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Postprint: A Thematic-Temporal Analysis of Theme Distribution and Evolution in Library Society of China Annual Conferences

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Abstract

[Purpose/Significance] From a thematic temporal perspective, this study employs the themes of the China Society of Library Science annual conferences and the bibliographic records of their proceedings as research samples to conduct distribution and evolution analysis of relevant subject terms, thereby delineating the theoretical and practical development trajectory of China's library community over the past decade.

[Method/Process] Relevant subject terms from the China Society of Library Science annual conferences between 2007-2017 were obtained, from which high-frequency terms were selected. Excel was utilized to construct a co-word matrix of subject terms, while Ucinet and SPSS tools were employed for static distribution analysis of subject terms, combined with the "Popular Research Hotspot Weight (PRHW)" index for dynamic evolution analysis. The static distribution characteristics of relevant subject terms were analyzed comparatively through word frequency, centrality, and clustering; the dynamic evolution characteristics were analyzed through temporal word frequency and temporal co-word analysis, with identification and deduction performed using the PRHW index; two typical subject terms were extracted from the seven clusters to construct a co-word temporal network encompassing all subject terms.

[Results/Conclusion] The static distribution characteristics of relevant subject terms are manifested as follows: high-frequency terms from annual conference themes and proceeding subject terms demonstrate good consistency, with proceeding subject terms being more micro-level and specific; neither exhibits significant centrality; clustering results yield seven specific clusters based on the principle of similarity. The dynamic evolution characteristics of subject terms are manifested as: categorized into four types—long-term attention, early attention, recent rising attention, and recent declining attention—whereby the

micro-level evolution characteristics of relevant themes are presented in a refined manner.

Full Text

Preamble

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Theme: Temporal Analysis of Theme Distribution and Evolution at Chinese Library Society Annual Conferences

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Abstract

[Purpose/Significance] This study examines the distribution and evolution of thematic terms from the Chinese Library Society annual conference themes and proceedings between 2007 and 2017, aiming to trace the developmental trajectory of library theory and practice in China over the past decade from a temporal perspective. **[Method/Process]** Relevant thematic terms were extracted from annual conference announcements during this period. High-frequency terms were identified and used to construct co-word matrices in Excel. Ucinet and SPSS were employed for static distribution analysis, while the “Popular Research Hotspot Weight (PRHW)” metric facilitated dynamic evolution analysis. Static distribution characteristics were examined through comparative analysis of word frequency, centrality, and clustering. Dynamic evolution was analyzed through temporal word frequency and co-word patterns, with PRHW used for identification and deduction. Two representative terms from seven identified clusters were selected to construct a comprehensive temporal co-word network. **[Results/Conclusions]** Static distribution reveals strong consistency between high-frequency terms in conference themes and proceedings, with the latter being more micro-level and specific. Neither exhibits significant centrality. Clustering yielded seven distinct groups based on similarity principles. Dynamic evolution patterns fall into four categories: long-term attention, early attention, recent rising attention, and recent declining attention, providing a nuanced portrayal of micro-level thematic evolution.

Keywords: Chinese Library Society Annual Conference; temporal analysis; word frequency analysis; co-word analysis; theme distribution; theme evolution

Classification Numbers: G252, G353.1

1. Literature Review

1.1 Current State of Research on Chinese Library Society Annual Conference Themes

The themes of the Chinese Library Society annual conferences have attracted scholarly attention. Feng Minying analyzed conference themes from 2000-2005, identifying four research trends: philosophy, resource sharing, digital libraries, and management/functions. Jia Huifang examined themes from 2000-2006, summarizing three major research hotspots (digital library theory and practice, information resource construction and sharing, and 21st-century librarian competency and role transformation) and five development trends (technology-philosophy integration, rule-of-law development, macro-level exploration, expanded research objects, and strengthened management thinking). Liang Guiying studied themes from 2004-2008, discussing four theoretical hotspots: library spirit/public library spirit, core values and competencies, library rights/freedom, and library legislation. These studies provide valuable summaries of pre-2008 themes, but thematic content after 2008 remains unexamined.

1.2 Current State of Theme Distribution and Evolution Research

Contemporary thematic analysis increasingly employs distribution and evolution methods. Theme distribution research identifies key research areas and trends by analyzing thematic patterns over time. Theme evolution analysis examines developmental changes in disciplinary topics through literature characteristics, revealing research hotspots and predicting future directions. Primary scientometric methods include word frequency analysis, co-citation analysis, and co-word analysis. When integrated into temporal networks, these yield citation temporal, word frequency temporal, and co-word temporal networks. Comparative studies suggest co-word analysis effectively reveals conceptual relationships and micro-level thematic evolution.

Current research typically combines multiple methods: - **Citation-based approaches:** Qiu Junping et al. constructed citation networks with temporal dimensions to visualize knowledge diffusion. Zhang Yiman used citation coupling with time series to examine interdisciplinary structures. - **Word frequency-based approaches:** Li Shuqing et al. combined temporal keyword identification to analyze positive and negative trends. Li Changling et al. studied interdisciplinary themes through temporal high-frequency word clustering. - **Co-word-based approaches:** Wei Ling et al. constructed co-word matrices from high-frequency terms to generate evolutionary network diagrams.

1.3 Summary of Research Status

Technological transformation has profoundly changed libraries and library services, reflected in conference themes. While pre-2008 themes have been summarized, post-2008 thematic evolution remains unexamined. Existing co-word temporal analysis faces coverage limitations. This study addresses this gap by

analyzing Chinese Library Society annual conference themes and proceedings (2007-2017) using word frequency-temporal analysis supplemented by co-word temporal analysis to reveal thematic distribution and evolution patterns.

2. Research Process

2.1 Data Acquisition and Processing

Electronic call-for-papers announcements for the 2007-2017 Chinese Library Society annual conferences were downloaded from the society's official website. Proceedings titles were obtained from e-commerce platforms. Given the moderate sample size and single-sentence format, manual indexing was adopted for accuracy. Terms were segmented, standardized, and refined based on semantic analysis. Synonymous terms were merged (e.g., MOOC/MOOCs, WeChat/WeChat services, mobile libraries/phone libraries), while related but distinct terms were retained (e.g., information literacy education/information literacy, library/public library/university library). Generic terms like “counter-measures,” “models,” and “influencing factors” were removed. This yielded 583 conference theme terms and 4,178 proceeding title terms. Excel pivot tables processed the data for import into Ucinet and Netdraw for visualization, then into SPSS for clustering analysis.

2.2 Temporal Network Construction

2.2.1 Word Frequency-Temporal Analysis Temporal dimension analysis reveals thematic evolution patterns. Following methods from relevant literature, the “Popular Research Hotspot Weight (PRHW)” was calculated to identify temporal variation patterns, categorizing terms into: (1) long-term attention, (2) recent rising attention, (3) early attention, and (4) recent declining attention themes.

Using Donohue's 1973 high/low frequency threshold formula (Formula 1), the threshold values were calculated as 33.6 for conference themes and 90.9 for proceeding terms. Annual thresholds varied from 3.8/24.0 (2007) to 11.9/30.0 (2017). Based on analysis needs, terms with frequency ≥ 4 were selected as high-frequency terms, yielding 26 conference theme terms (51.8% of total frequency) and 92 proceeding terms (43.6% of total frequency). Tables 1 and 2 present these high-frequency terms.

2.2.2 Co-word Temporal Analysis While word frequency-temporal analysis reveals attention trends, co-word temporal analysis captures content and structural evolution. By constructing annual co-word matrices for all terms and using Excel slicers to track specific terms' co-occurrence patterns year-by-year, micro-level evolution becomes visible. This addresses the coverage limitations of previous methods.

3. Results and Discussion

3.1 Thematic Distribution

The 2007-2017 period included 184 conference themes (583 terms) and 1,054 proceeding titles (4,178 terms). Static distribution was examined through word frequency, co-word patterns, clustering, and content analysis.

3.1.1 Word Frequency Distribution Characteristics Conference themes are highly condensed, making word frequency indicative of popularity. Among the top 10 high-frequency terms, six overlap between conference themes and proceedings: library, reading, librarian, promotion, public library, and local documents. Within ranks 11-20, three additional terms overlap: information literacy, public culture, and library services. Overall, 11 of the top 20 terms are consistent, with proceeding terms being more micro-level and specific (e.g., “new technology” in conference themes appears as “Weibo,” “WeChat” in proceedings). This demonstrates the guiding effect of conference themes on paper submissions.

3.1.2 Centrality Distribution Characteristics Visualization of conference theme centrality (Figure 1 [Figure 1: see original paper]) shows “library” at the center, followed by innovation, reading, theory, promotion, and new technology. Proceeding term centrality (Figure 2 [Figure 2: see original paper]) similarly positions “library” centrally, with public library, reading, university library, librarian, reading promotion, and local documents forming the inner layer.

Degree centrality analysis reveals conference theme network centrality of 20.40% and proceeding term network centrality of 8.22%, indicating neither exhibits significant centrality. This reflects the complex, multifaceted challenges facing diverse Chinese libraries, requiring broad thematic coverage rather than concentrated focus. The central terms largely overlap between both networks.

3.1.3 Small Community Distribution Characteristics Subgroup analysis visualizes network community structures. Ucinet divided the 26 conference theme terms into 11 small communities (ranging from 1 to 7 nodes), with the central community (Group 1) containing library, innovation, promotion, theory, reading, new technology, and architecture. The 92 proceeding terms formed 16 communities (3-12 nodes), with the central group including library, Chinese library, university library, public library, reading, mobile reading, universal reading, reading guidance, lectures, practice, public cultural services, and service systems (Figure 4 [Figure 4: see original paper]).

Proceeding term communities are more specific and tightly integrated, while conference theme communities cover broader content. Partial overlap exists between the two clustering results.

3.1.4 Clustering Distribution Characteristics Clustering automatically classifies variables based on similarity without prior knowledge. Conference theme hierarchical clustering is shown in Figure 5 [Figure 5: see original paper]. Proceeding term clustering yielded 15 categories, including: (1) regional culture, local documents; (2) digital resources, resource construction, sharing; (3) college students, human libraries, information literacy; (4) reading, reading promotion, public libraries; (5) universal sharing, library services; (6) reading guidance, reference, evaluation, management; (7) oral history, ethnic minorities, ancient books; (8) library law, legislation; (9) service systems, public cultural services, mobile reading, WeChat; (10) service innovation; (11) Chinese libraries; (12) library architecture; (13) service models; (14) branch libraries; (15) theory.

These analyses reveal seven major thematic clusters reflecting innovation and progress under new environments, technologies, and concepts: (1) evolving reading promotion, (2) information literacy education in new technological environments, (3) service quality improvement and librarian competency enhancement, (4) cultural construction and inheritance in the new era, (5) library architecture and space re-creation under service transformation, (6) adaptive laws and management systems, and (7) resource construction in new environments.

3.2 Dynamic Evolution of Conference Themes

3.2.1 Word Frequency-Temporal Analysis Without temporal analysis, attention levels cannot be quantitatively distinguished. Temporal analysis reveals four patterns: long-term attention, recent rising attention, early attention, and recent declining attention (Table 3).

Long-term attention themes like “library,” “reading,” “librarian,” “innovation,” and “public library” show stable trends despite fluctuations. “Library” maintains the highest attention, reflecting its central role in practice. “Reading” peaked in 2013, demonstrating its importance as a practical focus. “Librarian” consistently ranks high, highlighting the fundamental human element in services.

Recent rising attention themes include innovation, promotion, public library, ethnic minorities, public culture, new technology, and evaluation. Most gained prominence within the last three years, often co-occurring with central terms like “library” and “reading.” “Public library” appeared as a high-frequency term for eight years, including four of the last five, with high PRHW values.

Early attention themes show varying patterns: some remain but with declining attention (local documents, education, information literacy, sharing, theory, ethnic minorities), while others have disappeared from high-attention rankings (shared resources, cataloging). Proceeding terms reveal more specific declines in theoretical terms (core values, library spirit, competitiveness) and traditional practices (cataloging, thesauri).

Recent declining early themes include terms like “shared resources” and “cataloging” that have exited high-attention ranks, while others like “local documents” and “education” remain but with reduced attention.

3.2.2 Co-word Temporal Analysis Co-word temporal analysis reveals content and structural evolution. Two representative terms—“reading” and “education”—were selected from the seven clusters for detailed analysis.

Case 1: “Reading” Co-word Temporal Analysis

As a long-term high-attention theme, “reading” appears in every conference theme except 2009, reaching peak attention in 2013 with 25 co-occurrences. Pre-2013 focused on universal reading for the public to expand library growth space. In 2012, new co-terms “digital,” “network,” and “promotion” emerged, reflecting technological impacts. The 2013 phase refined thinking on reading promotion subjects (librarians, diverse cooperation), target populations (college students, disabled, youth), content (classics, bibliographies), and methods (processes, all-media, digital, new technology). Post-2013 themes further deepened with “personalization” (2014), “public culture” (2015), and “grassroots, new technology, ethnic documents” (2016), culminating in 2017’s focus on “future,” “family,” “mobile internet,” and reading “efficacy.”

Proceeding terms aligned with but enriched conference themes, offering more specific, vivid, and inspiring perspectives on subjects, content, technology, processes, practice, and theory (Table 6).

Case 2: “Education” Co-word Temporal Analysis

“Education” co-occurs with “reading” and appears annually except 2014. Primary co-terms include “information literacy” (5 times), “library” (4), “library science” (4), and “librarian” (2). Recent new co-terms “MOOC,” “digital humanities,” and “evaluation” signal emerging trends. Proceeding terms reflect new practices like “micro-era,” “maker,” and “gaming” (Table 7).

4. Conclusions and Implications

4.1 Conclusions

4.1.1 Static Distribution Characteristics of Thematic Terms

- (1) High-frequency core terms including “library,” “reading,” “librarian,” “promotion,” “public library,” “local documents,” “information literacy,” “public culture,” “library services,” “evaluation,” “new technology,” and “innovation” represent key focuses over the past decade. Conference themes provide macro-level guidance while proceeding papers offer micro-level presentations.

- (2) Centrality analysis shows conference theme network centrality of 20.40% and proceeding term centrality of 8.22%, indicating no significant centrality but rich thematic diversity. Central terms largely overlap between both networks.
- (3) Subgroup and clustering analyses produce consistent broad classifications with minor differences, yielding seven thematic clusters: (1) resource construction in new environments, (2) information literacy education in new technological contexts, (3) cultural construction and inheritance in the new era, (4) library architecture and space re-creation under service transformation, (5) adaptive laws and management systems, (6) evolving reading promotion, and (7) service quality improvement and librarian competency enhancement.

4.1.2 Dynamic Evolutionary Trends

- (1) Word frequency-temporal analysis using PRHW identifies four evolutionary patterns: long-term attention, recent rising attention, early attention, and recent declining attention themes.
- (2) Co-word temporal analysis of “reading” and “education” effectively traces micro-level evolution, providing clues for identifying emerging research hotspots and trends.

4.2 Implications

4.2.1 Implications for Library Practice

- (1) **Distinctiveness First:** China’s diverse library types, resources, and development levels require tailored approaches rather than uniform implementation in public cultural services, traditional culture transmission, reading promotion, and characteristic resource digitization.
- (2) **Technology Orientation:** Six of seven thematic clusters involve technology-driven transformation. Libraries should actively adopt advanced technologies to enhance resource construction, cultural/social services, reading promotion, information literacy, and space re-creation.
- (3) **Legal Safeguards:** Under rule-of-law development, libraries must systematically review regulations to ensure lawful operations.
- (4) **Competency Enhancement:** New technologies, demands, services, and capabilities require enhanced competencies for both service providers (data analysis, knowledge services, think tank services) and users (information/data literacy education).

4.2.2 Implications for Chinese Library Society Conference Themes

Analysis reveals four theme types: (1) policy-oriented (rule-of-law, reading promotion, Belt and Road, public cultural services), (2) technology-oriented

(MOOC, Internet+, big data, WeChat), (3) practice-oriented (resource construction, cataloging, information services), and (4) theory-oriented (digital humanities, grounded theory, knowledge management). Conference theme selection should combine primary themes with complementary topics to address industry development needs.

4.2.3 Implications for Library Science Research in China

- (1) **Diversity Impact:** China's vast, unevenly developed landscape with diverse library types provides rich research perspectives and samples.
- (2) **Traditional Culture Theory:** Historical cultural transmission contains library-related management experiences and theories that should be excavated to enrich Chinese library science.
- (3) **Digital Technology Impact:** Comprehensive digitalization affects all service processes, influencing research areas including digital humanities, data analysis, information literacy, knowledge services, think tank services, and smart libraries.

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Author Contributions

Hao Jinqing: Conceived research ideas and methods; drafted initial manuscript.

Wang Jun: Data collection and analysis; manuscript revision.

The Distribution and Evolution Analysis on the Topic Words of Chinese Library Society Annual Conference from the Perspective of Topic Time Sequence

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Abstract: [Purpose/significance] To trace the context and development trend of theory and practice in the Chinese library community over the past decade, this study analyzes the distribution and evolution of thematic terms from Chinese Library Society annual conference themes and proceedings between 2007-2017. [Method/process] High-frequency keywords were selected to generate co-word matrices, analyzed using Ucinet and SPSS for static distribution, and combined with PRHW index for dynamic evolution analysis. Two typical terms from seven clusters were selected to construct comprehensive temporal co-word networks. [Result/conclusion] Static analysis reveals good consistency between high-frequency conference theme and proceeding terms (the latter being more microscopic), neither showing significant centrality, clustering into seven groups. Dynamic evolution identifies four patterns through temporal analysis, refined through co-word temporal analysis.

Keywords: Chinese Library Society; sequential analysis; word frequency analysis; co-word analysis; topic distribution; topic evolution

Book Announcement

University Library Pan-Subject Service System by Professor Chen Jin et al., published by Ocean Press in November 2018 (ISBN: 9787521000726, Price: ¥58.00). This work presents an innovative service model developed by Shanghai Jiao Tong University Library, offering theoretical and practical guidance for subject services with strong sustainability and adaptability. The book systematically explains the connotation of subject services, providing specific methods and operational models that can be directly applied or adapted by university libraries nationwide.

Note: Figure translations are in progress. See original paper for figures.

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