme. In Example (4), the adverbial clause of time acts as clausal theme, which bears more information and is more complicated than simple theme and multiple theme.

Example (5): The abyssal zones (ST) // account for about 70 percent of the planet. (R)

Example (6): Well very simply, they're (MT)// sitting close to the camera. (R)

Example (7): Or maybe it's (MT)// determined at birth. (R)

Example (8): If you've never felt this experience, (CT)// maybe you just haven't had the right real-world encounter yet. (R)

In Example (5), "abyssal" is a technical term which some audience may be unacquainted with, and the way that the speaker introduces it directly enables the audience to understand the topic, which demonstrates the function of simple theme in science speeches. Example (6) includes three semantic components: "well" as textual theme, "very simply" as interpersonal theme, and "they're" as ideational theme, which provides more time for the audience to consider the preceding content. In Example (7), "or" is a structural element in textual theme, which can arouse the audience's curiosity because it is always used to introduce another possibility, while "maybe", as a modal verb, pertains to interpersonal theme, which can reflect preciseness of science discourse. In Example (8), the whole clause with "if" functions as clausal theme, which is more complicated than the themes in another three examples but performs a significant function in conveying more information.

3) Analysis of ideational, textual, and interpersonal theme

According to Halliday [19], language has three meta-functions including ideational, interpersonal, and textual functions. Based on the functional principles, multiple theme is divided into ideational theme, textual theme, and interpersonal theme. In order to further explore their differences in multiple themes, this paper examines and analyzes the frequency of ideational, textual, and interpersonal themes in political speeches and science speeches, illustrated in Table II.

There is always an ideational component in multiple theme, representing the topic of the clause [11], and thus, ideational

theme takes up 100 percent. Between textual theme and interpersonal theme, textual themes dominate in both political speeches and science speeches with the percentage of 84.66% and 89.86% respectively, for the reason that when delivering a speech, the speakers tend to add some continuative words, like "now", "yes", and "of course" to produce interactions with the audience, and on the other hand, to make it more logical and cohesive, the speech is always well-prepared with some cohesive ties such as "however", "therefore" and "and yet". In this way, the speech conforms to the guideline proposed by TED official website that the speech needs to be prepared and rehearsed in advance but not to be recited. Hence, textual themes are frequently used in political speeches and science speeches to make them more interactive and organized.

TABLE II: FREQUENCY OF IDEATIONAL, TEXTUAL AND INTERPERSONAL THEME

Type	Political Speech		Science Speech	
	Number	Percentage	Number	Percentage
Ideational T	176	100%	296	100%
Textual T	149	84.66%	266	89.86%
Interpersonal T	51	28.98%	56	18.92%

It is worth noting that the percentage of interpersonal themes in political speeches is higher than that in science speeches. Interpersonal function serves to express the speaker's identity, status, attitude, motivation, and judgement, realized by the mood and modality system, which indicates that speakers of political speech are more likely to express their attitudes and emotions. This may be determined by the different styles of political discourse and science discourse, and thus the speakers apply corresponding discourse strategies. Although some scientific concepts are simplified, the speakers of science speeches retain the style of science discourse, that is, preciseness, objectivity and concision, and hence they use fewer modal themes reflecting their judgements and comments. By comparison, interpersonal themes are widely used in political speeches to express speakers' attitudes and inclinations, thus affecting the audience by arousing their emotions.

B. Analysis of Thematic Progression Pattern

1) The distribution feature of thematic progression patterns

Thematic progression patterns reflect the organization of the text and influence its coherence. By analyzing the political speeches and science speeches, this paper reveals the distribution of thematic progression patterns in Table III.

TABLE III: DISTRIBUTION OF THEMATIC PROGRESSION PATTERNS IN SPEECHES

Type	Same Theme	Same Rheme	Continuous	Crossing
Political	48.23%	3.98%	43.81%	3.98%
Science	49.42%	7.51%	38.33%	4.74%

As Table III displays, in political speeches, same Theme pattern is used most in political speeches with a percentage of 48.23%, almost comprising half of all patterns, then followed by continuous patterns, occurring 99 times. Same Rheme pattern and crossing pattern appear the least, taking up less

than 4% each. In science speeches, same Theme pattern accounts for the largest proportion, and continuous pattern is also frequently used in science speeches. Similar to political speeches, same Rheme pattern and crossing pattern take up the least percentage, only occupying 7.51% and 4.74%.

Overall, political speeches and science speeches have some features in common: same Theme pattern and continuous pattern dominate in all patterns, whereas same Rheme pattern and crossing pattern are rarely used.

2) Analysis of same theme pattern and continuous pattern

To explore how same Theme pattern and continuous pattern are employed in political speeches and science speeches, some examples will be analyzed and interpreted.

Example (9): The problem (T1)// is the situations in which they—in which we all—have been asked to do our democratic work. (R1) The problem (T2=T1) // is the outdated democratic technology that we've all been forced to use. (R2)

Example (10): Then I (T1)// moved to Harvard, where I worked on my first NASA mission, called EPOXI. (R1) I (T2 = T1)// still didn't find any exoplanets. (R2) Then in March 2010, I (T3 = T1) // joined the Kepler Mission, NASA's grand experiment with putting one of our planet-hunting instruments into space. (R3)

Example (9) belongs to same Theme pattern, referring that the same theme “the problem” occurs in the two clauses, which enables the speaker to elaborate on the topic from different perspectives so as to deepen the audience's understanding. In this example, the speaker firstly explains the problem from a macro perspective, motivating the audience to think about their answer, and then points out that the problem lies in the “outdated democratic technology”, bringing his thoughts, which paves the way for the following statements and also performs an emphatic role by repeating the topical theme “problem”. Example (10) is selected from science speeches, in which the pronoun “I” serves as theme in the three sentences, describing the speaker's efforts in studying exoplanets and laying a foundation for introducing the scientific concepts in the latter part. Besides, the three sentences, all starting with “I”, form a parallel structure, which creates a sense of rhythm and makes the speech more convincing. In general, same Theme pattern is able to clarify the topic from different aspects, highlight the topic and develop a sense of rhythm, and deepen the audience's impression, so it is used in public speaking frequently.

Example (11): I've also collected data (T1)// from over 30,000 participants as part of a research study with Karissa Burnett and Jennifer Allen. (R1) And Jennifer Allen (T2 = R1)// is the woman who coined the term Autonomous Sensory Meridian Response in 2010. (R2)

Example (12): And yes, 5,000 planets (T1)// is incredible. (R1) What's even more incredible (T2 = R1) // is how space research will change as a result. (R2)

Example (11) and (12) are continuous patterns, in which the rheme in the first clause acts as the theme in the latter clause. In Example (11), after mentioning “Jennifer Allen”, the speaker instantly introduces her in the next clause, which makes the audience easier to grasp relevant information, while in Example (12), the speaker firstly mentions what he studies is “incredible”, and then introduces there exists

something more incredible, which can not only evoke the audience's curiosity, but also makes the speech more cohesive because this pattern enables the audience to keep up with the speaker's thinking.

3) Analysis of same rheme pattern and crossing pattern

Example (13): And that brings me (T1)// to my second topic: how we can practice civic religion productively. (R1) Let me tell you now (T2)// about that new civic ritual. (R2=R1)

Example (14): So the deep-sea animals (T1) //are basically irrigating a big chunk of the planet. (R1) And I (T2)// say a big chunk. (R2 = R1)

The two examples above pertain to same Rheme pattern, where “civic religion” and “civic ritual” are similar in Example (13), and “a big chunk” occurs twice as Rheme in Example (14). According to Danes, rheme performs a significant role in conveying new information, indicating that same Rheme pattern contributes to providing new topics, which can be applied to the beginning of the text [12]. Similar to the same Theme pattern, same Rheme pattern ends with a similar rheme, which can also create a parallel structure, making the speech more convincing and powerful. Overall, this pattern helps the audience to notice the new topic, but it needs to be combined with other patterns like the continuous pattern to transform the rheme to theme in the following clause, and hence, it takes up a relatively small proportion.

Example (15): Religion (T1)// is also moral discernment, an embrace of doubt, a commitment to detach from self and serve others, a challenge to repair the world. (R1) In this sense, politics (T2) could stand to be a little more like religion, not less. (R2=T1)

Example (16): But the trenches are formed (T1) // when one tectonic plate hits another one and drives it down into the Earth's mantle. (R1) Hence you (T2) // end up with something like Mariana Trench. (R2 = T1)

Example (15) is a crossing pattern, in which “religion” acts as theme in the first clause, followed by detailed explanations, and then “politics” is introduced as a new theme and the rheme “religion” occurs as the first theme. This can be regarded as the analogy in that the speaker first expounds his views on a concept that is more familiar to most people, and then proposes a new topic, a real focus of the speech, which renders the audience easier to comprehend this topic because they can associate it with the preceding concept and interpretation. In Example (16), “the trench” appears twice as theme and rheme respectively, located at the beginning and end of the sentence, which is given prominence, so this topic can draw the audience's attention effectively. However, compared with same Theme pattern and continuous pattern, this pattern is more complicated, and thus it is not used as often in political and science speeches.

V. CONCLUSION

By analyzing thematic structure and thematic progression patterns, this paper explores the characteristics, similarities, and differences in political speeches and science speeches. Results show that simple themes account for the largest percentage of political speeches, serving the purpose of drawing the audience's interest by introducing the topic

directly, whereas multiple themes are used most in science speeches because they can carry more information and promote the audience's understanding of the speech content. Clausal themes are rarely used in both two types of speeches. In addition, interpersonal themes comprise a higher percentage in political speeches to arouse the audience's emotions by adding modal themes, whereas textual themes are used more in science speeches to make the speech more logical and cohesive. Secondly, concerning thematic progression patterns, both political speeches and science speeches consist largely of same Theme pattern and continuous pattern, which helps to deepen the audience's comprehension of the topic, make the text more coherent, and create a sense of rhythm. By contrast, although same Rheme pattern and crossing pattern contribute to conveying new information, they are used less frequently because they are more complicated for the audience to grasp the key points. Lastly, between political and science speeches, the similarity is reflected in their infrequent usage of clausal themes because they may make it more challenging for the audience to promptly comprehend the messages due to the abundance of information they carry. Also, the distribution of thematic progression patterns is generally similar, namely that same Theme pattern and continuous pattern are adopted most since they can make the speech more organized and structured, which demonstrates the shared nature of public speeches. The main difference lies in that political speeches apply more simple and interpersonal themes to make the speech more engaging, whereas science speeches use multiple and textual themes more frequently to strike an optimal balance between informativity and acceptability.

This paper has guiding significance for speakers and English learners in that speakers are able to organize the speech in a more logical and engaging way and English learners can understand the speech content more easily by knowing the characteristics of speech discourse structure. However, this paper has some limitations. The first limitation is that the corpus is too small, only containing ten speeches, which will be more comprehensive if the research collects more data. Then, this paper mainly discusses the differences according to the statistical data, lacking chi-square test to further prove there do exist significant differences. Moreover, this study fails to analyze the unmarked theme and marked theme, which remains to be explored. Thereby, it is suggested that future research collect more data, apply validity test of data, and explore theme markedness in speeches.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

AUTHOR CONTRIBUTIONS

Mao Yi conducted the research, analyzed the data and

wrote the paper. Lei Xiaolan guided and revised the paper. All authors had approved the final version.

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