

Comparative Analysis of Ecological Discourse From the Perspective of Appraisal Theory: *The Ponds* and *The Pond in Winter* in *Walden*

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Abstract—This paper intends to use UAM Corpus Tool 6.2 corpus annotation software to conduct a comparative ecological discourse analysis of the selections of the ecological literary work *Walden - The Ponds* and *The Pond in Winter* from the perspective of the attitude system of appraisal theory, aiming to reveal Thoreau's attitude towards ecological environment and to prove the practicality of appraisal theory in the ecological discourse analysis of the literary work, and at the same time, to broaden the research for the ecological discourse analysis. It was found that the number of appreciative resources in *The Ponds* (412) was much greater than the number of judgement (61) and affect (39) resources and that the number of positive eco-discourses (270) and neutral/ambiguous eco-discourses (179) was also much greater than the number of negative discourses (63). The number of appraisal resources (185) in *The Pond in Winter* is much larger than that of judgement resources (50) and emotion resources (35), and the number of positive ecological discourses (270) and neutral/ambiguous ecological discourses (179) is much larger than that of negative ecological discourses (63), and positive ecological discourse (172) is much larger than neutral/ambiguous ecological discourse (65) and negative discourse (33). This reflects Thoreau's ecological orientation of loving nature, respecting nature, opposing excessive destruction of nature by human beings, and advocating calling on human beings to protect nature.

Index Terms—appraisal theory, attitude system, ecological discourse analysis, *The Ponds*, *The Pond in Winter*

I. INTRODUCTION

Nowadays, the contradiction between social development and the ecological environment has been continuously from the antagonism towards the goal of harmonious coexistence. Human environmental awareness has been gradually strengthened and ecological protection has become a global focus of attention. However, how to live in harmony with nature is still a major challenge facing us today, and we still need to make a lot of efforts to this end. Among the many works of ecological literature, *Walden* is undoubtedly an enduring and world-renowned classic. Although it has been 170 years since the book was first published, the ecological concepts and natural philosophies conveyed in this work provide us with a platform for in-depth reflection on the relationship between human beings and nature, and we can still get a lot of inspiration from it. In particular, the two pieces focusing on *Walden - The Ponds* and *The Pond in Winter* are not only descriptions and praises of the ponds and other natural scenery, but also reflect Thoreau's insights into the relationship between man and nature.

As a language function, "evaluation" plays an important role in social environment, text analysis, and cultural context, and we can analyze the emotions, attitudes, and values in the text through its three major subsystems, which plays a significant role in indicating the characters' attitudes towards the environment and calling on people to protect the environment. Ecological discourse analysis, as an important means to study the relationship between human and nature through the use of the relationship between language and nature, is gradually receiving attention from the academic community. We should not only pay attention to the form and meaning of language, but also explore the values and ideologies reflected behind it. Appraisal theory, as an important branch and tool in the field of discourse analysis under systemic functional linguistics, provides us with new perspectives and methods for interpreting the ecological discourse in *Walden*. This paper analyzes the ecological discourse of this ecological literary work *The Ponds* and *The Pond in Winter* by applying the appraisal theory, aiming to gain a deeper understanding of the ecological concepts. The study seeks to investigate how Thoreau, in *Walden*, utilizes language to express his reverence for nature, concern for ecology, and contemplation of the human-nature relationship. Furthermore, it aims to offer insights into contemporary ecological issues and sustainable development, urging humanity to recognize its proper place in nature and evoke an awareness of protecting and harmonizing with nature.

II. LITERATURE REVIEW

A. *Appraisal Theory*

Appraisal theory was first seen in the book *Language, Context and Text: A Sociolinguistic Framework* by Han and Hassan (1985), who proposed that “appraisal” refers to the way of expressing emotions, attitudes, and values in language, as a linguistic function, which plays an important role in the social environment, text analysis, and cultural context. Appraisal is a way of expressing emotions, attitudes, and values in language as a linguistic function that plays an important role in social contexts, text analysis, and cultural contexts. In addition, they propose that language has conceptual, interpersonal, and discourse functions. Conceptual function refers to how speakers acquire information, perceive the external world, and make connections with it, which is mainly embodied in materiality, morphology, and formality. The materiality of conceptual function includes six processes: material process, relational process, verbal process, psychological process, existential process, and behavioral process. Interpersonal function, on the other hand, points to the achievement of social communication purposes through language interaction between people, which is reflected in tone, mood, and intonation; while discourse function involves the use of language in context to achieve contextual coherence, including the subject system, information structure, and articulation (Hu et al., 1989).

However, since Systemic Functional Linguistics does not have a complete theoretical system in terms of language users’ viewpoints and positional representations, it was Australian linguist James Martin and his collaborator David Rose, among others, who developed the appraisal theory. In the 1990s, they expanded the appraisal theory based on Halliday’s Systemic Functional Linguistics and created the “Appraisal System” theoretical framework, which is divided into three categories: Attitude System (Affect, Judgement, and Appreciation), Engagement System (Monogloss and Heterogloss), and Graduation System (Force and Focus) (Martin & Rose, 2003), and further developed the interpersonal function research of Systemic Functional Linguistics (Yuan, 2010).

Based on Martin’s creation, many linguists have conducted their research to expand the theory of appraisal systems. Martin and Ross (2003) explored the construction of meaning beyond the clause level in discourse analysis; and in 2012, they combined appraisal theory and systemic functional linguistics to explore the relationship between style, knowledge, and pedagogy, providing a comprehensive theoretical framework for appraisal systems. Appraisal systems are widely used in a variety of fields such as comparative translation studies (Laviosa et al., 2017), political debate texts (Gu & Afzaal, 2023), and literary discourse analysis (Ghafar et al., 2022).

B. *Ecological Discourse Analysis*

With the development of Haugen’s model and Halliday’s model, discourse research on environmental issues has gradually become a core topic of eco-linguistics since the 1990s (Zhou, 2016). Ecological discourse analysis, as one of the main research methods in eco-linguistics, has also attracted widespread attention in the fields of environmental studies and social sciences.

At first, ecological discourse analysis was defined as the study of the topic of “ecological discourse”, and later developed into the ecological study of any discourse. This evolution signaled a shift in the term “ecology” from an object-specific perspective to an integrative one. The purpose of ecological discourse analysis is mainly to gain an in-depth understanding of how societies construct, transmit, and interpret language and symbols related to ecological issues, and how these discourses influence public perceptions and behaviors (Alexander & Stibbe, 2014). Abroad, linguists have mainly analyzed ecocritical discourse (Gach, 2016), positive ecological discourse analysis (Stibbe, 2017; Yang, 2023), and multimodal ecological discourse analysis (Qi & Hu, 2022; Nasir et al., 2022; Song & Perry, 2023), corpus-based ecological discourse analysis (Hameed et al., 2022; Yang & Wang, 2023), and systemic functional linguistics-based ecological discourse analysis (Han & Liu, 2019) to ecologically analyze a discourse or discourse.

Ecological discourse analysis can reveal three ecological orientations of discourses: beneficial discourses (sustainable development discourses that favor harmony between humans and nature), neutral discourses (discourses that are in a neutral attitude, located in the middle of beneficial and destructive), and destructive discourses (discourses that are not conducive to the sustainable development of humans and nature) (Stibbe, 2014, 2015). For linguists, it’s important to judge whether discourse is ecologically beneficial through eco-discourse analysis, to encourage support for ecological factors that are conducive to the harmonious development of man and nature, and to reveal and criticize unfavorable factors (Stibbe, 2015), so as to construct more discourse strategies that are beneficial to ecological harmony (Bartlett, 2018).

Ecological linguistic theories and ecological discourse analysis methods have now been applied in a variety of fields, including environmental news reporting, policy making, sustainable development communication, environmental education, and subject teaching. Zhu Wenjun became the first person to apply eco-linguistics in China in 1990 when he studied different ways of expressing linguistic phenomena in different environments. By using a variety of methods such as qualitative and quantitative analysis to analyze environmental texts, eco-linguistic researchers have studied how media coverage of environmental issues shapes public perceptions, how eco-discourse in government policy documents influences policy-making, and how environmental social movements use eco-discourse to disseminate information and garner support. It also reveals the discursive struggles and power relations between different interest groups through the analysis of the elements and characteristics of eco-discourse, further promoting public awareness and action on environmental issues.

The application of ecological discourse analysis abroad has reached a mature stage, with wide-ranging applications both within disciplines and across interdisciplinary fields. Conversely, in China, the development of ecological discourse analysis started relatively late. However, it's currently experiencing rapid growth, particularly in research areas such as linguistics (endangered languages, ethnic languages, language crises, etc.), translation studies, discourse analysis in news, subject teaching, and so on. Nevertheless, there remains a dearth of research, especially in the domain of literary works, particularly ecological literature, and the comparative analysis thereof.

In light of this, this study aims to utilize the attitude system of appraisal theory to conduct a comparative analysis of ecological discourse in selected chapters of Thoreau's book *Walden*, a classic masterpiece of eco-environmentalism, in order to explore Thoreau's attitudes and consciousness toward the ecological environment and to derive insights for environmental protection.

III. THEORETICAL FRAMEWORK

This study refers to the framework of attitude systems in Martin's (2000) and Wang's (2001) introduction, while establishing a new framework based on the three ecological discourses mentioned above by Stibbe (2014, 2015), which are further categorized into positive, neutral/ambiguous and negative discourses. Among them, the attitude system, as the most important part of the appraisal system, can be divided into three major sub-systems - affect system, judgement system, and appreciation system - in which the affect system can be used to express the language user's positive or negative affect response to the object through process clauses or positive or negative vocabulary, etc., and it can be further divided into the quality affect, process affect and commentary affect, in which process affect can be further divided into realistic/reactive and non-realistic/desire affect (Wang, 2001), while quality affect and commentary affect can be further divided into positive and negative forms of affect respectively. The judgement system consists of two parts: social esteem and social sanction, which can be further divided into positive, neutral, and negative according to whether the social behavior is appropriate and conforms to the norms of social behavior. The appreciation system is the differentiation of the aesthetics of a text, which can be further divided into three parts: reaction, composition, and value. The following is the specific theoretical framework of this study.

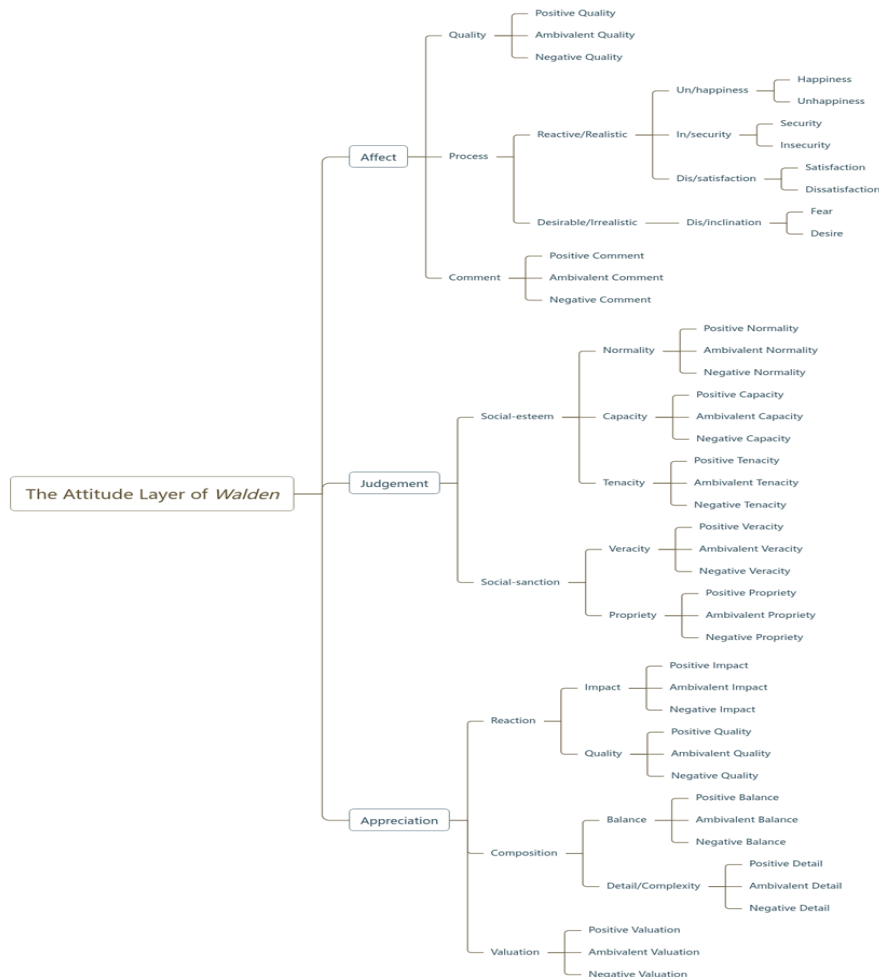


Figure 1. Theoretical Framework of Attitudinal System in This Study

IV. RESEARCH DESIGN

A. Research Questions

This paper analyzes the texts of *The Ponds* and *The Pond in Winter* by applying the attitude system in appraisal theory to answer the following two questions:

- (1) How are the attitude resources of *The Ponds* and *The Pond in Winter* distributed and what kind of characteristics do they present respectively?
- (2) What kind of Thoreau's ecological orientation do the attitude resources in *The Ponds* and *The Pond in Winter* present respectively?

B. Research Materials

This study selects *Walden*, a classic work of ecological literature by American writer Henry David Thoreau, in whose writing, nature is not only a material existence but also a spiritual support and ideal pursuit. Through delicate descriptions, Thoreau demonstrates the beauty, power, and harmony in nature, and these features constitute attitude resources in appraisal theory. For example, his description of the ponds embodies this resource: the ponds are clear and transparent, reflecting the sky and the surrounding scenery, and this stillness and beauty make people feel the magic and magnificence of nature. This paper focuses on two of the essays about Thoreau's description of *Walden* - the ninth essay *The Ponds* and the sixteenth essay *The Pond in Winter* - to analyze Thoreau and his ponds from the aspect of evaluative theoretical attitude perspectives, and the following are the specific vocabulary data for each of his texts.

TABLE 1
VOCABULARY IN *THE PONDS* AND *THE POND IN WINTER*

Number	Text	Vocabulary
1	<i>The Ponds</i>	9177
2	<i>The Pond in Winter</i>	5215
3	Total	14392

C. Research Tool

In this study, a total of 14,392 words from the selections, *The Ponds* and *The Pond in Winter* in *Walden*, were used as the basis for identifying the evaluation resources, and the annotation framework was established and manually annotated with the help of the corpus annotation software UAM Corpus Tool (Version 6.2), a toolset for linguistic annotation of text and images invented by Professor Mick O. Donnell, which allows users to annotate and analyze textual data. The UAM Corpus Tool is a toolset for linguistic annotation of text and images invented by Professor Mick O. Donnell, allowing users to annotate and analyze textual data. The tool has a clean and user-friendly page, is easy to get started with, and aims to provide an easy-to-use interface and rich functionality for working with large amounts of textual information, as well as the ability to build your own frameworks for manual annotation.

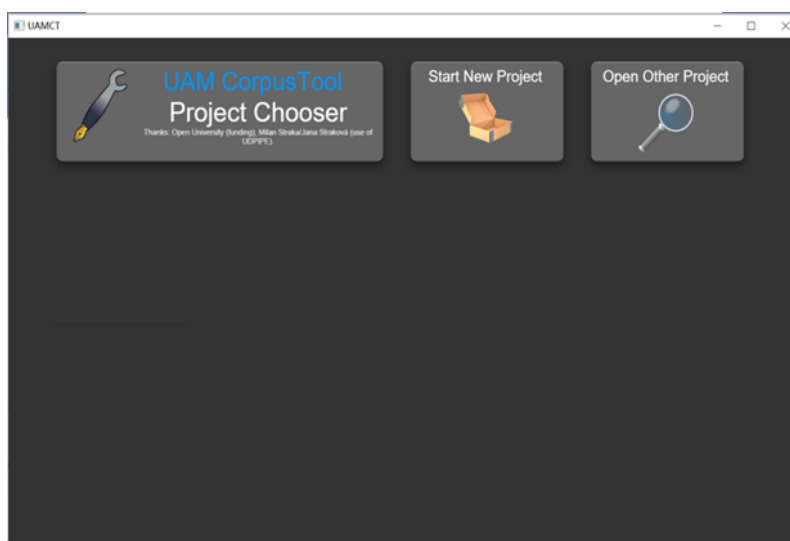


Figure 2. UAM Corpus Tool 6.2 Interface

D. Research Process

In the in-depth study of the selections from *Walden*, *The Ponds* and *The Pond in Winter*, the initial tasks involved text extraction and corpus construction. The author converted the selected English texts into txt. format and constructed two corpora, "The Ponds" and "The Pond in Winter", to analyze the texts systematically and efficiently, which provided

a solid foundation for examining the distribution of attitude resources in the subsequent study.

Secondly, the authors used the corpus tool UAM Tool 6.2 to import the txt. text from the two corpora into the corpus software, and built a layer according to the established theoretical framework of the attitude system, to ensure that the text could be annotated and analyzed under the unified framework, so as to produce more accurate and reliable results.

Subsequently, the text annotation was carried out. Based on the Attitude System Theory framework, the authors found the corresponding attitude resources in the two articles and carried out more specific and detailed annotations. This included identifying the words, phrases, and sentences in the texts that express the author's feelings, positions, and evaluations, and classifying and labelling them.

Finally, data analysis was carried out. The authors conducted an in-depth study of the distribution of attitude resources in two selected texts, *The Ponds* and *The Pond in Winter*, and explored their embodied characteristics and ecological orientations to further reveal the authors' affect attitudes and values in describing different seasons of Walden.

To ensure the accuracy and reliability of the manual annotation, the authors carried out a second annotation two months after the initial completion of the annotation task, and the results of the two annotations were thoroughly compared and analyzed. In response to some inconsistencies in the annotation results, the authors conducted in-depth reflection and careful consideration and finally chose a more appropriate type of annotation after repeated refinements and comparisons.

V. FINDINGS AND DISCUSSION

A. Distribution of Attitude Resources in *The Ponds* and *The Pond in Winter*

This section will be devoted to the discussion of the distribution of attitude resources and their characteristics in *The Ponds* and *The Pond in Winter* and will analyze in depth the subtleties of emotional expression in these two pieces of prose. At the same time, this section will also compare the similarities and differences in the distribution of attitude resources between the two essays, to be able to understand more comprehensively their commonalities and differences in emotional expression, and thus gain a deeper understanding of the literary value of the two essays.

(a). Distribution of Attitude Resources in *The Ponds*

TABLE 2
DISTRIBUTION OF ATTITUDE RESOURCES IN *THE PONDS*

ATTITUDE-TYPE	N	%
AFFECT	39	7.6
JUDGEMENT	61	11.9
APPRECIATION	412	80.3
TOTAL	512	99.8

Through the careful analysis of the text, it can be found that in the ninth essay of *Walden - The Ponds*, the distribution of attitude resources presents the following characteristics:

As shown in Table 2, among a total of 512 attitude resources, appreciation resources take an dominant position, with a proportion as high as 80.3%. This fully indicates that in *The Ponds*, the author has made great use of appreciative descriptions and modifications to show the natural beauty of the ponds, the environmental atmosphere, and the vivid forms of the animals living there, so that readers can feel the uniqueness of different ponds in an immersive way. The resources of Judgement and Affect, on the other hand, are relatively small, accounting for only one-fifth of the total attitude resources (of which judgement resources account for 11.9%, while the proportion of affect resources is the least, accounting for only 7.6%). This distribution highlights Thoreau's prudent attitude in emotional expression and valuable judgement, and his portrayal of nature is more based on objective perception and appreciation rather than excessive subjective judgement or emotional rendering, which more accurately conveys the natural beauty and harmony of the ponds, and embodies the author's respect and reverence for the natural environment.

TABLE 3
DISTRIBUTION OF AFFECT RESOURCES IN *THE PONDS*

AFFECT-TYPE	N	%
QUALITY	12	2.3
PROCESS	15	2.9
COMMENT	12	2.3
TOTAL	39	7.6

As shown in Table 3, among the emotional resources, the distribution of the Quality, Process, and Comment categories is relatively balanced, occupying 2.3%, 2.9%, and 2.3% respectively, reflecting that Thoreau will appropriately describe the pleasure, tranquility, and other emotional states and feelings he experiences when he faces the surrounding environment of the ponds, to deepen Thoreau's appreciation and praise for the ponds.

TABLE 4
DISTRIBUTION OF JUDGEMENT RESOURCES IN *THE PONDS*

JUDGEMENT-TYPE	N	%
NORMALITY	19	3.7
CAPACITY	9	1.8
TENACITY	13	2.5
VERACITY	6	1.2
PROPRIETY	14	2.7
TOTAL	61	11.9

As shown in Table 4, among the Judgement resources, Normality, Propriety, and Tenacity are more prominent, occupying 3.7%, 2.7%, and 2.5% respectively. This section is mostly related to human behavior, which shows that Thoreau is more concerned about whether human behavior or phenomena are in line with social norms, social legitimacy, and mental integrity. This phenomenon is analyzed and judged to show whether or not it has an impact on nature or what kind of impact it has.

TABLE 5
DISTRIBUTION OF APPRECIATION RESOURCES IN *THE PONDS*

APPRECIATION-TYPE	N	%
REACTION	342	66.7
COMPOSITION	47	9.2
VALUATION	23	4.5
TOTAL	412	80.3

As shown in Table 5, the Reaction category is the richest of the appreciation resources, accounting for 66.7% of the whole attitude resources; in particular, the Quality resource accounts for 64.7% of the appreciation resources. This is followed by Composition at 9.2% and Valuation at 4.5%. This reflects that when Thoreau describes the ponds, he uses meticulous and sufficient descriptions to present the characteristics and charms of the ponds vividly in front of the readers, so that the readers can deeply appreciate his sincerity and love for nature, and at the same time the structure of the article is handled properly, presenting the harmony and balance of nature, showing Thoreau's deep feeling and appreciation of natural beauty.

(b). *Distribution of Attitude Resources in The Pond in Winter*

TABLE 6
DISTRIBUTION OF ATTITUDE RESOURCES IN *THE POND IN WINTER*

ATTITUDE-TYPE	N	%
AFFECT	35	12.9
JUDGEMENT	50	18.5
APPRECIATION	185	68.3
TOTAL	270	99.6%

The distribution of attitude resources in *Walden's* sixteenth text *-The Pond in Winter-* also shows its particular characteristics:

Overall, Appreciation resources also dominate, occupying 68.3%, followed by Judgement resources, accounting for 18.5%, while Affect resources account for 12.9%. This distribution characteristic and its reasons are somewhat similar to that of *The Ponds*, but the proportion of Affect and Judgement resources in *The Pond in Winter* is relatively higher, accounting for one-third of the total Attitude resources in the whole text.

TABLE 7
DISTRIBUTION OF ATTITUDE RESOURCES IN *THE POND IN WINTER*

AFFECT-TYPE	N	%
QUALITY	9	3.3
PROCESS	11	4.1
COMMENT	15	5.5
TOTAL	35	12.9

As shown in Table 7, among the affect resources, the Quality, Process, and Comment categories are relatively balanced, occupying 3.3%, 4.1%, and 5.5% respectively. This reflects that the author exquisitely describes *Walden* in winter through different dimensions of emotional resources to build up his unique insight and profound experience of the natural environment. For example, Thoreau praises the mystery of the lake by describing the unknown fish and highlights the unfathomable admiration of *Walden Lake* by contrasting its surface with its depth, showing his meticulous portrayal and profound thinking about *Walden Lake* in winter.

TABLE 8
DISTRIBUTION OF JUDGEMENT RESOURCES IN *THE POND IN WINTER*

JUDGEMENT-TYPE	N	%
NORMALITY	17	6.3
CAPACITY	14	5.2
TENACITY	3	1.1
VERACITY	12	4.4
PROPRIETY	4	1.5
TOTAL	50	18.5

As shown in Table 8, among the judgement resources, Normality, Capacity, and Tenacity are more prominent, occupying 6.3%, 5.2%, and 4.4% respectively. This reflects that when Thoreau depicts Walden in winter, he uses appropriate judgement resources to make judgement on whether human social behaviors and natural phenomena are normality, capacity, and tenacity, and whether they are in line with the laws of nature and ecological laws, which shows Thoreau's concern about Walden, thus side by side demonstrating his expectation for the harmonious coexistence between human beings and nature.

TABLE 9
DISTRIBUTION OF APPRECIATION RESOURCES IN *THE POND IN WINTER*

APPRECIATION-TYPE	N	%
REACTION	148	54.6
COMPOSITION	26	9.6
VALUATION	11	4.1
TOTAL	185	68.3

Among the appreciative resources, the Reaction category remains the most abundant, occupying 54.6%, with Quality accounting for 51.7%; followed by Composition at 9.6%; and Valuation at 4.1%. This reflects the fact that the author uses a large number of appreciative resources to describe the Walden in winter, which also produces a deep feeling and appreciation.

(c). *Comparative Analysis of Distribution of Attitude Resources in The Ponds and The Pond in Winter*

The two essays *The Ponds* and *The Pond in Winter* are both selections of *Walden*, showing certain similarities in the overall trend, but certain significant differences can be found in the details through comparative analysis.

In the overall distribution of attitude resources, *The Ponds* and *The Pond in Winter* are both dominated by Appreciation resources, occupying the vast majority of the proportion, which is very suitable for the nature of the two essays, writing landscape prose, to carefully and vividly portray the changes in the scenery of the ponds, bringing a profound aesthetic experience to the author and the reader. And in which appropriate use of certain Judgement and Affect resources, in the objective description of the natural scenery at the same time to further enrich the author's emotional expression of Walden and other ponds and their surroundings. However, in terms of the specific ratio, Appreciation resources (the description of the ponds' scenery) in *The Ponds* are more than that in *The Pond in Winter*, and on the contrary, Affect resources and Judgement resources in *The Pond in Winter* are more than that in *The Ponds*.

Specifically, in terms of Affect resources, both texts utilize some degree of Quality, Process, and Comment resources, but *The Pond in Winter* has a slightly higher proportion than *The Ponds* about total resources. Particularly in terms of Comment resources, there is a significant difference between the two essays, with *The Pond in Winter* employing more commented emotion, for example, It is surprising that they are caught here, -that in this deep and capacious spring, far beneath the rattling teams and chaises and tinkling sleighs that travel the Walden road, this great gold and emerald fish swims, which reflects Thoreau's utter amazement at the discovery of such beautiful fish in Walden and the naturalness and biodiversity of Walden.

In terms of Judgement resources, both essays also use certain resources of Social Esteem and Social Sanction. However, in *The Ponds*, which focuses more on the natural state and ecological value of Walden, the resources of Propriety are more prominent. In contrast, *The Pond in Winter* focuses more on the resilience and authenticity of Walden and related human behaviors in winter, and the Capacity and Veracity resources are significantly different from *The Ponds* and more prominent. This difference reflects Thoreau's attention and judgement on the different seasonal characteristics of Walden.

In terms of Appreciation resources, Reaction, Composition, and Valuation resources are similarly used in both, and the Quality subcategory of Reaction resources is the most abundant, reflecting Thoreau's rich and detailed depiction of the ponds' scenery. However, compared with *The Ponds*, in *The Pond in Winter*, although appreciation resources still dominate, the relative proportion has decreased, while the proportion of affect and judgement resources has increased, which suggests that Thoreau gives more modifications with emotional colors when describing Walden pond in winter, and after the following data can be seen that most of them are positive discourses, which therefore shows his love for the scenery of Walden in winter.

To sum up, there are both similarities and significant differences in the distribution of attitude resources between *The Ponds* and *The Pond in Winter*. This difference reflects Thoreau's unique feelings towards the different seasonal scenery and local human activities of Walden, as well as the changes in his ecological orientation and aesthetic concepts.

B. Comparative Analysis of Ecological Orientation between *The Ponds* and *The Pond in Winter*

Thoreau's *Walden* not only depicts his attitude towards the appreciation of natural scenery but also contains a profound ecological orientation. Through the ecological discourse analysis of the two chapters of Thoreau's *Walden*, *The Ponds* and *The Pond in Winter*, the author shows that Thoreau's unique insights into the relationship between man and nature are reflected through the depiction of the lake scenes in different seasons.

(a). Ecological Orientation of Attitude Resources in *The Ponds*

TABLE 10
DISTRIBUTION OF ECOLOGICAL DISCOURSE IN *THE PONDS*

Distribution of Ecological Discourse	Attitude-Type	N	Total N
Positive Discourse	Affect	29	270
	Judgement	34	
	Appreciation	206	
Ambivalent Discourse	Affect	5	179
	Judgement	1	
	Appreciation	173	
Negative discourse	Affect	5	63
	Judgement	26	
	Appreciation	33	
Total	—	512	512

In this study, 512 attitude resources in *The Ponds* were also screened for ecological orientation, and the results are shown in Table 11. It was found that these attitude resources showed distinctive features in terms of ecological orientation.

Among them, the ecologically positive discourse resources occupy a prominent position, with a total of 270, which fully reflects Thoreau's positive attitude towards the beauty and harmony of the natural ecology, his deep love and appreciation, and his high recognition of its ecological value. There are 179 ecological ambiguity discourse resources, which reflect that Thoreau's description of nature is very cautious and objective, using a lot of space to faithfully describe the size, depth, and color of the ponds, which shows his respect for the natural ecology and will not intervene too much, and he goes along with the relationship between human beings and nature. However, there are still 63 ecologically destructive discourse resources in it. Although the number is relatively small, it reveals that human beings still have some destructive activities for nature, reflecting his concern and worry about nature. Specific examples are analyzed below:

1. Eco-Positive Discourse Resources

Example 1: It is a **vitreous greenish** blue, as I remember it, like those patches of the winter sky seen through cloud vistas in the west before sundown.

This sentence analogizes the greenish blue of the glass with the patches of the winter sky seen through cloud vistas in the west before sundown, suggesting the harmonious coexistence between the color of the glass and the natural environment, and embodying Thoreau's praise, yearning, and respect for the beauty of nature. Thoreau's eco-positive discourse through delicate depictions and romantic imagery also reflects his positive emotional attitude towards the ecological environment and his closeness to nature.

Example 2: In warm evenings I frequently sat in the boat playing the flute, and saw the perch, which I seemed to have **charmed**, hovering around me, and the moon travelling over the ribbed bottom, which was strewn with the wrecks of the forest.

This sentence describes Thoreau sitting in his boat on a warm night playing the flute, attracting bass to hover around him, while the moonlight poured over the bottom of the ponds, which was covered with the wrecks of the forest. It shows Thoreau's respect and appreciation for the natural environment, and the beauty and balance of the ecosystem through his interaction with nature. The word "charmed" plays an important role in the text in appreciating the attitude, expressing the fascination and closeness of the bass to the sound of its flute, emphasizing the friendly interaction and connection between man and nature, and also showing the recognition and appreciation of the harmonious coexistence of nature.

2. Ecological Ambiguity Discourse Resources

Example 3: In **clear** weather, in summer, they appear **blue** at a **little** distance, especially if agitated, and at a **great** distance all appear alike. weather they are sometimes of a **dark slate** color. The sea, however, is said to be **blue** one day and **green** another **without any perceptible change** in the atmosphere. In stormy weather they are sometimes of a dark slate color.

This sentence describes in plain language the effect of different weather changes on the color of Concord's waters compared to the color of the sea. The contrast between "clear" and "stormy" shows the different colors of Concord's waters when the weather is clear and cloudy, blue when it is clear, and dark slate when there is a storm; the contrast between "little" and "green one day and green another without any perceptible change in the atmosphere"; "little" and

“great” to echo the above “All our Concord waters have two colors at least, one when viewed at a distance, and another, more proper, to be seen at a distance. All our Concord waters have two colors at least, one when viewed at a distance, and another, more proper, close at hand”. thus indicating the change of color at a distance. The words “blue” and “green” are true to the colors of the waters and the sea, and are not mixed with personal feelings.

3. Ecologically Destructive Discourse Resources

Example 4: ...indicative of some life prowling about its extremity, of **dull uncertain blundering** purpose there, and **slow** to make up its mind.

This sentence describes the reaction of the fish to the fishing line while Thoreau was fishing, using the words “dull”, “uncertain” and “blundering” together with the word “slow”. The use of the words “dull”, “uncertain” and “blundering” in this sentence and the use of the word “slow” indicate its caution when biting the hook, although the fish has been anthropomorphized to increase the vividness and interest of the article, these negative words will easily make the reader neglect the fish’s wisdom of survival and its passivity in the face of human activities, and intensify the antagonistic relationship between human beings and nature.

In conclusion, the attitude resources in *The Ponds* contain a rich ecological orientation, and the resources of ecologically positive and ecologically ambiguous discourses are much larger than ecologically destructive discourses, at the same time, they both show the positive praise and ecological value of the ponds’ scenery and include the criticism of human destructive activities, which reflects Thoreau’s protection and appeal to the harmonious ecological environment of the ponds.

(b). Ecological Orientation of Attitude Resources in *The Pond in Winter*

TABLE 11
DISTRIBUTION OF ECOLOGICAL DISCOURSE IN *THE POND IN WINTER*

Distribution of Ecological Discourse	Attitude-Type	N	Total N
Positive Discourse	Affect	26	172
	Judgement	38	
	Appreciation	109	
Ambivalent Discourse	Affect	4	65
	Judgement	0	
	Appreciation (Quality)	61	
Negative discourse	Affect	5	33
	Judgement	12	
	Appreciation	15	
Total	—	270	270

In this study, 270 attitude resources in *The Pond in Winter* were screened for ecological orientation, and the results are shown in Table 12. It is found that the number of attitude resources of ecologically positive discourse (172) is much larger than the resources of ecological ambiguity (65) and ecological destructiveness (33), presenting Thoreau’s positive ecological philosophical orientation. Specific examples are analyzed below:

1. Discourse Resources of Ecological Positivity

Example 5: The **regularity** of the bottom and its **conformity** to the shores and the range of the neighboring hills were **so perfect** that a distinct promontory betrayed itself in the soundings quite across the pond.

The sentence describes the regularity of the topography of the pond’s bottom through “regularity”, and the harmony of Walden with its shores and the surrounding hills through “conformity”, and the words “so perfect” are used to evaluate these phenomena, thus demonstrating the ecological beauty of harmony and balance in nature. This description treats nature as an independent and valuable existence, which not only makes us feel the order and law of natural ecology but also makes us feel awe and appreciation for nature.

2. Ecological Ambiguity Discourse Resources

Example 6: After a **cold** and **snowy** night it needed a **divining rod** to find it.

This sentence describes the natural environment and climate of Walden in winter through the words “cold” and “snowy” objectively and realistically. At the same time, the mysterious word “divining rod” is used to reflect that it is very difficult to find water on a cold and snowy night, which not only increases the mystery of the sentence but also reflects the author’s reverence and respect for natural phenomena. This use of ecological ambiguity discourse resources not only preserves the original appearance of natural phenomena but also makes readers feel Thoreau’s awe and humility towards nature.

3. Ecological Destructive Discourse Resources

Example 7: So much for the **increased horrors of the chasm** of Loch Fyne when emptied. No doubt many a smiling valley with its stretching cornfields occupies No doubt many a smiling valley with its stretching cornfields occupies exactly such a “**horrid chasm**,” from which the waters have receded, though it requires the insight and the far sight of the geologist to convince the **unsuspecting** inhabitants of this fact.

This sentence describes the horrors of the flooding of Walden by comparing it to the description of the flooding of Loch Fyne, which is four times shallower than Walden, thus side-stepping the horrors of the flooding of Walden. Negative words such as “increased horrors of the chasm” and “horrid chasm” emphasize the horror and devastation of the flooding. The contrast between “smiling valley with its stretching cornfields” and “horrid chasm” also hints at the potential threats to the natural environment caused by human activities. The contrast between “smiling valley with its stretching cornfields” and “horrid chasm” also hints at the potential threat that human activities may pose to the natural environment, prompting readers to think deeply about environmental protection and the impact of human activities on the environment.

In conclusion, the attitude resources in *The Pond in Winter* also contain rich ecological orientation, and the resources of ecological positive and ecological ambiguous discourses are much larger than those of ecological negative discourses, which vividly show the different faces and ecological values of the Walden in winter with plain and objective language, and show Thoreau’s reverence and respect for the Walden.

(c). *Comparative Analysis of Ecological Orientation in The Ponds and The Pond in Winter*

The two essays *The Ponds* and *The Pond in Winter* respectively depict different scenes of Walden and its surrounding ponds in different seasons. By comparing and analyzing the resources of positive attitudes, neutral/ambiguous attitudes, and negative attitudes, it can be found that there is consistency as well as subtle differences in the ecological philosophical concepts held by Thoreau when describing the ponds in different seasons in the two essays.

Firstly, in terms of similarities, both pieces demonstrate Thoreau’s positive attitude towards the pond and its surrounding ecology. In *The Ponds*, he expresses his praise and appreciation of natural beauty through his delicate depiction of the pond’s scenery; while in *The Pond in Winter*, he embodies his respect and reverence for the laws of nature through his depiction of the quietness and solemnity of the pond in winter. This positive attitude resource dominates in both works, reflecting Thoreau’s love and concern for ecology. In addition, the two works have some similarities in the use of ecological ambiguity discourse resources. In describing the pond, Thoreau mainly adopts objective and plain language to avoid over-emotionalization, to be able to preserve the original appearance of natural phenomena. This reflects Thoreau’s respect for nature and also triggers readers’ in-depth thinking and exploration of natural phenomena.

However, although the two works are largely consistent in their ecological orientation, they present different emphases in their descriptions of ecological destruction. In *The Ponds*, Thoreau expresses his concern for environmental protection by criticizing human destructive activities; while in *The Pond in Winter*, he expresses his reverence for nature more through the different changes of Walden in winter and through positive and negative comparisons, and implies that nature can be analogous to the human mind and that human activities may pose a potential threat to the environment, and therefore the resources of ecological negativity discourse are to be more prominent than in the text *The Ponds*. This difference may stem from the different ecological characteristics of ponds in different seasons and the degree of impact of human activities.

Taken together, *The Ponds* and *The Pond in Winter* have both similarities and significant differences in their ecological orientations. Both reflect Thoreau’s love and appreciation for the natural beauty of Walden, show a positive attitude and reverence for the natural ecological environment, and at the same time express concern and worry about ecological problems, triggering readers to think deeply about ecological environmental protection and the impact of human activities on the environment.

VI. CONCLUSION

This study has analyzed the ecological discourse of the selections *The Ponds* and *The Pond in Winter* from the ecological literary work Walden through the framework of attitude systems in the evaluative theory of Systemic Functional Linguistics. The study used UAM Corpus Tool 6.2, a corpus annotation software, to meticulously annotate and interpret the emotions, attitudes, and values in the text through a combination of quantitative and qualitative approaches. The results of the analysis show that Thoreau expresses a positive ecological philosophical view in *The Ponds* and *The Pond in Winter*, with the greatest use of appreciative quality adjectives and more ecologically positive discourse, and the overall appreciative resources are much greater than the affect and judgement resources, and objectively and realistically depicts the changes of the landscape and its surroundings in different seasons of Walden, and so on. This study not only verifies the applicability of appraisal theory in the analysis of ecological discourse but also provides a new research path for the study of ecological literature.

Although this study has made some progress in exploring the ecological discourse in Thoreau’s *Walden*, there are still some limitations. First of all, this study only focuses on two essays in *Walden - The Ponds* and *The Pond in Winter*, which is a relatively narrow scope of corpus, and it is difficult to comprehensively reflect the ecological concepts of

Thoreau's works as a whole. Thoreau's works are huge and profound, and his ecological ideas are found in many works, so it is difficult to comprehensively reveal the rich connotations of his ecological discourse based on the analysis of the limited corpus only. Secondly, this study mainly focuses on the analysis of the attitude system and has not yet explored the engagement system and graduation system of appraisal theory in depth. As a complete theoretical framework, appraisal theory includes several interrelated subsystems, each of which plays an important role in the construction of textual meaning. In addition, this study will inevitably be affected by subjective factors in the process of corpus annotation. Although the authors try their best to maintain an objective and impartial attitude, differences in personal understanding and judgement may still lead to some bias in the annotation results.

In the future, this study will be committed to expanding the scope of the corpus and conducting ecological discourse analyses on more of Thoreau's works, and at the same time, it will make comprehensive use of various subsystems of appraisal theory to conduct more in-depth and comprehensive analyzes, so as to comprehensively reveal the complexity and diversity of the ecological discourse in Thoreau's works and better understand his ecological thoughts. In addition, the study will further improve the annotation specifications and adopt more scientific and objective methods for corpus processing and analysis, so as to improve the accuracy and reliability of the study. Future research will be committed to overcoming the existing limitations, exploring the ecological discourse in Thoreau's works from a more professional and in-depth perspective, and making greater contributions to the study of ecological discourse.

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