

Preliminary Exploration of Special Collections Information Mining Based on Provenance Marks: A Case Study of Fudan University Library Post-print

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Abstract

[Purpose / Significance] Drawing on practices from calligraphy, painting, and ancient books, this study leverages China's unique seal culture to trace the historical circulation information of individual Chinese special collection volumes and reconstruct the provenance history of special collection holdings. [Method / Process] In addition to presenting cases of collection, analysis, and utilization of individual volume seals and library book stamp information currently implemented at Fudan University Library, this paper attempts data mining approaches to address seals lacking archival documentation. [Results / Conclusion] Through small-sample collection data analysis experiments, the feasibility of this method is demonstrated, required metadata fields are clarified, and a preliminary cataloging rules scheme for large-scale provenance reconstruction is formulated.

Full Text

Preamble

Research on Special Collection Information Mining Based on Collection Mark Information: Taking Fudan University Library as an Example

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Abstract

[**Purpose/Significance**] Drawing from practices in calligraphy, painting, and ancient book studies, this research utilizes China's unique culture of authenti-

cation seals to trace the historical provenance of individual special collection volumes, thereby reconstructing the transmission history of special collections. **[Method/Process]** In addition to introducing cases of collecting, analyzing, and utilizing authentication seals and book signatures at Fudan University Library, this study attempts data mining for seals lacking archival documentation. **[Result/Conclusion]** Through small-sample data collection and analysis experiments, the feasibility of this method is demonstrated, required metadata fields are identified, and a preliminary cataloging protocol for large-scale retrospective projects is formulated.

Keywords: Special collections development; Retrospective cataloging; Authentication seals; Library stamps; Data analysis

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1. Background and Significance

Drawing on international standards and classifications, library collections can be roughly divided into five levels based on their intrinsic value: (1) Level 1 consists of outdated books no longer suitable for circulation; (2) Level 2 comprises old books with certain preservation value; (3) Starting from Level 3, emphasis shifts to values beyond the book's content, such as notable authors, specific historical periods, or special binding and printing features; (4) Level 4 includes books that align with a library's unique collection characteristics and positioning, such as research orientations of served communities or expansion of existing special collections; (5) Level 5 represents the library's "collections of record" that scholars must consult for related research. According to these definitions, collections above Level 2 require librarians to excavate value beyond the content information provided at publication [1].

For many libraries, the information revelation for non-ancient-book special collections is essentially identical to that of general collections. In fact, because these special collections are often older than new books, their original cataloging information may be even more abbreviated than that of ordinary publications. Crucial historical information such as the provenance of individual volumes, their condition, appearance, paper quality, printing details, whether inscriptions appear on title pages, or whether the original owner's book seals or bookplates are present—all this data is missing, preventing comprehensive revelation of special collection information and failing to excavate the value of Level 3 and above collections. This represents a genuine loss, like pearls cast before swine.

This study focuses on book seal data that reflects the circulation history of special collection books. By mining seal data, we can uncover the stories behind the

seals, reconstruct the collection history of special collection books, and thereby lay a foundation for assessing their value.

2. Feasibility of Mining Library Seal Information

Library seals constitute a special type of authentication seal. The value of authentication seals is widely recognized in the fields of ancient books and calligraphy/painting; by the same token, library seals can serve as a basis for retrospectively tracing the circulation history and evaluating the value of special collections. China's tradition of authentication seals began in the Sui and Tang dynasties, when people would affix seals on authenticated calligraphy or paintings or on supplementary pages to signify responsibility. Compared to other seals, they possess unique traditions and functions [2]. In the West, there is also a tradition of affixing bookplates to collected books. The history of bookplates began in the 15th century, far less ancient than China's book seal tradition, but exquisitely crafted and richly meaningful bookplates have earned epithets such as "pearl of printmaking" and "gem on paper" [3]. For ancient books, the importance of organizing and researching book seals has been widely recognized, and the seals on ancient books can be documented and organized using research methods from painting/calligraphy authentication seals to identify woodblock printing eras, understand collection and circulation processes, learn about collectors, and enrich library science research [4]. Regarding non-ancient-book special collections, although research on book seals exists, it has not received the same level of attention. On one hand, library seals are often designed to be solemn and conservative, predominantly using easily recognizable regular script or dignified ancient seal script, resulting in lower artistic value compared to other authentication seals. On the other hand, these collections mostly involve publications and collections from the past century. Although early systems were not fully developed, abundant archival materials remain. For researching the provenance and circulation of individual books, consulting archives is more convenient and efficient than examining library seals. However, this does not mean library seals have no research value. Just as extant official seals are valuable for verifying ancient official seal systems during the Zhou dynasty period when textual evidence is unavailable [5], library seals in special collections also hold value and significance for modern history research.

3. Information Mining for Special Collections

Currently, domestic libraries—particularly university libraries with a certain history—have experienced numerous upheavals in their early collections, resulting in gaps in special collection information revelation. These gaps manifest in several ways: (1) Missing information in early accession registers, where ambiguous and non-standard terminology often fails to provide accurate data, with frequently changing calculation standards and numerous omissions; (2) Missing registration information for donated books, as systems rarely recorded collection provenance before, and even when specific donation catalogs exist, books already

shelved by call number can often only be identified through seals; without donation catalogs, one must search through vast collections volume by volume; some recorded books cannot be found, while others discovered on shelves lack any records; (3) Collection loss and information gaps caused by wars and turmoil, as multiple wars and upheavals over the past century, combined with insufficient staffing and overwhelming workloads that left no capacity for detailed cataloging, mean that many books' provenance cannot be verified through existing cataloging records and accession registers; (4) Incomplete information revelation and missing records due to departmental restructuring and collection transfers; (5) Simplified retrospective cataloging data after conversion from card catalogs to automated systems.

4. Application of Book Seals in Special Collection Information Mining

4.1. Tracing Individual Book Circulation History Through Book Seals

Researching and organizing authentication seals can be used to identify book ages, understand collection and circulation processes, learn about collectors, and enrich library science research [5]. Circulation marks including book seals, bookplates, property numbers, and borrowing information have been effectively utilized as important evidence in special collection development in many university libraries, such as Yunnan Normal University Library's use of the "National Southwestern Associated University Library" seal when organizing Southwest Associated University documents [6], and similar research methods employed by Lanzhou University Library [7] and Beijing Jiaotong University Library [8] to study their own library histories.

However, in many cases utilizing library seals to study individual book circulation history, existing research methods rely excessively on researchers' knowledge of individual seals' origins, lacking verification steps such as cross-referencing multiple seals on a single volume or using individual volume information to deduce seal origins. For university libraries with a certain history, many seals appearing in special collections lack accessible archival documentation for researchers to understand their origins, and existing materials often contain omissions or ambiguities that render them insufficiently reliable, requiring multiple seals to corroborate each other to achieve information mining.

4.2. Discovering Collection Value Through Book Seals

Through multiple transfers, Fudan University Library's Special Collections Department now holds a large number of Republican-era books from schools and institutions that no longer exist, such as Daxia University, Zhendan University, and St. John's University, as well as various primary and secondary schools, normal schools, and National Government Army units (see Table 1). The archives of these schools and institutions are no longer easily accessible, and their histo-

ries will not continue. Every piece of historical material about them is precious, and their book collections are intimately connected to their histories and developmental processes. The marks left on these external books (such as residual seals, handwritten notes, accession numbers, and even borrowing cards) will become important research resources for the Republican-era education system after retrospective organization.

4.3. Reconstructing Collection Development History Through Seal Information

The service periods of many library seals are not documented in archives, but comparative analysis of multiple collection volumes can probabilistically restore these records. In addition to library seals, many collection volumes also include seals from various departmental, division, and group reference rooms collected through retrospective cataloging across the university. While these departmental reference rooms and libraries can also be investigated through relevant archives to determine collection sources, tracking collection development history becomes impossible when archives are missing. In such cases, by leveraging the aggregated data of book seals and organizing related book information, the entire history of collection development can be reconstructed.

5. Practice of Seal Data Mining for Special Collection Books at Fudan University Library

Fudan University Library has a century-long history. Between 1918, when the Wuwu Reading Society was initiated by alumni, and 1953, when collection development shifted primarily to subscriptions, collection sources were mostly donations or transfers from other schools. Figure 1 [Figure 1: see original paper] shows the average annual growth rate of library collection volumes calculated from archival data. Between 1924 and 1979, every explosive growth in collection size corresponds to documented donations or transfers in library history, such as: in 1925, “Liu Dabai deposited 2,000 volumes, Du Dingyou deposited 800 volumes”; in 1928, “the Arts Reading Room recently received 200 volumes donated by Xie Liuyi, and obtained long-term subscriptions to *New Women*, *Yusi*, and *Literary Weekly* magazines”; in January 1930, “for the 25th anniversary of the university, professors Hong Shen, Yu Nanqiu, Li Quanshi, Cai Shangsi, and others donated over 1,000 volumes of masterpieces”... Additionally, there were post-war collections from the puppet Shanghai University, and after liberation, over 550,000 volumes transferred from external institutions during national higher education departmental restructuring [9]. Before being donated or transferred to Fudan University Library, these books may have been second-hand or gifts from alumni to their mentors. Every book has a fascinating story behind it, and librarians must organize these traces to uncover them.

5.1. Sample

The initial sample consisted of 30,000 volumes from among over 100,000 Republican-era books at Fudan University Library, with book seals from these 30,000 volumes preliminarily organized. During the actual organization process, the scope expanded to include historical figures' handwritten notes, though countless other interesting small marks encountered fell outside this organization scope. In the future, special collection seals will serve as an entry point to gradually reveal complete special collection information, making the value of these precious treasures known and usable.

Among the approximately 30,000 volumes currently organized, 550 unique seals were found, including 428 institutional seals and 363 personal or institutional book collection or donation seals, with nearly 100 name or leisure seals temporarily unverifiable. This analysis focuses on Fudan-related library seals, with 117 unique seals currently identified, of which 71 are library seals.

5.2. Difficulties in Organizing and Mining Seal Information

Although library seals have been used since the library's founding, they have never been archived, creating numerous difficulties in organizing the library's seals.

(1) Obstacles with non-purchase sources such as donations and transfers. Since donated and transferred books constitute a large proportion of Republican-era books, the relationship between these second-hand books' accession dates and publication years is weak. The accession dates recorded in searchable accession registers may also be misaligned with the dates when seals were affixed, as seals could be applied during subsequent inventories after accession. Consequently, no single piece of information in this work can independently serve as reliable evidence. Thus, determining the approximate service period of each library seal must begin with the seal's textual information, then corroborated through multiple other pieces of evidence before final determination. It is foreseeable that after establishing a special collection seal database, big data statistical results may overturn many current conclusions, though it is impossible to immediately establish such a database. The best approach is to organize as complete a seal register as possible for the special collections department.

(2) Accuracy issues in seal identification. First, as encountered in this study, without a seal register for reference, simultaneous organization by multiple people results in numerous duplicates and omissions due to subjective impressions like "looks similar" or "have seen before" (such as multiple similarly designed "Fudan University Library Collection" seals, see Table 2), as well as misidentification of the same seal as two different ones due to difficulty recognizing seal script characters. Although this team has only roughly organized the tip of the iceberg of Fudan University Library's special collection books, establishing a relatively complete seal register to standardize work, followed by gap-filling in subsequent retrospective work, currently appears to be the best

approach.

5.3. Case Studies

5.3.1. Tracing Book Circulation History Through Library Seals Fudan University Library's collection sources before 1953 were mostly donations, with renowned professors donating multiple times. Through seals and handwritten notes on books, many interesting stories can be discovered, supplementing unrecorded history [9]. The following are typical cases of various applications:

(1) Identifying multiple donations from the same donor. For example, among four books donated by President Chen Wangdao, three title pages bear three seals (see Figures 3 [Figure 3: see original paper]-6 [Figure 6: see original paper]): a 2.7cm large seal script red square seal “Wangdao’s Collection,” a 1.3\$×6.6cm nine-fold seal script red rectangular seal “Donated by President Chen Wangdao,” and a 4.1×1.5cm red mixed simplified/traditional regular script red rectangular seal “Fudan University Library Collection Seal.” Querying accession numbers determined the accession date as 1974-1979, which should be December 1977, two volumes from the complete collection donated by Chen Wangdao’s family after his death, usable for supplementing MARC donation records. Additionally, two books published in the 1940s have accession numbers 279310 and 269059, lacking the two Chen Wangdao seals but bearing handwritten “Donated by Mr. Chen Wangdao” (see Figure 5 [Figure 5: see original paper]) and an author’s dedication “To Dean Wangdao for correction” with signature and personal seal (see Figure 7 [Figure 7: see original paper]). These accession numbers belong to the 1955 accession register, when Fudan University Library reorganized and cataloged 300,000 volumes. However, reviewing existing donation archives for President Chen Wangdao reveals no donation records between the 1940s and 1955. Although the exact years for these two books cannot be determined, they slightly supplement Chen’s already lengthy donation record.

(2) Determining donation dates. The front flyleaf of *Social Evolution* bears a regular script seal “Mr. Sun Hanbing’s Collection” (see Figure 7), along with handwritten accession numbers “1387” for “Sun’s Library” and “027216” for “National Fudan University Library,” plus a regular script seal “Attention: For Reference Only, Please Cherish and Protect” (see Figure 8 [Figure 8: see original paper]). Initially, the team inferred that this book was originally purchased for the Sun family’s “Sun’s Library,” later accessioned by Fudan Library during the “National Fudan University” period (spring 1942 to autumn 1949). However, accession number records show that 020001-030000 were accessioned in Republic of China Year 27 (1938). In 1938, Fudan University had just relocated to Chongqing due to the war, moving only one-fifth of its collection, and consequently launched a “Book Donation Campaign” from December 23-29, followed by a “Book Donation Week” in January of the following year, during which faculty and students donated over 3,000 volumes [9]. Based on this, Sun likely donated this book during the donation campaign, but the accession number seal was not affixed and the number not written until the 1945 inventory when col-

lections were moved back to Shanghai. Another possibility is that the book was donated in earlier campaigns but had its accession number reassigned in 1938 during the Beibei relocation, as the Year 27 accession register shows numbers from 01001-050000, while only 12,593 volumes were relocated—clearly, a large portion of the collection was re-inventoried and assigned new accession numbers for the relocation. Hopefully, future organization work will collect more data to confirm this book’s accession date.

An interesting discovery regarding this Beibei period involves four books (see Figures 9 [Figure 9: see original paper]-13 [Figure 13: see original paper]). Like the two books whose donation year by President Chen Wangdao could not be verified, these four books were published in the late 1930s to early 1940s with 1955 accession numbers. Three bear a regular script traditional character, 4\$×\$2.8cm rectangular seal “National Fudan University Journalism Department News Museum Library Registration” with accession numbers, plus a 2.9cm nine-fold seal script red thick-border square seal “National Fudan University Journalism Department News Museum Library” appearing on both the front flyleaf and first page. The one book without the News Museum accession number, *Ancient Social History*, bears President Zhou Gucheng’s handwritten dedication “Respectfully donated to Fudan News Museum Library” with signature and a 1.4cm Bili seal script red thick-border square name seal, while another book bears handwritten “Donated by Comrade Zeng Dezhen” (Journalism Department Class of 1941) on the cover [11]. Neither the News Museum nor its library still exists, and the library’s collection likely merged into the main library during the Shanghai relocation. However, these marks have enabled the team to reconstruct the affection and contributions of professors and alumni to their alma mater in those difficult circumstances.

5.3.2. Discovering Collection Value *Guide to Studying in Britain* (see Figure 14 [Figure 14: see original paper]) is one of the earliest known books in Fudan University Library’s collection. Its publication information lacks a year, with accession number 1200, indicating accession before Republic of China Year 15 (1926). The cover bears a rectangular 3.4\$×\$1.5cm traditional character seal “Fudan University Library Accession Number,” likely created after the 1924 Library Committee establishment. The first text page (see Figure 18 [Figure 18: see original paper]) bears a traditional character circular 3.3cm “Fudan University Library Collection” seal with seal script “Library” at the center, “Fudan University” in regular script at the top, and “Collection” in regular script at the bottom. This seal commonly appears on books inventoried in 1962, usually paired with a red borderless simplified character small seal “62 point” at the page header. Through simple correlation analysis and year data comparison, it is currently believed to be a library seal used in 1962-1963 (see detailed methodology in Section 5.3.3). Based on this information, the book was accessioned during the Wuwu Reading Society period, was very popular with readers in the 1930s, later fell out of use due to outdated information, but was retained during each subsequent inventory, now becoming precious material

for studying Fudan University Library's own history and the circumstances of Chinese students in Britain during the 1920s-1930s. This important information beyond publication details cannot be presented in MARC records.

5.3.3. Methodology for Studying Library Seal Service Periods Through Books

The service periods of library seals are often undocumented in archives but can be reconstructed through comparative analysis of multiple collection volumes. Although seal texts already reveal much special collection information—for example, seals containing “National Fudan University” can basically be identified as from the late Anti-Japanese War period to pre-1949, and seals with various departmental names can be investigated through relevant archives—many seals can only be studied through collected data, i.e., by organizing book-related information to infer the era and origin of seals on books. For instance, multiple “Fudan University Library Collection” seals have been discovered (see Table 2) in various forms: red or white characters, square or rectangular, etc. Regular script seals can be roughly dated through traditional versus simplified characters, but seal script seals cannot be dated textually. This reverse research is tedious and requires long-term, large-scale data collection.

The plan is to systematically and rigorously analyze the service periods of each of the 71 currently collected library seals (and every seal to be added) by comparing them with all datable information from every volume bearing that seal, thereby obtaining usable information for forward-looking research.

However, the current data sample was not randomly selected: first, the extracted books came from the first 11 shelves in the 7th-floor humanities stack, concentrated on shelves 5-6, with shelving based on call numbers (i.e., subjects); second, selection was not random but driven by the explicit purpose of “collecting exhibition items for the centennial celebration.” While current conclusions may describe the data well, they will likely be overturned as the database and research methods improve. This section merely illustrates a research methodology.

Initially, researchers believed that simply collecting accession numbers of volumes bearing the 15 target seals and finding corresponding year records would easily reveal seal usage periods. 实际操作 revealed complex situations: (1) Typically, every library volume bears at least one Fudan library seal, yet collecting usage data for library seals across 100,000 volumes in a short time is extremely difficult—some seals were used extensively, others sparingly. (2) Seals could be affixed at any point after accession. (3) Years corresponding to accession numbers are not entirely reliable, with multiple instances of one accession number corresponding to multiple accession registers (i.e., multiple accession years).

Given these circumstances, researchers can only begin by calculating correlations for all data indiscriminately (see Table 3). Correlations are generally very low, but discoveries still emerge.

The aforementioned circular “Fudan University Library Collection” seal (Seal 10 in Table 1) appears on 58 of the first 110 volumes, with accession years spanning from the 1930s to early 1960s (see Figure 19 [Figure 19: see original paper]). Seventy-eight percent of all 110 volumes bear the “62 point” small seal, and conversely, 68% of all books with the “62 point” seal have this circular seal. The correlation coefficient reaches 0.37, the highest among all seals for correlation with 1962 inventory traces (see Table 3). After doubling the sample size (still not randomly selected), the correlation coefficient changed little to 0.4, showing a slight upward trend and representing the most credible current data analysis result, though still subject to future overturn.

6. Comprehensive Cataloging Scheme for Book Seals

This team’s data mining and analysis attempts for Fudan University Library’s special collection book seals have lasted less than a year and only preliminarily explored and summarized current issues. Conclusions based on current practice may be overturned by subsequent data additions, but methodologically, information mining and analysis based on book seals is feasible and operable. For example, statistically determining each library seal’s service period is feasible for most seals, and correlation coefficients between multiple seals can verify years and transmission relationships.

However, if this work is to be comprehensively deployed on sample data, complete retrospective cataloging of special collection marks, construction of a comprehensive data framework, and establishment of a reasonable analysis model are required. This would provide a data foundation for forward-looking analytical research, obtain more credible seal usage information for special collection information mining and cataloging, enable correct grading of information, historical, and artistic value, allow collection value to be revealed from various perspectives, and equip librarians with sufficient information for better decision-making in daily preservation, service, and collection expansion.

Drawing from the rules used by Fudan University Library’s Ancient Books Department for cataloging authentication seals in collections, the following MARC cataloging rules for library seals are recommended: (1) **Cataloging order for book marks**: For thread-bound books opening on the left, catalog from the first page’s lower right corner upward and leftward; for Western-style bindings opening on the right, catalog from the first page’s upper left corner downward and rightward. (2) **Field definitions**: Field 305 logs authentication seal names using transcription + red/white... + square/rectangular... descriptions. Field 317 states circulation history. Field 702 records past collectors involved with authentication seals.

However, special collection book marks are not entirely suitable for direct application of ancient book rules and require additional considerations: (1) How to distinguish between seals with similar designs and identical texts? For example, following the above rules would result in identical descriptions for Seal 6 and

Seal 7, making them indistinguishable. (2) Field 305 cannot serve as a search point, and with each seal not recorded separately, how can data be analyzed? (3) How to incorporate metadata for each circulation event?

To address these issues, the author proposes the following rules to guide comprehensive retrospective practice: (1) **Comprehensively collect and create a book seal database:** Assign each seal a unique ID for later differentiation and data extraction/analysis. Essential fields include: ID (primary key), illustration, transcription, design description, archival record of seal/collector/institution active period, and data analysis period (dynamic). (2) **Establish an independent special collection database or, within a unified library catalog database, record individual volume seal information and add more information and acquisition hints to all retrospectively cataloged special collection MARC data:** In the special collection database, catalog each copy's marks individually, using barcode numbers as the link to the unified catalog system (primary key). Record authentication seals using only ID numbers to reduce data volume, facilitate searching, and ensure the same seal is not cataloged as two different seals due to catalogers' subjective reasons, improving error tolerance. Transcribe handwritten notes and other marks in full, describing their script and location. Describe each volume's condition (detailed rules to be formulated as needed). Establish records of each seal's affixation time based on individual volume archives or all marks 推测, not for display but for analysis only.

The database relationships are illustrated in Figure 19 [Figure 19: see original paper].

7. Conclusion

The problem of missing historical information faced by Fudan University Library is common among domestic university libraries. This missing information can lead to misjudgment of special collection value, prevent reader utilization, cause missed international exchange opportunities, and even result in major losses through mistaken deletions. Institutions in similar circumstances may find the methods described herein worth attempting. Amid the current trend of building "world-class" universities, these valuable historical imprints in 各校特藏 are an indispensable part of constructing world-class libraries. University libraries should fully recognize the urgency and importance of retrospectively recovering historical information. The author suggests starting with one's own library history, organizing and supplementing all definite clues, exploring other possible but uncertain clues such as library seals, and collecting data for analysis. With proper work planning, even smaller-scale special collections can utilize existing management systems combined with common office software like Excel or Access to achieve preliminary or even complete data collection and analysis.

References

- [1] BERGER S E. Rare books and special collections [M]. Chicago: Neal-Schuman, 2014.
- [2] SHA Menghai. History of Seal Studies [M]. Shanghai: Shanghai Calligraphy and Painting Publishing House, 2017.
- [3] AN Jiaqing. Discussing Chinese and foreign collection art culture from bookplates and book seals [J]. Movie Review, 2012(11):84-85.
- [4] WANG Yanhong. On the significance of organizing ancient book collection seals [J]. Library Forum, 2005(5):214-215.
- [5] CHEN Zhenlian. General Theory of Seal Carving Art [M]. Shanghai: Shanghai Calligraphy and Painting Publishing House, 2016.
- [6] MAO Ruijiang. “Circulation marks” in special collection documents and their cataloging [J]. Journal of Academic Libraries, 2015, 33(4):24-28.
- [7] ZHAO Shucheng, WANG Yong, WAN Zhenxin. Viewing Lanzhou University Library’s development through changes in collection seals [J]. Journal of Lanzhou University, 2001(1):151-156.
- [8] YAO Shuping. Cinnabar inherits culture, seals witness history—Research on Beijing Jiaotong University collection seals [J]. Beijing Archives, 2013(3):48-50.
- [9] QIAN Jingya, SHI Weihua. Centennial Chronicle of Fudan University Library (1918-2018) [M]. Shanghai: Fudan University Press, 2018.
- [10] Fudan University History Compilation Group. Fudan University Annals [M]. Shanghai: Fudan University Press, 1985.
- [11] Fudan University School of Journalism. Alumni List: 1929-1949 [EB/OL]. [2019-03-10]. <http://www.xwxy.fudan.edu.cn/node2/fdxwxy/xyjr/node859/userobject1ai101685.html>.

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

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