

A Study on Theme Construction of Forest Documentaries from the Perspective of Multimodal Discourse Analysis

— Taking *Forest China* as an Example

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Abstract: Based on multimodal discourse analysis, social semiotics and systemic functional linguistics, this study builds a multimodal analytical framework. By annotating and analyzing linguistic, visual and auditory modalities in *Forest China* excerpts with the ELAN tool, it explores documentary theme construction approaches. The results show that these three modalities form a time-linked semiotic synergy around the “forest arena” theme: each plays its distinct role, and their in-depth synergy breaks single-modal limitations, jointly constructing the ecological narrative of the “forest arena”.

Keywords: Multimodal Discourse Analysis; Forest Documentaries; Grammar of Visual Design

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Introduction

With the growing global awareness of ecological protection and the rapid development of information technology, a trend of multimodal integration is increasingly demonstrated in the international communication of ecoculture. The construction of ecological meanings and the evocation of emotional resonance are jointly participated in by multiple semiotic systems such as language, images, and sounds. Against this backdrop, applying multimodal discourse analysis theory to interpret and optimize the practice of international ecocultural communication has become an important research topic.

Currently, multimodal discourse analysis is developing rapidly in academic circles, but there remains room for further expansion of related research^[1]. Although there has been initial progress in fields such as documentary subtitle translation^[2] and cross-cultural communication^[3] in domestic studies, most of domestic research focuses on linguistic text conversion or multimodal description of a single genre. In particular, the exploration of how multimodal signs synergistically construct ecological narrative themes is still insufficient. Specifically, for ecological themes such as forest documentaries, researchers mostly are stuck in single-modal^[4] or bimodal^[5] analysis, lacking analysis about systematic deconstruction of the coordination mechanism among linguistic, visual, and auditory modalities, and rarely combining refined annotation of specific excerpts to reveal the inherent logic of modal interaction. From the perspective of research objects, domestic multimodal analyses of international exemplary forest documentaries like *Forest China* are mostly concentrated on subtitle translation^[6], and have not yet delved into the multimodal construction paths of core ecological narrative themes, nor have they explored cross-cultural modality adaptation barriers and optimization strategies in conjunction with the needs of the international communication of China's forestry ecoculture. Documentaries are typical multimodal discourses that contain a variety of social semiotic resources. To enhance ecological protection awareness, multimodal research on nature documentaries is particularly important^[7].

In response to the practical needs of the international communication of China's forestry ecoculture, the multimodal synergy mechanism of ecological narratives in forest documentaries is examined, with excerpts from *Forest China* employed as a case study. Content-wise, based on Grammar of Visual Design and Systemic Functional Linguistics, it is analyzed in this study, through refined multimodal annotation, how documentaries construct themes via the interaction of visual, auditory, and linguistic modalities. Furthermore, this study is designed to identify cross-cultural modal adaptation barriers, thereby providing certain empirical and theoretical support for breaking communication barriers, optimizing multimodal narrative strategies, and accurately “telling China's ecological stories well.”

1 Construction of the Theoretical Framework for Multimodal Discourse Analysis

1.1 Systemic Functional Linguistics

Systemic Functional Linguistics (SFL), founded by M.A.K. Halliday, is a theory that studies language from a social semiotic perspective. Its core proposition is that language is a social semiotic system whose essential function is to construct meaning in social communication^{[8][9]}. This theory not only focuses on the formal structure of language but also emphasizes how language fulfills its functions within socio-cultural contexts, making it particularly suitable for analyzing dynamic, multimodal communicative phenomena such as documentaries.

SFL's theoretical system is built on three metafunctions, which coexist in all instances of language use and work together to construct overall meaning^[10], as shown in Table1-1.

Table 1-1

| Metafunction | Definition | Realization Mechanism |
|----------------------------|---|---|
| Ideational Metafunction | Encodes objective and subjective experiences, entities, and logical relations | Transitivity |
| Interpersonal Metafunction | Manages relationships; expresses attitudes | Mood Modality Appraisal |
| Textual Metafunction | Organizes coherent, context-appropriate discourse | Thematic Structure Information Structure Cohesion |

Systemic Functional Linguistics provides the theoretical tool for analyzing the linguistic modality in this study, and its metafunction framework lays a solid theoretical foundation for extending the analysis to visual and auditory modalities. It enables us to go beyond isolated semiotic forms and delve into the mechanism through which language and other signs synergistically construct meaning in specific cultural contexts [9].

1.2 Grammar of Visual Design

Kress & Van Leeuwen (1996) proposed in their pioneering work *Reading Images: The Grammar of Visual Design* that visual images, like language, are a form of social semiotic, and their meaning construction can also be analyzed through a functional grammatical framework. Drawing on and extending Halliday's three metafunctions, they constructed the three core meanings of the Grammar of Visual Design, as shown in Table 1-2, which provides a direct and operable theoretical tool for analyzing the visual modality.

Table 1-2

| Type of Meaning | Definition | Corresponding Function | Elements |
|--------------------------|---|------------------------|---|
| Representational Meaning | Analyze how images represent the world | Ideational Function | Narrative Representation Conceptual Representation |
| Interactive Meaning | Analyze how images establish the relationship between viewers and the represented world in images | Interpersonal Function | Contact Distance Perspective Modality |
| Compositional Meaning | Analyze how various elements are integrated in the composition | Textual Function | Information Value Salience Framing |

The Grammar of Visual Design provides a powerful tool for this study to deconstruct how visual modalities and auditory modalities construct meaning in documentaries. It enables us to systematically analyze how *Forest China* achieves its diverse narrative purposes and cultural expressions through the selection of different multimodal semiotic resources, thereby revealing the underlying socio-cultural motivations [11].

2 Multimodal Synergistic Analysis (Selected Segments from *Forest China*)

This study selects 18 segments from the Clouds Over Qinling chapter of *Forest China* for multimodal synergistic analysis, which contains a total of 127 clauses. The episode Clouds Over Qinling of *Forest China* covers scenarios such as the survival and reproduction of organisms, species interactions, and seasonal changes of the natural environment in the Qinling forests, highlighting themes such as biodiversity, natural balance, and forest arena. This section examines the forest arena as the core analysis theme and select representative segments to analyze how multimodal symbols synergistically construct narrative connotations.

2.1 Segment 1

This segment depicts "Bazitou" challenging "Jiaban" for the second time, competing in the Forest.

Figure 2-1 Screenshot from *Forest China*Figure 2-2 Screenshot from *Forest China*

2.1.1 Analysis of the Linguistic Modality

This section centers on the ideational metafunction among Halliday's three metafunctions in Systemic Functional Linguistics, relying on the transitivity system to conduct a clause-by-clause analysis of the five sentences in the research segment. By identifying process types, participants, and circumstantial elements, it reveals how language represents the survival experiences of resource competition and power games within the monkey society, providing linguistic logical support for the construction of themes related to group conflicts and power transitions.

Taking "They forage for fruits among fallen leaves to satisfy their hunger." as an example, this sentence belongs to a material process, with the core verb "forage" categorized as an action-oriented material process. It directly reflects the objective behavior of monkeys acquiring food in their natural environment, embodying the essence of their survival dependence on limited resources and laying the groundwork for the subsequent narrative of food competition. In terms of participant construction, "They", as a plural pronoun referring to the monkey group, constructs an image of a collective survival subject, implying the group-based nature of resource acquisition. "fruits", as the goal of the action, clarifies the core resource for the monkeys' survival, establishing a dependent relationship between foragers and food and foreshadowing conflicts over resources. Regarding circumstantial elements, "among fallen leaves" serves as a locational circumstance, referring to the specific foraging scene of the monkeys. It anchors the survival behavior in a real natural space, transforming the abstract concept of a resource-constrained living environment into a perceptible objective scenario and enhancing the authenticity of the narrative.

Taking "After all, the number of fallen fruits is limited, so conflicts often arise among clans over the competition for food." as an example, this sentence contains two interconnected processes: a relational process in the first half and a material process in the second half. In the relational process of the first half, the core verb "is" belongs to an attributive relational process, establishing an attribute association between "fallen fruits" and "limited". It objectively states the scarcity of core resources, providing a logical premise for the conflicts in the latter half. The participant "fallen fruits" specifies the scarce resource, focusing on the monkeys' core survival dependence and reinforcing the awareness of resource constraints. In the material process of the second half, the core verbs "competition" and "arise" reflect the conflict behaviors among families triggered by resource scarcity, directly representing the competitive relationships in monkey society. The participant "among clans" defines the scope of conflicting subjects, escalating from individual foraging to group confrontation and highlighting the scale and intensity of the conflicts. "fruits", as the goal of "competition", inherits the resource scarcity mentioned earlier, forming a causal chain of "limited resources → group competition". The circumstantial element "often" is a frequency circumstance indicating the normalized nature of conflicts, while "over the competition for food" is a causal circumstance clarifying the triggering logic of conflicts, further reinforcing the survival principle in monkey society that resources determine competition.

Taking "Jiaban resorted to violence everywhere on the scene, and its high-handedness incited resistance from some clan members." as an example, this sentence contains two progressively interconnected material processes, directly representing the escalation of power conflicts. In the first material process, the participant "Jiaban" identifies the core individual in the conflict, constructing an image of a dominant and arbitrary subject. The circumstantial element "everywhere" is a scope circumstance modifying the range of the action "resorted to violence", highlighting the spread of its aggressiveness and reinforcing its arbitrary characteristics. In the second material process, the participant "its high-handedness" transforms the behavioral motivation into a core participant, clarifying the direct cause of the resistance and escalating the conflict from resource competition to the opposition against arbitrary power. "some clan members" defines the scope of the resisting subjects, reflecting the group dissatisfaction caused by arbitrary behaviors and forming an opposing relationship between "the powerful" and "the resisters". Through semantic cohesion, the two processes fully present the escalating logic of power conflicts, laying narrative tension for the subsequent power transition.

Taking "Bazitou's moment had come, and it rallied a group of male monkeys as its allies." as an example, this sentence contains a relational process and a material process, which is a strategic representation of the disadvantaged party seeking a breakthrough in power games. In the relational process of the first half, the implicit core verb "had come" belongs to an existential relational process, establishing a state association, implying an impending shift in the power structure. The participant "Bazitou's moment" clarifies the core background of the action, combining individual development with the group's power vacuum and highlighting the transitional meaning of the narrative. In the material process of the second half, the core verb "railed" reflects Bazitou's active behavior of building cooperative relationships, which is a key strategy for its power struggle. "a group of male monkeys", as the goal of "railed", defines the scope of allies, forming a cooperative structure of "core leader → ally group". "as its allies" clarifies the identity attribute of the goal, transforming the action result of "railed" into a stable cooperative relationship, accumulating strength for the subsequent power struggle and promoting the narrative towards the core of

power transition.

Taking the sentence “Having lost the support of other family members, Jiaban was caught in a crossfire, and Bazitou seized the chaos to deliver a fatal blow to it” as an example, this sentence contains a relational process and a material process. In the relational process of the first half, the implicit core verb “was caught in a crossfire” belongs to an attributive relational process, establishing a situational. This objectively presents its weakened state after the collapse of power. The participant “Jiaban” clarifies the root cause of its weakness through attributive modification, inheriting the consequences of provoking resistance mentioned earlier, thus forming a causal loop of “arbitrariness → loss of power” and reinforcing the inevitability of its downfall. In the material process of the second half, the core verb “delivered” reflects Bazitou’s key action of ending the conflict, which is a decisive behavior for power transition. The participant “Bazitou” serves as the agent of the action, establishing its status as the winner of the power struggle, while “it” acts as the goal of the action, specifying the target of the attack and forming the final opposition between the winner and the loser. The circumstantial element “amid the chaos” is a situational circumstance modifying the background of the action “delivered a fatal blow,” highlighting its grasp of timing and conforming to the image setting of a resourceful character. “Fatal” is a result circumstance modifying the intensity of the attack, clarifying the final outcome of the conflict. This completes the full narrative logic of “resource competition → power conflict → power transition,” comprehensively representing the survival experiences and dynamics of power struggles within monkey society.

Table 2-1

| Process | Frequency (Unit: Times) | Proportion |
|--------------------|-------------------------|------------|
| Material Process | 6 | 67% |
| Relational Process | 3 | 33% |
| Total | 9 | 100% |

As shown in the table above, the transitivity analysis of the clauses reveals that material processes account for 67% and relational processes for 33%. Material processes serve as the core process type in the linguistic construction of the theme “resource competition – power game” in monkey society, laying the objective behavioral foundation for survival competition and power transition. Accounting for over half of the total, material processes objectively represent the survival competition and power transition within monkey society through dimensions such as the monkeys’ survival, conflict and power game behavior. They transform the abstract descriptions of conflicts and games in monkey society into concrete scenarios with actions, causes, and consequences. Relational processes, on the other hand, supplement the resource and the situational attribute. They lay the premise and strengthen the outcomes for the behavioral logic of material processes from the perspective of objective states. The synergy between the two constructs the thematic connotation of monkey society as being both full of survival pressure and hidden power strategies, preventing the narrative from merely staying at the level of behavioral description and enhancing the depth of presentation and logical appeal regarding the complexity of monkey society.

2.1.2 Analysis of the Visual Modality

This section focuses on two core dimensions: representational meaning and compositional meaning, examining how visual symbols synergistically construct the ecological narrative of threat and response in the forest arena.

As for the figure 2-1, for representational meaning, the image constructs a narrative representation through the element combination of “golden monkeys + fallen leaves + trees”. The body postures and distribution of the golden monkeys in the frame form implicit interactions; especially the golden monkey facing the camera, whose posture conveys a dynamic tendency of alertness and gaming, intuitively presenting the group interaction and power game process of the monkey group against the background of resource competition and echoing the narrative logic of inter-family conflicts and individual power struggles in the text. Regarding compositional meaning, in terms of information value, the golden monkey group is located in the central area of the frame, belonging to the core information position, which transforms the interactive scene of the monkey group from textual description into a visualized real existence and strengthens the audience’s cognition of social conflicts and alliances among the monkey group; for salience, the clear presentation of the golden monkey subject forms a visual contrast with the background of fallen leaves and trees, making the monkey group the visual focus and highlighting their core role in resource competition and power games; in terms of framing, there are no obvious dividing lines, and the golden monkeys, fallen leaves, and trees form a connection through natural space, implying their dependence on the forest environment while emphasizing the ecological logic that the survival game of the monkey society is inseparable from the natural environment.

As for the figure 2-2, for representational meaning, the image constructs a narrative representation through the element combination of “golden monkeys+fallen leaves and woods”. The three golden monkeys in the frame form implicit interaction vectors; especially the distribution and postures of the golden monkeys in different areas convey a gaming dynamic of being attacked from both sides, intuitively presenting the intense process of power conflicts in monkey society and echoing the narrative logic of “Jiaban” losing power and multi-party confrontation in the text. Regarding compositional meaning, in terms of information value, the golden monkey groups are located in the left and right areas of the frame respectively, belonging to key information positions, which transforms the “being attacked from both sides” state of the monkey group from textual description into a visualized spatial conflict and strengthens the audience’s cognition of the intensity of power games among the monkey group; for salience, the emphasis on golden monkeys in different areas and the natural presentation of the

frame form a multi-focal visual guide, highlighting the core roles in the confrontational relationships between monkey groups; in terms of framing, there are no obvious dividing lines, and the golden monkeys, fallen leaves, and woods form connections through natural space, implying the dependence of their power games on the living environment while emphasizing the ecological logic that social conflicts of the monkey group are inseparable from the natural environment.

The scene restoration through representational meaning and the focus guidance through compositional meaning synergistically construct the core connotation of the survival narrative in monkey society. At the cognitive level, they materialize abstract concepts such as inter-family conflicts, power resistance, being attacked from both sides, and power confrontation in the text; at the emotional level, through the presentation of the monkeys' images and interactions, they guide the audience to understand the cruelty and strategic nature of their survival competition and power games; at the ecological level, through the framed connection between organisms and the environment, they deepen the understanding of the ecological essence that monkeys rely on the forest environment for survival and competition.

2.1.3 Analysis of the Auditory Modality

As a core component of multimodal narration, the auditory modality constructs the survival scenes and emotional atmosphere of the forest arena through the synergy of biological sounds, environmental sounds and background music. This section relies on the ELAN tool to annotate them, analyzes the meaning-making functions of different auditory symbols, and presents the statistics as follows.

Table 2-2 Annotation and Statistics of Biological Sounds

| Annotation | Hit | Frequency | Average Duration | Time Proportion | Recovery Time |
|--|-----|----------------------|------------------|---------------------|---------------|
| Sound of Golden Monkeys Chewing | 1 | 0.011599986080016705 | 6.035 | 0.07000591599290082 | 6.862 |
| Sound of Golden Monkeys Fighting | 1 | 0.011599986080016705 | 14.966 | 0.17360539167353 | 64 |
| Sound of Golden Monkeys Frolicking | 1 | 0.011599986080016705 | 7.123 | 0.08262670084795899 | 12.897 |
| Sound of Golden Monkeys Climbing Trees | 2 | 0.02319997216003341 | 3.761 | 0.08725509529388566 | 29.931 |
| Sound of Golden Monkeys Crawling | 2 | 0.02319997216003341 | 5.4415 | 0.12624264850882178 | 44.32 |

Table 2-3 Annotation and Statistics of Environmental Sounds

| Annotation | Hit | Frequency | Average Duration | Time Proportion | Recovery Time |
|--|-----|----------------------|--------------------|---------------------|---------------|
| Sound of Branches Rustling | 2 | 0.02319997216003341 | 3.6335 | 0.0842970988434814 | 29.933 |
| Sound of Falling Leaves | 3 | 0.03479995824005012 | 23.221999999999998 | 0.8081246302504437 | 7.2 |
| Sounds of Insects Chirping and Birds Singing | 1 | 0.011599986080016705 | 6.667 | 0.07733710719547136 | 0 |

Table 2-4 Annotation and Statistics of Background Music

| Annotation | Hit | Frequency | Average Duration | Time Proportion | Recovery Time |
|------------------------|-----|----------------------|------------------|---------------------|---------------|
| Tense Background Music | 1 | 0.011599986080016705 | 17.083 | 0.19816256220492534 | 40 |

(1) Biological Sounds:

The golden monkeys' fighting sounds, with their long duration and significant time proportion, serve as the acoustic core of power game scenes. They intuitively enhance the auditory impact of conflicts, accurately anchoring the intense narrative of power struggles among the monkey group. The golden monkeys' chewing sounds appear briefly; in the scene of seeking for food, they consolidate the authenticity of foraging behavior through subtle acoustic signals, laying the survival logic for conflicts over food. Meanwhile, the golden monkeys' frolicking sounds, tree-climbing sounds, and crawling sounds construct the daily acoustic landscape of the monkey group in social interaction and environmental activity scenes respectively. These sounds form a dynamic-static contrast with the fighting sounds, enriching the auditory layers.

(2) Environmental Sounds:

As the acoustic core of the forest environment, the sound of fallen leaves, with its high time proportion and long average duration, constructs the textured sense of the fallen leaf environment where the monkey group lives, allowing the audience to perceive the scene authenticity through hearing. The sound of swaying branches appears only briefly; when the monkeys' activities cause branch movements, it reinforces the authenticity of action scenes through subtle acoustic signals. Acting as dynamic embellishments of the forest environment, it briefly breaks the static acoustic background and highlights the impact of the monkeys' activities on the environment. The chirping of insects and birds occurs occasionally, implying the forest's biodiversity through short acoustic signals. During the intervals of intense conflicts, it adds a natural sense of vitality to the frame, forming an acoustic contrast with the cruel power games of the monkey group. This not only enriches the ecological perception of the forest but also implies the complexity and diversity of the living environment from an auditory perspective.

(3) Background Music:

The intense background music serves as the acoustic narrative focus of the monkey group's power conflict scenes. In key conflict segments, it enhances the dramatic tension of power games through its intense tone, accurately anchoring the climax of the narrative. It highlights the key nodes of power transition among the monkey group from an auditory dimension and strengthens the dramatic appeal of the narrative.

Through the micro-supplementation of biological sounds, environmental sounds and background music, the auditory modality forms synergy with the narrative logic of the linguistic modality and the visual tension of the visual modality.

2.1.4 Modality Synergy

In this segment, the linguistic, visual, and auditory modalities take the theme of "resource competition – power game" among the monkey group as the anchor and time as the narrative link, and form a semiotic synergy to jointly construct the narrative of survival competition and power transition in monkey society.

In the linguistic narrative, material and relational processes establish the logic of survival needs leading to resource constraints and then conflict outbreak. The visual modality materializes resource competition into imagery through group distribution and postures in frames, while the auditory modality enhances environmental authenticity with ambient sounds and supplements foraging details with behavioral sounds. Their synergy turns abstract survival descriptions into tangible multi-sensory experiences, laying the groundwork for subsequent power conflicts. When the linguistic narrative shifts to power games, intensive material processes convey conflict intensity and power transition cruelty. The visual modality presents group confrontations and shifts the focus to power conflicts via spatial distribution; the auditory modality amplifies conflict impact with fighting sounds, builds tension with background music, and supplements action details with behavioral sounds. The three modalities' synergy advances the narrative from survival background to power conflict outbreak, letting the audience perceive both survival pressure and power game cruelty.

The logical progression of the linguistic modality, the scene restoration of the visual modality, and the acoustic layering of the auditory modality form a narrative loop in the temporal dimension: changes in the process types of language guide the narrative rhythm, shifts in visual frames anchor the narrative focus, and switches between auditory sound effects and music regulate emotional fluctuations. This synergy not only enriches the thematic connotation of "resource competition – power game" in monkey society into a more three-dimensional form but also transforms the audience from information receivers into immersive observers of the monkeys' survival scenes, deepening their cognition and emotional resonance with the survival competition and power logic of monkey society.

3 Conclusion

This study integrates Systemic Functional Linguistics and Grammar of Visual Design, taking the golden monkey power game segments from *Forest China* as the research object, and analyzes the linguistic, visual, and auditory modalities with the assistance of the ELAN tool. The unique functions of the three modalities in forest documentaries are clarified in this research: the linguistic modality constructs the narrative logic; the visual modality materializes survival competitions through representational and compositional meanings; the auditory modality supplements scene details and strengthens the conflict atmosphere. Taking time as the synergistic link, the three modalities form a communicative synergy, effectively constructing the core theme of "forest arena". They not only present the cruelty of survival competition in monkey society but also convey the strategic nature of its power games, fully verifying the applicability of multimodal discourse analysis in the field of ecological narrative. Specific case support is provided for the multimodal research on forest ecological cultural narratives by this study, and practical implications are offered by its core findings for the communication of China's forestry ecological culture. In the future, China's forest ecological narratives can draw on this modal synergy logic, combine with the cognitive characteristics of the audience, optimize the modal division of labor and collaboration mode, and enhance narrative appeal through precise modal selection and synergistic design. This will provide a feasible path for telling good Chinese forest ecological stories and improving the communication power of China's forestry ecological culture.

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