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A study on the international communication effect of Chinese Sci-Fi films and TV series based on LDA topic modeling: a case study of English reviews of the Chinese and American versions of The Three-Body Problem

Zhenhua Zeng[1], Jingyi Tian[2], Saifei Wu[2]*

[1]Yuzhang Normal University, Nanchang, China
[2]School of Journalism and Communication, Jiangxi Normal University, Nanchang, China

*Corresponding Author. Email: zzh7519@163.com

Abstract. With Chinese science fiction films and TV series gradually entering the international stage, this study focuses on English-language reviews on Internet Movie Database (IMDb) and Letterboxd. Using Latent Dirichlet Allocation (LDA) topic modeling, it analyzes the international reception of the Chinese sci-fi work The Three-Body Problem, aiming to uncover the main discussion points and differences in attention among foreign audiences for the two versions of The Three-Body Problem through text-mining techniques. The findings reveal differences between the two versions in terms of target audience, cultural presentation, adaptation evaluation, and focus in plot discussion. Moreover, this study explores new pathways for Chinese sci-fi media to go global from four dimensions: channel, content, communicator, and recipient. The study provides not only a novel perspective for understanding the international influence of Chinese sci-fi media but also empirical support for strategies in the international dissemination of Chinese cultural products.

Keywords: Chinese Sci-Fi films and TV series, international communication, LDA topic modeling, The Three-Body Problem, English reviews

1. Introduction

The 14th Five-Year Plan for Chinese Film Development, released in 2021, set forth expectations for building China into a strong film nation: by 2035, Chinese cinema is anticipated to achieve significantly greater discourse power and influence within the global film landscape. The plan provides a powerful ideological framework and a scientific guide for carrying out publicity, ideological, and cultural work in the new era, as well as for fulfilling new cultural missions [1]. Since the explosive success of the 2019 film The Wandering Earth, which marked the beginning of the "Chinese Sci-Fi Era," science fiction has gradually emerged as a prominent genre in international media communication. In 2020, the National Film Administration and the China Association for Science and Technology jointly issued the Several Opinions on Promoting the Development of Sci-Fi Films, explicitly identifying science fiction cinema as a key driver for high-quality film

development and a new growth engine. Subsequently, the domestic TV adaptation of The Three-Body Problem, directed by Yang Lei, became a landmark work of China's first year of sci-fi drama [2]. This year, the Netflix adaptation of The Three-Body Problem has sparked widespread discussion, and this sci-fi Intellectual Property (IP) has emerged as a new and powerful engine for the international dissemination of Chinese film and television, effectively enhancing the global influence of Chinese media.

Since its publication in 2008, the novel The Three-Body Problem has become a landmark achievement in Chinese science fiction literature and a core vehicle for its international dissemination, consistently attracting attention from diverse audiences. Among its screen adaptations, the TV series directed by Yang Lei and starring Zhang Luyi, Yu Hewei, Chen Jin, and others, has received the highest acclaim, praised by both fans of the original novel and sci-fi viewers, and won the Best Television Series award at the 32nd China TV "Golden Eagle Awards." In March 2024, the Netflix adaptation 3 Body Problem premiered, produced by David Benioff and D.B. Weiss of Game of Thrones fame. With an investment of 1.15 billion RMB, it became one of the most expensive single-episode projects in Netflix history, and in June of the same year, it won the International Communication Award at the 29th Shanghai Television Festival Magnolia Awards. On IMDb, the Tencent-produced and Netflix-produced versions received scores of 7.5 and 7.6, respectively, attracting large viewership and strong international responses. The overseas dissemination of Chinese TV dramas has now transitioned from a "borrowing the ship to go abroad" stage to a "building the ship to go abroad" stage [3]. The international transmission of The Three-Body Problem represents a leap from simply "going out" to actively "going in," elevating the global status of Chinese sci-fi works and effectively promoting the development of China's sci-fi industry. This process plays a crucial role in enhancing China's cultural influence.

2. Literature review

Research on the TV adaptations of The Three-Body Problem has primarily focused on their international communication effects and cultural value. Regarding international communication effects, as a representative work of Chinese science fiction literature, The Three-Body Problem has exerted widespread influence worldwide. According to the Report on the Overseas Dissemination of Chinese Science Fiction (2018–2023), the overseas search popularity of Chinese sci-fi works and the number of related reports in mainstream media have shown a steady annual increase. As a leading work, The Three-Body Problem exhibits a significantly higher comprehensive dissemination index than other novels. Cui explored how the TV adaptations of The Three-Body Problem translate a grand, imaginative scale into everyday experiences that audiences can accept [4]. Zhou analyzed Douban ratings for both the novel and TV series, examining the differing textual criticism logics of general readers and the academic community [5]. Furthermore, following the release of the Netflix version of The Three-Body Problem, which reached over 190 countries and regions, the series triggered widespread discussion. Although evaluations were polarized, the series demonstrated a broad international communication impact. In terms of cultural value, The Three-Body Problem showcases the unique appeal and profound connotations of Chinese science fiction in international dissemination. It not only innovates in narrative structure and worldview construction but also engages deeply with ethical and moral questions, technological development, and humanistic concerns. The successful broadcast of both the Chinese and Netflix versions has enhanced the global influence of Chinese sci-fi films and TV series.

The Latent Dirichlet Allocation (LDA) model, as a text-mining technique, has been widely applied in film review analysis, effectively revealing audience sentiment tendencies and focal points. As of November 2024, a CNKI search using "LDA" as a keyword returned 6,680 studies employing the model for data analysis, among which 99 focused on online reviews, indicating its extensive use in text analysis. In practical applications,

researchers have adapted LDA to meet specific research needs. For instance, Tang Shi determined the optimal number of topics by plotting the topic–perplexity curve to optimize the model. Other studies combined sentiment analysis with LDA, classifying reviews by sentiment polarity and conducting thematic research using improved LDA models. Scholars such as Yang Xiuzhang and Wu Shuai employed an LDA–BiLSTM model combined with knowledge graphs for film review text mining, accurately predicting review sentiment categories [6]. The LDA model is not only popular for domestic content analysis but also widely applied internationally. For example, Hao H. et al. conducted a cross-cultural study comparing Chinese and American online doctor reviews. Although not directly related to film reviews, this study highlighted LDA's potential in cross-cultural text analysis, broadening its application in film critique and other international text analysis contexts. This further demonstrates LDA's significance and broad influence in global text analysis.

Based on this foundation, the present study applies text-mining methods to analyze online reviews of the Chinese and Netflix versions of The Three-Body Problem on IMDb and Letterboxd. Using computer-assisted content analysis via the LDA topic model, the study clusters review texts into themes, extracting frameworks and key topics from a large corpus of comments. This approach enables identification of audience attention points and perspectives on the films, providing reference-worthy insights. In computational communication research, text-mining methods and LDA topic modeling allow data-driven analysis of massive text corpora, overcoming previous limitations in which researchers could only analyze small sample sizes due to the overwhelming volume of reviews. From the perspective of international communication, employing text-mining and LDA topic modeling offers meaningful insights into the cross-cultural dissemination of Chinese science fiction films and TV series.

3. Research methods

3.1. Research path

The research path of this study follows the sequence: data collection → data preprocessing → topic extraction using the LDA topic model → perplexity calculation and visualization analysis → analysis of topic probability distributions → extraction of core keywords and comparative analysis → examination of the current status of international dissemination of the two versions of The Three-Body Problem. A detailed research workflow is presented in Figure 1.

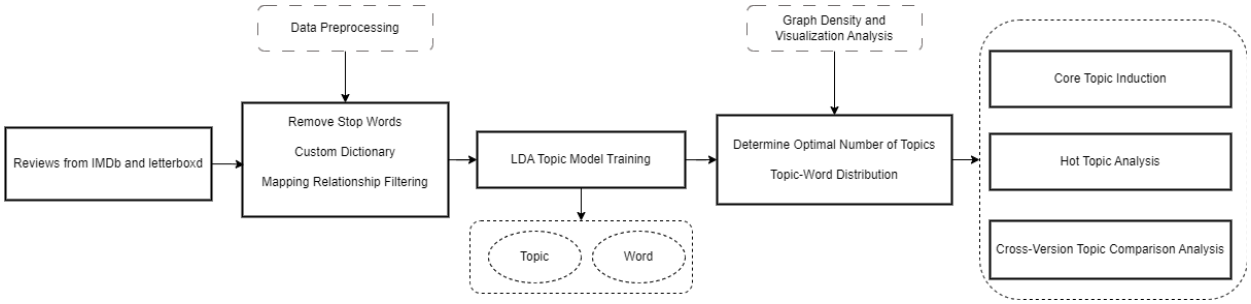

Figure 1. Research methodology flowchart

3.2. LDA topic model

The Latent Dirichlet Allocation (LDA) topic classification model is an extension of probabilistic Latent Semantic Analysis (pLSA). Its fundamental idea is to represent each document as a multinomial distribution over a set of topics, with each topic itself expressed as a multinomial distribution over all words in the

vocabulary. Given the generative model of documents and the observed data, the topic structure of each document can be inferred through posterior probability estimation [7].

The model assumes a three-level structure of words, topics, and documents. The topics in each document follow a certain probability distribution, meaning that a document can be described through the probabilistic distribution of multiple topics. Similarly, the distribution of each topic can be represented as a probabilistic distribution over words. In this way, hidden topic information within a document set or corpus can be identified. The basic assumptions of the LDA model are as follows: (1) There exist K mutually independent topics in the document collection. (2) Each document in the collection is composed of a random mixture of these K topics, and the topic proportions follow a Dirichlet distribution. (3) Each topic is represented as a multinomial distribution over feature words, which itself follows a Dirichlet distribution.

In the LDA analysis process, the number of topics to be extracted must usually be predetermined. The optimal number of topics can be determined using perplexity or by evaluating the degree of clustering in topic visualization [8]. As a probabilistic graphical model, LDA allows for modeling and inference of topics in textual corpora, improving efficiency compared with manual screening and reducing subjective bias. LDA supports unsupervised learning; by applying the LDA topic model to the English-language reviews of the two versions of The Three-Body Problem, hidden topics can be discovered and inferred from the text.

3.3. Sample data selection

From the perspective of international dissemination, this study selected English-language reviews from two well-known international film review platforms, IMDb and Letterboxd, as the sample. IMDb, the Internet Movie Database, not only provides a public rating system but also bases its scoring mechanism on multiple factors. In particular, the IMDb Top 250 list employs a Bayesian statistical algorithm to ensure the list's authority and representativeness. Since the Tencent-produced version of The Three-Body Problem had relatively few reviews on IMDb, the study supplemented data with relevant comments from Letterboxd. Letterboxd, a rapidly growing film review platform in recent years, has already surpassed the traditional IMDb in terms of overseas user activity.

Using web-scraping techniques, review texts for both versions of The Three-Body Problem were collected from their release dates up to October 24, 2024. The Tencent version had 285 reviews across the two platforms: 190 on Letterboxd, of which 24 reviews in Simplified and Traditional Chinese were removed, leaving 166 reviews. Reviews in other languages (Malay, Russian, Spanish, Portuguese, etc., totaling 24) were translated into English, and five irrelevant or noisy reviews were deleted. Combining IMDb and Letterboxd data, a total of 256 valid reviews were obtained, comprising 23,759 English words. For the Netflix version, 1,023 reviews were collected from IMDb, all considered valid, totaling 193,445 English words.

3.4. Text preprocessing

Collected reviews were preprocessed to remove stop words. This process incorporated the commonly used English stop word list from CSDN and a custom stop word list, retaining meaningful content words to reduce noise. A custom dictionary was constructed for special phrases (e.g., three-body, Liu Cixin) that should not be tokenized, preserving their original forms to better capture terminology related to The Three-Body Problem. Finally, mapping rules were applied to unify terms—for example, recognizing SAN-TI and 3-body as the same keyword—to ensure data relevance and accuracy.

3.5. LDA topic model training

English text was tokenized by spaces, and the LDA topic model was constructed using Python's Scikit-learn library. Hyperparameters α and η were set to default values, with a maximum of 1,000 iterations (max_iter = 1000). From each topic, the ten words with the highest probability were extracted and ordered by frequency to accurately capture and represent the core meaning of each topic. These keywords were used to construct topic labels for subsequent analysis. The learning offset was set to 50.0 to adjust the learning rate, preventing overly large steps during iteration. In CountVectorizer, max_*df* = 0.95 and min_*df* = 0.05, indicating that terms appearing in more than 95% or fewer than 5% of documents were excluded from the vocabulary.

Perplexity was calculated using lda.perplexity and visualized. However, due to high text homogeneity, the perplexity curves for the Tencent and Netflix versions showed an upward trend. Therefore, the number of topics was determined based on topic separability. Python's pyLDAvis library was used to visualize the topics and keywords, and the visualizations were saved as HTML files. The pyLDAvis visualizations allow intuitive observation of topic distributions. In the figures, five circles represent five topics; the larger the circle, the higher the frequency of that topic across all documents. The distances between circles represent the degree of distinction between topics. As shown in the figures, the five topics are well separated, indicating effective clustering. The optimal number of topics was further validated using the perplexity curve's inflection point: the Tencent version was determined to have five topics (Figure 2), while the Netflix version was determined to have four topics based on topic overlap (Figure 3).

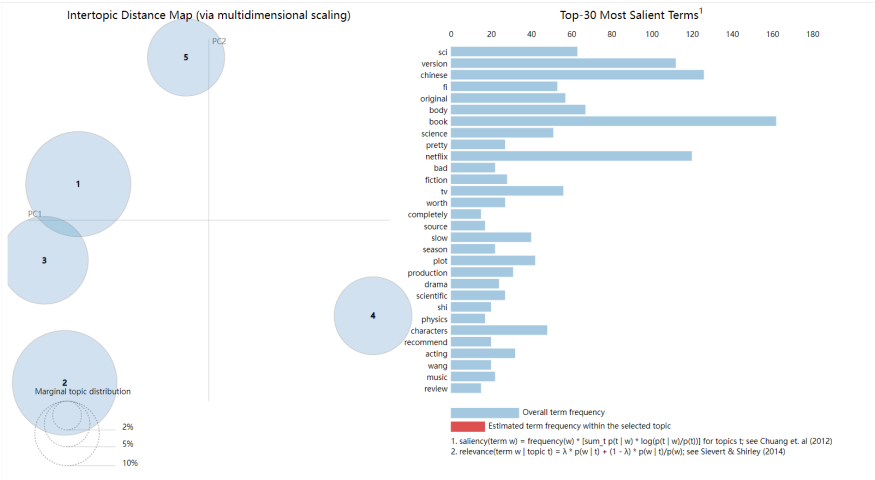

Figure 2. Topic number analysis for tencent version reviews

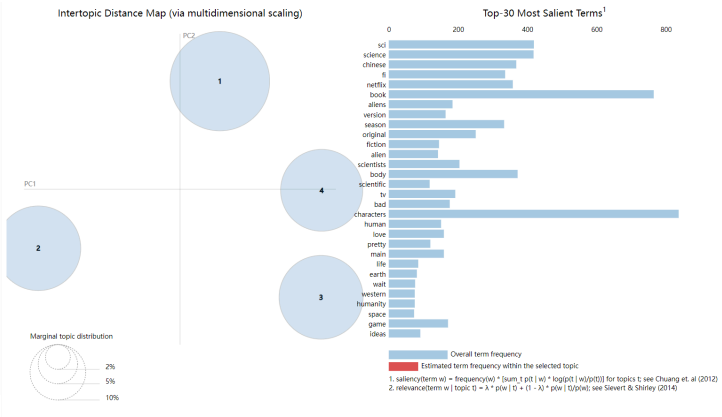

Figure 3. Topic number analysis for netflix version reviews

As an unsupervised machine learning method, the LDA model allows the uploaded preprocessed list data to be analyzed, displaying discovered topics and the probability distribution of each topic by setting the number of topics.

4. Empirical analysis

4.1. Topic extraction results

After LDA model training and topic extraction, the optimal number of topics was determined to be $k = 5$ for the Tencent version and $k = 4$ for the Netflix version. For each topic, the top-ranking keywords were selected based on their probability values. Using these high-probability keywords, in combination with relevant literature and specific review content, each topic was manually labeled. The resulting topic–keyword distributions are presented in Table 1 and 2.

Table 1. Tencent version of the three-body problem: topic–keyword–probability distribution

Topic	Film and Cultural Presentation	Plot and Adaptation Discussion	Adaptation Quality and Acceptance	Series Evaluation	Adaptation and Viewing Recommendation
Keywords	Chinese	book	Chinese	sci-fi	original
	Netflix	slow	pretty	tv	three-body
	version	character	Netflix	bad	Netflix
	Shi Qiang	plot	worth	season	completely
	love	sci-fi	production	physics	drama
	Wang Miao	scientific	source	music	tv
	western	faithful	acting	drama	recommend
	audience	acting	Liu Cixin	follow	plot
	actors	review	effects	plot	close
	cultural	pace	scenes	worth	Liu Cixin
Distribution Probability	26.5%	26.3%	18.4%	14.5%	14.3%

Based on the keywords and logical context of each topic, the five topics for the Tencent version were labeled as: "Film and Cultural Presentation," "Plot and Adaptation Discussion," "Adaptation Quality and Acceptance," "Series Evaluation," and "Adaptation and Viewing Recommendation." Table 1 lists the distribution probabilities and the ten most relevant keywords for each topic, ordered by descending probability.

Table 2. Netflix version of the three-body problem: topic–keyword–probability distribution

Topic	Plot and Character Discussion	Science and Human Destiny	Cross-Cultural Communication and Adaptation	Viewing Evaluation and Expectations
Keywords	characters	science	Chinese	sci-fi
	bad	alien	Book	season
	season	three-body	Netflix	three-body
	main	fiction	original	love
	plot	scientists	version	wait
	game	human	characters	ideas
	pretty	scientific	tv	original
	acting	characters	western	Netflix
	boring	life	china	based
	scenes	earth	Liu Cixin	complex
Distribution Probability	32.1%	23.3%	22.8%	21.8%

For the Netflix version, LDA analysis revealed four topics. Based on the keywords and logical context of each topic, they were labeled as: "Plot and Character Discussion," "Science and Human Destiny," "Cross-Cultural Communication and Adaptation," and "Viewing Evaluation and Expectations." Table 2 presents the distribution probabilities and the ten most frequent keywords under each topic, ranked in descending order.

4.2. Topic keywords and interpretations

The Tencent version of The Three-Body Problem consists of five topics, covering multiple dimensions of review analysis:

Topic 1 – "Film and Cultural Presentation" (Distribution Probability: 26.5%) This topic examines how The Three-Body Problem, as a Chinese sci-fi work, presents its cultural characteristics on the international stage and how actors convey character emotions and storylines to Western audiences. Core characters such as Wang Miao and Shi Qiang are frequently mentioned for their complex emotions and evolving relationships, with particular attention to their "friendship" arcs, highlighting character depth. The topic also considers how the Tencent version attracts international audiences through fidelity to the original source (source), high production quality (production), and cultural elements (cultural). The integration and display of Chinese (Chinese) elements, as well as the global dissemination of Chinese sci-fi culture, are central to discussions. Audience (audience) responses from Western viewers reflect the cross-cultural reception and the series' international impact. Overall, this topic focuses on core characters and cultural intersections, illustrating how The Three-Body Problem bridges cultural barriers to resonate with global viewers.

Topic 2 – "Plot and Adaptation Discussion" (Distribution Probability: 26.3%) This topic encompasses multiple aspects, from narrative pacing (pace, slow) to character development (characters), highlighting how

the series attracts audiences through scientific (scientific) and sci-fi (sci-fi) elements. Keywords such as faithful and book indicate audience expectations regarding the series' fidelity to the original novel, which is crucial for international communication success. The focus on plot and characters underscores attention to complex storytelling and well-developed character portrayal. This topic reveals that overseas audiences perceive the series as a high-quality sci-fi work combining profound scientific concepts, engaging narratives, and faithful adaptation of the source material.

Topic 3 – "Adaptation Quality and Acceptance" (Distribution Probability: 18.4%) This topic emphasizes the series' international dissemination and the responses it generates among overseas audiences. Keywords such as scenes, effects, acting, and production reflect audience attention to production quality, scene design, special effects, and actor performances. The appearance of worth and Netflix indicates comparison between versions and the role of Netflix as an international dissemination platform. The keyword Chinese reflects audience interest in and evaluation of Chinese cultural elements in an international context. This topic demonstrates the complexity and diversity of The Three-Body Problem's international reception, highlighting the influence and acceptance of different versions across cultural and market contexts.

Topic 4 – "Series Evaluation" (Distribution Probability: 14.5%) This topic involves overall evaluation of the Tencent version, considering narrative, scientific elements, music, and whether the series is worth watching. Keywords such as worth indicate perceived viewing value; plot and follow suggest narrative coherence and engagement. Drama and tv specify the genre and platform; physics and sci-fi emphasize core sci-fi elements. Season reflects audience evaluation of the current season and expectations for subsequent ones. The keyword bad, often in combinations like not bad or breaking bad, signals generally positive recommendations from overseas audiences, with attention to character development. This topic reflects overall audience perception, including narrative engagement, presentation of scientific concepts, musical accompaniment, and series recommendability.

Topic 5 – "Adaptation and Viewing Recommendation" (Distribution Probability: 14.3%) Keywords such as close and plot indicate attention to fidelity between the series and the original novel. Audiences appreciate how complex sci-fi plots are faithfully conveyed while retaining the novel's spirit. Recommend and completely reflect overall recognition of the series' quality and completeness, suggesting it is not only worth recommending but also a complete storytelling experience. TV, drama, and Netflix highlight the series' success as a TV adaptation on the streaming platform Netflix, receiving wide international attention and acclaim. Keywords three-body and original emphasize the work's originality as Liu Cixin's creation and its significance as a representative of Chinese sci-fi literature internationally. Overall, this topic illustrates the series' international success, both as a sci-fi drama and as a cultural product influencing global audiences.

The Netflix version of The Three-Body Problem consists of four topics (Figure 4), with high topic separability and better clustering results.

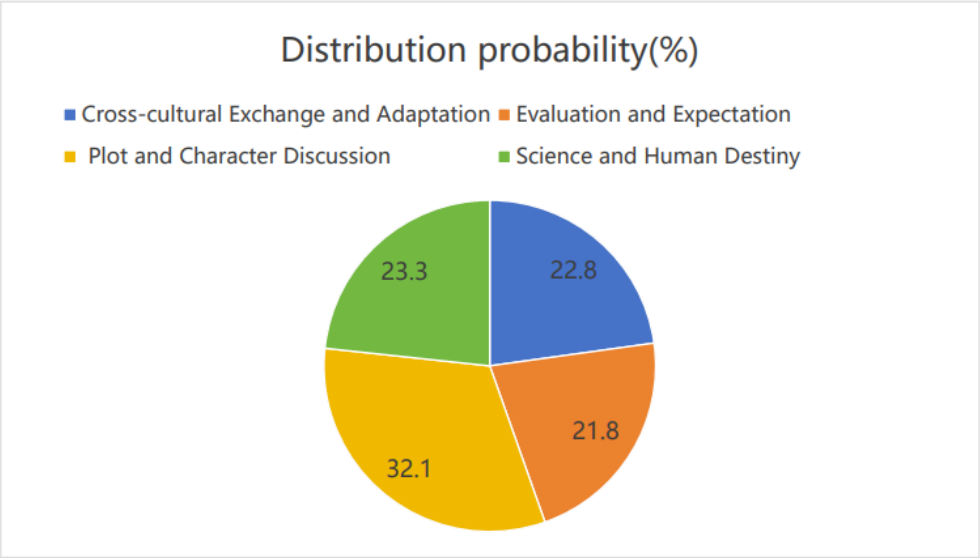

Figure 4. Topic distribution probabilities for the Netflix version

Topic 1 – "Plot and Character Discussion" (Distribution Probability: 32.1%) This topic, accounting for the largest proportion, reflects audience evaluations of multiple aspects of the Netflix version, particularly narrative development, character portrayal, acting quality, and entertainment value. Keywords such as season indicate audience expectations for continuity and serialized storytelling. Characters and acting emphasize character depth and actor performances, while scenes likely refer to key moments or visual effects. Words like boring and bad reveal some viewers' dissatisfaction with certain plot points or production elements. Plot, game, and main highlight the narrative's central storyline and complexity, whereas love indicates emotional engagement and audience appreciation. Keywords book and sci-fi underscore the significance of the original novel and its science fiction elements. Overall, this topic demonstrates the nuanced audience response, combining praise for plot and characters with critiques of specific aspects, centered primarily on narrative discussion.

Topic 2 – "Science and Human Destiny" (Distribution Probability: 23.3%) This topic focuses on character development, scientific elements, fidelity to the original novel, and the broader appeal of science fiction. Keywords such as characters and human highlight character portrayal and explorations of human nature. Earth and alien refer to interactions between humans and extraterrestrial life. Scientific and scientists emphasize the central role of science and scientists in the storyline. Keywords three-body and science fiction directly reference the work and its genre. Original and book indicate audience attention to how faithfully the series adapts the novel. Collectively, this topic reveals viewers' evaluations of the Netflix version in terms of character depth, science fiction elements, adherence to the source material, and cross-cultural relevance.

Topic 3 – "Cross-Cultural Communication and Adaptation" (Distribution Probability: 22.8%) This topic centers on the reception and comparison of The Three-Body Problem across cultural contexts, particularly differences between the Tencent and Netflix versions. Keywords characters and original emphasize character development and the importance of the source material. China and Western reflect the work's origin and regional differences in reception. TV, version, and Netflix represent the television adaptation and streaming platform dissemination. Book highlights the comparison between the novel and its adaptations. Overall, this topic reflects audience discussion of how the work is presented and received across different cultures and

media platforms, illustrating the effectiveness of cross-cultural communication within the Three-Body Problem series.

Topic 4 – "Viewing Evaluation and Expectations" (Distribution Probability: 21.8%) This topic involves audience comparisons and evaluations of different versions (including Netflix and Tencent), as well as their fidelity to the original novel and audience anticipation. Keywords season and wait indicate interest in continuity and upcoming seasons. Complex and ideas suggest the intricate scientific concepts and innovative ideas in The Three-Body Problem. Love, book, and based reflect appreciation for the original novel and anticipation for adaptations. Sci-fi underscores the work's classification as a science fiction series. Overall, this topic captures audience enthusiasm for the series, appreciation of its science fiction elements, and concentrated discussion and anticipation of the first season's plot.

4.3. Comparative analysis of themes between the Tencent and Netflix versions of The Three-Body Problem

To investigate the thematic differences in English-language reviews of the Tencent and Netflix versions of The Three-Body Problem, this study applied the LDA topic model to the review texts, extracted keywords under each topic, and calculated their frequency of occurrence. Using these data, heatmaps and word clouds were generated to visually present keyword distributions. In the heatmaps, color intensity reflects the relative frequency of keywords in each version, revealing differences in audience focus between Chinese and international viewers.

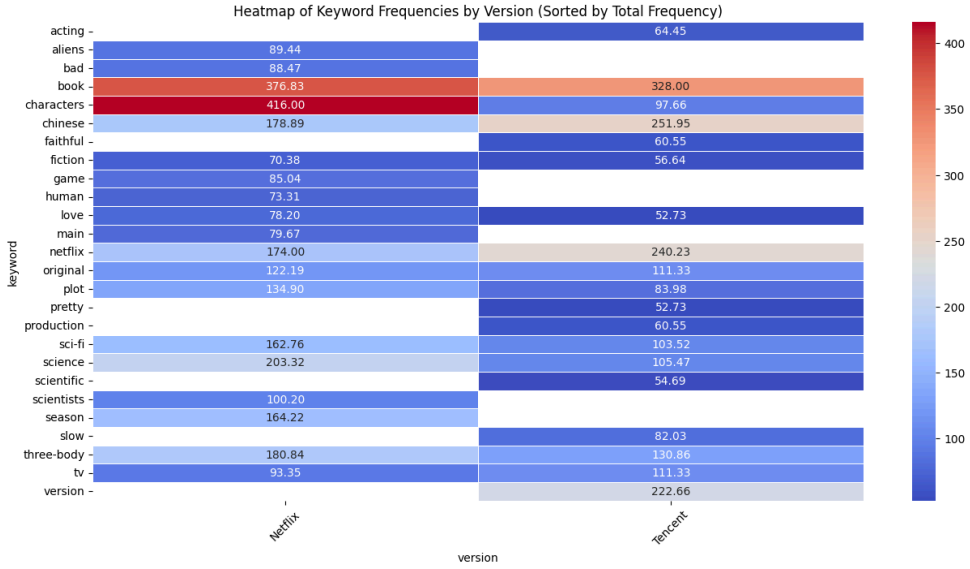

Figure 5. Heatmap of keyword frequencies in English reviews for Tencent and Netflix versions

Figure 5 presents the heatmap of keyword frequencies in the English reviews of both versions. The 19 most frequent keywords were selected, and their proportional frequencies in the two versions were calculated. The heatmap visually illustrates relative importance: for example, book and characters appear significantly more frequently in the Netflix version, whereas Chinese and version appear more frequently in the Tencent version. This suggests that viewers of the Netflix adaptation tend to focus on the quality of adaptation and character development, while Tencent viewers are more attentive to Chinese cultural elements and differences between

versions. Differences in keyword frequency between the two platforms also reflect the audience attention directed toward Tencent and Netflix as distinct streaming platforms.

Significant differences exist between the Netflix and Tencent versions in terms of target audience and cultural adaptation. The Netflix version, as a global platform, must overcome cultural barriers to appeal to a broad international audience. This cross-cultural adaptation strategy often necessitates adjustments to plot and characters, sometimes at the expense of the original novel's depth and detail. For example, core characters are adapted from an entirely Chinese cast to a multi-ethnic ensemble to better attract a global audience. Additionally, Netflix, as an international streaming platform, reaches a wider audience, with 145,000 viewers rating the series. In contrast, the Tencent version primarily targets domestic audiences and therefore excels in maintaining fidelity to the original work and Chinese cultural characteristics, aligning closely with Chinese viewers' expectations and cultural identity. This fidelity has also earned recognition from overseas viewers.

The two versions also differ in narrative pacing and storytelling approach. The Netflix version favors faster-paced narratives and tightly structured plots to suit Western viewing habits. As a result, some complex scientific concepts and character relationships may not be fully developed or explained. Within its eight-episode structure, it covers material up to the third novel (Death's End), with a focus on the relationship between individuals and science. Conversely, the Tencent version preserves the original narrative rhythm, giving viewers more time to digest and understand complex plotlines. While this may lead some viewers to perceive a slower pace, it provides space for in-depth exploration of scientific and philosophical questions, emphasizing the impact of science on humanity's collective fate, consistent with China's concept of a shared human destiny.

The Netflix version benefits from substantial financial investment, enabling higher production values and visual effects, and has announced plans for a second season, heightening audience anticipation. Viewers also discuss the plot, music, and visual scenes more extensively. The Tencent version, however, emphasizes national sentiment and a sense of fate, reflecting Chinese cultural connotations. Careful attention to story background and character development has prompted overseas audiences to engage more with discussions of its cultural presentation. These differences not only influence viewing experience but also reflect the distinct production philosophies and objectives of the two versions.

5. Exploring the international dissemination of Chinese Sci-Fi films and TV series

In the context of globalization, Chinese sci-fi films and television series serve as an important vehicle of cultural soft power, and their international dissemination plays a vital role in enhancing national cultural influence. According to the latest international communication effectiveness evaluation system [9], The Three-Body Problem demonstrates outstanding performance in terms of international communication utility, a dimension that primarily measures the impact of dissemination on target audiences' cognition, psychology, and behavior, helping overseas audiences better understand China as "trustworthy, lovable, and respectable." This study analyzes the international dissemination of Chinese sci-fi films through four dimensions: channels, content, communicators, and recipients, and explores potential pathways for future development.

5.1. Networked channels: strategic layout from a global perspective

From the perspective of overseas film review platforms, the Netflix adaptation of The Three-Body Problem demonstrates a clear advantage in dissemination breadth compared to the Tencent version. The key driver of this success is Netflix's strong influence as an international streaming platform. With its vast global user base

and extensive experience and resources in international dissemination, Netflix-produced content reaches a broader audience. Its global dissemination strategy provides a wide platform for showcasing a Chinese sci-fi classic, allowing international viewers to deeply appreciate the unique charm and style of Chinese sci-fi. This phenomenon also offers valuable insights for the overseas dissemination of Chinese sci-fi films. The international success of works such as The Wandering Earth further validates the strong potential and unique value of Chinese sci-fi. Accordingly, exploring international dissemination pathways requires actively expanding overseas channels and leveraging foreign platforms for precise targeting and efficient communication, ensuring that the voice of Chinese-style sci-fi resonates widely and deeply across the globe.

Furthermore, international collaboration plays a crucial role in creating sci-fi works with global influence. In the sci-fi film and TV sector, Sino-foreign cooperation has become an irreversible trend, not only helping bridge understanding gaps between countries regarding sci-fi content but also driving innovation and development of sci-fi culture. For example, the Sino-American co-production The Meg successfully integrates cultural essences and production techniques from both countries, presenting a visually stunning sci-fi experience to global audiences. This cooperative model provides useful reference points for the internationalization of Chinese sci-fi, suggesting that continued collaboration with top international production teams can help develop a series of globally influential sci-fi IPs.

5.2. Content design: balancing rigorous logic and imaginative creativity

Within the expansive domain of sci-fi films and TV series, the depth and meticulous construction of content constitute the core competitiveness. Through Latent Dirichlet Allocation (LDA) analysis of overseas English-language reviews, insights can be gained into audience preferences and expectations regarding content, revealing the importance of content depth and its inherent artistic appeal.

First, from the perspective of plot and character development, high-frequency keywords extracted via LDA —such as story, character, and breaking bad—clearly indicate that audiences place high value on narrative unfolding and character portrayal. Sci-fi, as an art form grounded in realistic extrapolation, relies on internal logical coherence and robust theoretical foundations to persuade audiences and establish emotional resonance. Unexpected plot twists and complex yet orderly character relationships further enhance audience immersion and enjoyment.

Second, the in-depth exploration and presentation of core concepts constitute another crucial dimension of content refinement. In the Netflix version, LDA results show frequent occurrences of terms such as science, human, and earth, reflecting audience interest in core concepts such as science, human destiny, and cosmic exploration. In the Tencent version, the relationship between science and human destiny is deeply explored, aligning with China's concept of a "shared human destiny" and presenting profound reflections on humanity's future in relation to the universe. The Netflix adaptation, by contrast, focuses more on the relationship between individuals and science, using nuanced emotional depiction and character development to show how science affects and shapes individual fate. This deep exploration of core concepts not only enriches the work's thematic depth but also stimulates extensive audience discussion and reflection on the deeper meanings of sci-fi media.

Third, the artistic enhancement provided by music and special effects is an indispensable element of content refinement in sci-fi media. Keywords such as music and effects highlight audience appreciation of audiovisual elements. Music, with its distinctive melodies and expressive qualities, creates unique atmospheres and emotional tones; for instance, the Tencent version's opening theme A Matter Of Time establishes a profound contrast between the vastness of the universe and individual insignificance, delivering a deeply immersive emotional experience. Special effects, as the visual language of sci-fi, utilize advanced

technology to bring imagined fantastical scenes, futuristic landscapes, and surreal creatures to life in a visually compelling and realistic manner. Such visual presentation not only satisfies audiences' imagination of the sci-fi world but also confers unique artistic appeal. The creation of sci-fi media thus requires creators with strong artistic foundations, advanced technical skills, and interdisciplinary collaboration abilities, fostering continuous innovation and development in sci-fi visual effects.

5.3. Promoting Chinese culture: cultural transmission through Sci-Fi media

Yin Hong, Vice Chairman of the China Film Association, has pointed out that enhancing the international communication and influence of Chinese films is essential for building China into a cultural and cinematic powerhouse, and is a necessary step to strengthen the soft power and cultural competitiveness of the nation. As communicators, Chinese sci-fi media should deeply explore and present their cultural essence while fostering global empathy. The repeated differences highlighted in the topic models between "Chinese" and "Western" reflect the cultural gaps that Chinese sci-fi must bridge in international dissemination. In the creation process, Chinese sci-fi should integrate the core values of socialism with Chinese characteristics, showcase the unique charm of Chinese culture, and simultaneously adopt a global perspective on humanity's shared destiny, thereby eliciting empathy worldwide.

Science fiction, as a distinct narrative medium, often considers humanity as a whole, which naturally reduces the perception of national differences in storytelling. This narrative approach facilitates global dissemination, as it transcends national boundaries and emphasizes humanity's collective response to unknown risks. For example, the Tencent version of The Three-Body Problem depicts scenes of unified human action, reflecting the consciousness of a shared human destiny while demonstrating how Chinese sci-fi can resonate with a global audience while conveying Chinese culture. Therefore, the international communication strategy for Chinese sci-fi must adhere to China's core values, draw upon national cultural resources, and tell distinctly Chinese sci-fi stories effectively.

In cross-cultural dissemination, Chinese sci-fi should balance cultural adaptation and innovation. On one hand, it must respect and understand the preferences and aesthetic habits of audiences from different cultural backgrounds to avoid misunderstandings or conflicts. On the other hand, it should boldly experiment with new narrative techniques and modes of expression, integrating Chinese elements with modern technology to create uniquely Chinese sci-fi works. Such an approach not only enhances China's national image but also promotes Chinese culture globally, strengthening its international influence. Implementing this strategy requires creators with a global vision, actively advancing the outward dissemination of films and enhancing their international competitiveness and impact.

5.4. Target audiences and storytelling: narratives in cross-cultural contexts

When discussing international communication strategies for Chinese sci-fi media, it is essential to consider the reception habits and aesthetic preferences of overseas audiences. LDA topic model analyses reveal that international audiences engage with sci-fi works in unique and in-depth ways, highlighting the need for more refined, audience-oriented strategies in Chinese sci-fi dissemination. If overseas media organizations or professionals produce content based on the same Chinese concepts, they can transform originally abstract or symbolic "hard" content into narratives that are more perceptible and relatable to the target audience [10].

The narrative strategy for Chinese sci-fi in international communication should shift from "self-statement" to "other-centered storytelling." This shift helps reduce communication gaps and barriers, enabling the work to naturally integrate into the target culture and increase its global appeal. The Netflix adaptation of The Three-Body Problem, though differing somewhat from the original core, expands the influence of Chinese-style sci-fi

and illustrates the importance of designing stories from the perspective of overseas audiences, aligning with their cultural contexts and aesthetic expectations to enhance acceptance. In this process, Chinese sci-fi should advance its internationalization gradually, continuously summarizing experiences and lessons to refine narrative strategies and dissemination methods. Evaluating and constructing the international image of Chinese sci-fi from the overseas audience's perspective can help reduce cultural misunderstandings and conflicts, while strengthening audience resonance and identification.

6. Conclusion

This study employed the LDA topic model to computationally analyze and compare the discussion themes generated by overseas audiences for the Tencent and Netflix versions of The Three-Body Problem. The findings reveal international viewers' reception and preferences for Chinese sci-fi media and highlight the differences in the overseas dissemination effects of the two versions. By examining four dimensions—channels, content, communicators, and audiences—this study provides a new perspective on the international communication of Chinese sci-fi works. The application of the LDA topic model in this context not only offers fresh insights into the global influence of Chinese sci-fi media but also provides empirical support for strategies aimed at promoting the internationalization of Chinese cultural products. However, several limitations should be acknowledged. The representativeness of the data samples, the selection of algorithm parameters, and the preprocessing procedures may have affected the accuracy and precision of some extracted topics. Additionally, while the comparison between the two versions of The Three-Body Problem revealed significant differences, the depth and breadth of the comparative analysis remain limited. Future research could refine the comparison dimensions to more comprehensively and intuitively highlight the distinctions between the two versions.

To address these limitations, future studies could focus on several areas for further development: first, optimizing the parameter settings of the LDA model and improving data preprocessing procedures; second, deepening the comparative analysis of the two versions across more dimensions and levels to explore both differences and commonalities, thereby uncovering the underlying reasons; third, investigating the success factors of Chinese sci-fi works that achieve strong international dissemination, with detailed analysis of content creation, communication strategies, and audience positioning. These efforts would provide more practical and actionable strategies for the international promotion of Chinese sci-fi media and other cultural products, injecting new vitality into the global dissemination of Chinese culture and enabling it to engage the world with greater confidence and effectiveness.

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