Ying Zhang. Bibliographic Relationships among Chinese Publications: A Bibliographic study of the Chinese Collections of the East Asia Resources at the University of North Carolina at Chapel Hill. A Master's Paper for the M.S. in L.S. degree. April, 2003. 65 pages. Advisor: Jerry D. Saye.

Based upon the previous studies of bibliographic relationships of Western publications, the current study examines the bibliographic relationships of Chinese publications, a field that has not been studied to date. The shelf list of the Chinese collection in the East Asia Resources of the University of North Carolina at Chapel Hill is used to draw a sample for analysis. Tillett's study with her taxonomy, as well as other studies of the bibliographic relationships is used as the foundation for analysis. The Research results of the study reveal both similarities and differences between the Western and Chinese publications in terms of their bibliographic relationships.

HEADINGS:

Bibliographic relationships

Chinese collections

BIBLIOGRAPHIC RELATIONSHIPS AMONG CHINESE PUBLICATIONS:
A BIBLIOGRAPHIC STUDY OF
THE CHINESE COLLECTIONS OF THE EAST ASIA RESOURCES
AT THE UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

by
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Approved by:

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Advisor

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Chapter 1 Introduction

The technology available to the libraries keeps exerting a great impact upon the functioning and processing within the library. This is especially true for cataloging function. The parallelization between the development of the technology and the evolution of cataloging codes and catalogs has been well documented in articles by Schmierer (1989), Attig (1989), and O'Neill and Vizine-Goetz (1989). They argue that the technology, say, the printing technique and the MARC format, both shaped and enhanced the user-friendliness of the library catalog as a fundamental tool. In fact, efforts to apply the newly available technology to improve the library catalog have not ceased. The potential that Internet technology, the World Wide Web and relational database technology has brought engages more and more people in developing a new form of catalog that would capitalize upon technology to fully realize the "finding" and "collocating" functions of the library catalog. The collocating function of the current library catalogs, in whatever forms—card or online, is generally unsatisfactory to the library users. It is against this background that the study of bibliographic universe appeared as it is believed deep knowledge of bibliographic universe would help code developers to determine the structure of the future catalog.

The recent study of the bibliographic universe has two major directions. One is the creation of, and the differentiation between, the concepts of "work" and "item". Work refers to content and conceptual creation by an author in a particular context while item

refers to the physical media that carries the "work". This could be a book, a CD-ROM, a video tape, etc. The distinction between "work" and "item" has been accepted by the cataloging community at the theoretical level. For example, Lubetzky (1969) stated that "book" and "work" are coextensive only in the case of a work that has been published but once. The implementation of the work concept has not made its debut yet. Verona (1959) advocated the use of "work", instead of the concrete "bibliographic unit", as the object of cataloging. The International Federation of Library Association and Institutes Study Group (IFLA) (1998) went further in developing the concept of "work". In its final report *Functional Requirements for Bibliographic Records*, FRBR proposed that the distinction between "work" and "item" could be best realized by using relational database technology. Further it asserted that the second objective, the collocating function, of the catalog would thus be better fulfilled.

The other large segment of the study of the bibliographic universe investigates the bibliographic relationships among publications through the use of large scale empirical studies. It is believed the discovery of the full range of relationships among bibliographic items could be the driving force for the change of cataloging codes to make them more effective in reflecting these relationships in catalog. This, in turn, could become more efficacious in displaying these relationships to the user, thus fulfilling the collocating functions of the library catalog.

Though bibliographic relationships have long received attention from catalogers (Panizzi, 1841; Cutter, 1904), systematic and methodical study of the bibliographic relationships did not begin until IFLA attempted in the 1970s to create a universal MARC format to communicate bibliographic records. In IFLA's *UNIMARC Format*, three types

of relationships were defined, namely, vertical, horizontal and chronological one. Besides institutional efforts to study bibliographic relationships, numerous individuals have studies this too. Most prominent are Tillett, Smiraglia, and Vellucci. Through a detailed analysis of the Anglo-American Cataloguing Rules (AACR), Tillett (1987) proposed a taxonomy of seven bibliographic relationships. Based upon that analytical study, she further examined the occurrence of different relationships in bibliographic items of different subjects, languages, publication dates and formats. Smiraglia's study focused only on one of the relationships defined by Tillett—the derivative relationship (1992). This work produced a taxonomy of derivative relationships. Velluci (1997) focused her study upon musical materials where a great intensity of bibliographic relationships exists. She found that nearly 94% of musical materials bear at least one of the relationships defined by Tillett. Vellucci (1997) asserted that the study of bibliographic relationships is crucial for any future database model of library catalogs for that model would inevitably incorporate these relationships when it employs links to show the relationships between bibliographic items.

Extensive studies have been conducted to identify the bibliographic relationships of the bibliographic universe. However, the base material studied has always been publications of western origin. The bibliographic relationships among Asian materials have not been examined to date. The current study is designed to add literature on the bibliographic relationships of Asian publications, and specifically Chinese publications.

The purpose of this study is to identify the characteristics of Chinese publications. It asks the following questions: Are the bibliographic relationships of the Oriental publications different from western publications? Further, are older Chinese publications

different from more modern publication in term of bibliographic relationships? Do differences exist across various subject matters? What is the structure of bibliographic relationship in Chinese publications? Do Chinese publications have more relationships than do the Western publications?

Additionally, results of this study could be beneficial to the Chinese Japanese and Korean (CJK) cataloging community in North America in several ways. First, it would benefit cataloging policy makers who might have not been aware of the differences Chinese publications from the Western publications. By taking the similarities and discrepancies of bibliographic relationships of the Chinese materials into consideration, code developers may propose more specific linking rules and devices to represent those relationships whether using the present or future online cataloging systems. This research could provide a tentative answer to the questions like "Are the current linking devices in the cataloging rules for bibliographic relationship adequate for Chinese publications? If not, how should they be improved?" The second group to benefit could be the Chinese catalogers. Knowing the characteristics of the bibliographic relationships and the linking devices of Chinese materials, it would easier for them to catalog books that bear bibliographic relationships. Moreover, it might be easier for them to adapt to, and become comfortable with, any future catalog whose function is to display such relationships.

Chapter 2 Literature Review

2.1 Bibliographic relationships

What are bibliographic relationships? Bibliographic relationships, as mentioned above, refer to the connections and associations between two or more than two bibliographic items (Tillett, 1987). For example, the second edition of a book is associated with the first edition in this way just as an item within a series is connected with the series as part of the whole series. The concept of bibliographic relationships is also related to the concept of bibliographic structure which includes three components, namely, structures of "bibliographic descriptions, catalogs and the bibliographic universe itself." (Svenonius, 1989) Bibliographic relationships should be associated with the structure of the bibliographic universe itself. The relationships between bibliographic items determine the structure of the catalog which transcribes these relationships.

2.2. The studies on bibliographic relationships

2.2.1. The initial studies of bibliographic relationships

A. Bibliographic relationships perceived by Panizzi

Panizzi discovered the bibliographic connections during his employment as the Keeper of the Department of Printed Books in the British Museum. He developed a set of cataloging rules, later known as the "91 Rules" and incorporated the concept of bibliographic connections into these rules, on which the later cataloging codes in England

and the United States were based (Brault, 1972). Panizzi was forced into several large

debates with the library patrons before he could convince them that the principles behind

the rules could better organize the holdings of the library and, thus better serve the

patrons themselves. In addition to the possible bibliographic relationships due to the same

subject, the same author but with different names, the same work but with different titles,

Panizzi also pointed out the bibliographic relationships between different editions and

versions of the particular "work", translations, etc.:

> "A reader may know the work he requires; he cannot be expected to know all the
> peculiarities of different editions; and this information he has a right to expect
> from the catalogues."
> <div align="right">--- Q.9814 (Bault, 1972, p. 50)</div>

> "In a case like the present, where the title of the translation varies to a certain
> extent from that of the original, the title of the original ought always to be set out,
> as otherwise a reader who knows only the title of the original work would look in
> vain in the catalogues for the translation …"
> <div align="right">--- Q.9827 (Bault, 1972. p. 50)</div>

Panizzi suggested cross references be used to display bibliographic relationships in

the 91 Rules[1], and he divided them into three types: cross references from name to name,

from name to work and from work to work. Though not regarding the collocating of the

printed books in his defense before the Royal Commission as one of the objectives of the

catalog (Brault, 1972), Panizzi in fact provided the users of that catalog with informing

clues to identify and locate the bibliographic items related to each other one way or

another. For instance, bibliographic relationships that involved translations, collected

works and uniform works such as the Bible were considered in the Rules. Rule LXXIX

explicitly stated "The Old and New Testament and their parts, to be cataloged under the

general heading 'Bible,'" and arranged in a particular order that dealt with different

versions of the Bible and different languages in which the Bible was printed. These rules

were approved by the Royal Commission. Thus, Panizzi was able to make cataloging more consistent and uniform. The catalog produced according to the Rules provided greater assistance and more links for the patron to find items that have bibliographic relationships. However, Pazinzzi did not explore further the specific relationships in the bibliographic universe. His devices in representing the relationships were limited to cross reference only.

B. Cutter and his objectives of the catalog

Known as a library systematizer and an advocate for his "Expansive Classification," Charles A. Cutter did not focus his research and library work upon the nature of the bibliographic relationships and connections that exist among the items in library materials. Rather, his analysis of the objectives shaped the development of the future cataloging codes including the linking devices used to represent the relationships. The formulation of the objectives laid the foundation for the future studies of bibliographic relationships. Drawing both codes from Panizzi's rules and Charles Jewett's *On the Construction of Catalogues of Libraries*, Cutter published his *Rules for the Printed Dictionary Catalogue* in 1876. He designed and formulated his codes based on the objectives that he thought a library catalog should be developed to achieve. The objectives, stated a century ago, are still the objectives of current cataloging codes (Svenonius 1989). They were:

- To enable a person to find a book of which either the author, title or the subject is known
- To show what the library has by a given author, on a given subject or in a given kind of literature
- To assist in the choice of a book as to its edition (bibliographically) and as to its character (literary or topical)

(Cutter, 1876, p. 10)

Unlike Panizzi, Cutter explicitly stated collocation as the objective for a library catalog. Accordingly he designed his codes to describe bibliographic relationships between items in the then prevailing form of catalog – the printed dictionary catalog. Linking techniques such as notes, references, uniform titles, specification of edition, collation, etc. were employed by him to fulfill the second and third objectives. In Rule 281, Cutter called for a note listing the content for the book containing several works by the same author, or by several authors. Collations were used to report the bibliographic relationships among items under an individual serial title.

C. Bibliographic relationships as perceived by the American Library Association

Cutter's approach was borrowed by the American Library Association and the Library of Congress when these two institutions worked to develop the cataloging codes. The objective of collocating related bibliographic items remained one of the shaping forces for the A.L.A. cataloging rules in 1908 and the Library of Congress descriptive cataloging rules in 1949. However, more tracing techniques were used to display bibliographic relationships in these rules than previously used. For example, the definition of serials began to appear in the glossary to explain the bibliographic relationships they had. The Library of Congress issued several versions of the *Guides to the Cataloging of the Serial Publications of Societies and Institutions* to provide instructions to handle these relationships. Thus, the chronological and hierarchical structure exemplified in serials publications has received considerable attention. Fully aware of the existence of the bibliographic relationships, code developers created more varied forms of linking devices. However, the relationships were still addressed at the

code development level and not at the theoretical level until the work of Lubetzky and

Verona.

2.2.2. Bibliographic relationships at the theoretical level

   A. Work of Lubetzky

The major contribution of Lubetzky to the bibliographic relationships literature is

two-fold. First, he revised Cutter's objectives which had remained unchallenged for 75

years. In "Cataloging Rules and Principles: a Critique of the A.L.A. Rules for Entry and a

Proposed Design for Their Revision," Lubetzky (1953, p. 36) sought to revise the second

objective of the catalog as follows "…to reveal to the user of the catalog, under one form

of the author's name, what works the library has by a given author and what editions or

translations of a given work." According to Svenonius (1989, p. 2), the significant

difference between Lubetzky's formulation and that of Cutter's was

> "the former explicitly calls for collocating the various physical manifestations of
> work, such as different editions and translations of it. That different editions of a
> work should be gathered and displayed in physical proximity is only implied in
> Cutter's third objective, an objective which, interestingly, is often overlooked in
> discussions of catalog objectives."

The objective formulated by Lubetzky was later adopted by other cataloging theorists

such as Wilson (1989), Verona (1959) and others. They suggested taking the second

objective, that is, to collocate the related bibliographic items in the library, as the primary

objective so as to allow patrons to retrieve every related bibliographic item that might be

of their interest

   Second was Lubeztky's study of the concept of work first mentioned by Panizzi in

his defense before the Royal Commission in 1840 (Bault 1972). Lubetzky (1969)

explained the concept to a greater extent. He differentiated between the concepts of

"book" and "work" and argued that "book" and "work" were coextensive only in the case where a work had been published but once. He argued further that while it was possible that the majority of works collected by large research libraries fell into the category of works existing in only one edition, these were possibly not the works most sought and used. According to Lubeztky, most frequently used books have multiple editions, with different title information, variants of the author's name, authorship, varying subtitles, different series, different subsidiary authors such a translators, editors, and etc. He concluded that human intervention was required to ensure that any user seeking a work was allowed to choose among all editions of that work held by the library. Though all the multiple editions were different manifestations of the work, they actually represented the "work" and therefore, all the editions should be associated or connected with each other through the "work". His discussion of the concept of the work matched well the revised objectives of Cutter he had proposed earlier. In addition, Lubetzky also proposed that the main entry of the library catalog should be the work. The author or the title should be the used as added entries for the retrieval purpose.

B. The application of work concept by International Federation of Libraries Associations and Institutions (IFLA)

IFLA proposed a new cataloging philosophy which integrated the concept of "work" with relational database technology. The Study Group on the Functional Requirements of Bibliographic Records developed the means to describe the bibliographic universe using four concepts: Work, Expression, Manifestation and Item. The relationships among these four concepts could be stated this way: work is realized through expression that is

embodied in manifestation that is exemplified by item (IFLA, 1998, p. 13). By dividing the bibliographic universe into four major categories and using them as the basis to do future cataloging, IFLA intended to create a universal catalog to facilitate the international cooperative cataloging endeavors and minimal cataloging practice. Though the proposal pays great attention to the universality of the bibliographic records, it lacks the instruments or tools to deal with the specificity of publications when formats, subjects, place and time are considered. Therefore, the empirical study of the specific bibliographic relationships with regard to the subject, place, time, and format would be a perfect complement to the IFLA study. It will play a crucial role in implementing the relational database catalog model, as Vellucci (1997) has suggested.

2.2.3. Empirical studies on bibliographic relationships

 A. Bibliographic relationships treated by UNIMARC

 The IFLA working group on content designators pointed out the hierarchical bibliographic relationships when the group was assembled to work on the UNIMARC format for bibliographic records in the 1980s. According to the group, hierarchical relationships exit between bibliographic descriptions of individual volumes of a multi-volume set and bibliographic descriptions of the multi-volume set itself, or between the portion of the bibliographic entity and its entirety (UNIMARC, 1980). This hierarchical relationship is a vertical one. In addition, the group also identified the horizontal relationship and the chronological relationship. Horizontal relationships refer to "the relationship between versions of an item in different languages, formats, media, etc; the chronological relationship in time between issues of an item, e. g., the relation of a serial

to its predecessors and successors" (UNIMARC, 1980, p. 58). Four hundred fields in the

MARC format are reserved for these relationships. Though the distinction between

different categories of bibliographic relationships was pointed out by IFLA for the first

time, the broad categorization of the relationships still got its shortcomings. Vellucci has

suggested:

> "The IFLA group that developed UNIMARC Format approached the
> identification of bibliographic relationships at a highly theoretical level. While
> these three broad categories are comprehensive in that all relationships can be
> fitted into them, they do not contain the degree of detail necessary to describe,
> distinguish, and classify all types of more complex relationships."
>
> ------- Vellucci (1997, p. 19)

B. Bibliographic relationship as identified by Tillett

Tillett (1987), through careful study of the cataloging literature and cataloging rules

since 1841 up to the current cataloging codes in 1987, examined bibliographic

relationships as well as tracing techniques. She proposed a taxonomy of bibliographic

relationships and explored the treatment of such relationships in cataloging rules. She

drew two conclusions: 1) even though practices existed to indicate bibliographic

relationships in library catalog since Panizzi's time, there lacked a general theoretical

framework for bibliographic relationships and thus no principles were found to guide

catalogers in treating these relationships (1987); and 2) the main driving force for

evolution of bibliographic relationships was the physical form of the library catalog

which itself developed through several phases, namely, the book catalog and the printed

card catalog (1987). The objective of Tillett's research was to develop a theory, based on

her research on the treatment of bibliographic relationships to provide guidelines and

assist in designing better catalog using computers, then a relatively new physical form of

library catalog.

Seven taxonomical bibliographic relationships, suggested by Tillett, are available for a given bibliographic item:

- equivalence relationship
- derivative relationship
- descriptive relationship
- whole-part/part-whole relationship
- accompanying relationship
- sequential relationship, and
- shared characteristic relationship

She stated that with the identification of these types of relationships, greater flexibility was available to display related materials for the catalog users. Though Tillett did not explicitly state that her research results of bibliographic relations could be associated with the Lubetzkian theory, the result of her research in fact provides great support to that cataloging theory which considers, as the first objective of the catalog, the collocating bibliographic relationships.

Detailed explanations of the seven relationships as well as their examples are given below. The methodology of the current research is based upon that taxonomy. The definitions and explanations of the relationships are quoted directly from Tillett's dissertation (1987, p. 191).

- **Equivalence Relationships**, which hold between exact copies of the same manifestations of a work, or between an original item and reproductions of its, as long as intellectual content and authorship are preserved;

- **Derivative Relationships**, which hold between a bibliographic item and a modification based on that item, for example, the second edition of a work is the derived product of the first edition;

- **Descriptive Relationships**, which hold between a bibliographic item or work and a description, criticism, evaluation, or review of that item or work;

- **Whole-part relationships**, which hold between a component part of a bibliographic item or work and its whole;

- **Accompanying Relationships**, which hold between a bibliographic item and the bibliographic item it accompanies, such that the two items augment each other equally or one item augments the other principal or predominant item;

- **Sequential Relationships**, which hold between bibliographic item that continue or precede one another, but are not considered derivative; and

- **Shared characteristic relationships**, which hold between a bibliographic item and another bibliographic item that is not otherwise related but coincidently has a common author, title, subject, or other characteristic used as an access point in a catalog.

Based upon these relationships, Tillett conducted a large-scale empirical study to determine the composition of each of these bibliographic relationships in the Library of Congress bibliographic database. Variables such as subject, format, language, and publication date were involved in her study. The following is a brief summary of the results of her research. It is presented here for the purpose of later comparison with the findings of this study.

Tillett found that in terms of occurrence of bibliographic relationships by the MARC formats, books prevail in "equivalence", "derivative" and "whole-part" relationships, with 63.4 percent, 79.3 percent and 75.01 percent respectively among all the MARC formats examined in the study. Serials ranked second for the equivalence relationship, constituting 36.05 percent of the records. There are nearly no equivalent bibliographic relationships found in the maps, visuals and music. For the derivative relationship, the maps was the second (13.41%) in rank, replacing serials which had but a 6.46 percent share for this relationship. Visuals and music both had less than 1%. For the whole-part relationship, the maps (14.28%) again ranked as second, followed by serials (4.95%). However, for this bibliographic relationship, the visuals had 4.48 percent, nearly the same as serials. The share of music remained low in this category, only 1.28 percent. However, for the accompanying and sequential bibliographic relationships, the

predominance of books disappears. Visuals had the largest share (65.98%), followed by serials, music, books, maps which had 16.29 percent, 13.42 percent, 3.77 percent, and 0.54 percent respectively. The serial was the only format that exhibited sequential relationship, at 100 percent. (Tillett 1987, p. 139-147)

In terms of the occurrence of bibliographic relationship within subject areas: for the five subject areas in her study, the whole-part relationship was most prevalent for all subject areas, followed by the derivative, accompanying, and equivalent relationship respectively except in the "unknown" subject area.

In terms of the occurrence of the bibliographic relations and publication date: For the 17th Century, not many items were published due to the still primitive technology for printing. Items in this category only accounted for 0.04 percent of her total sample. Pre-17th Century bibliographic terms that had whole-part and derivative relationships appeared most frequently. In the 18th Century, the sequential relationship was still the most prevalent bibliographic relationship. This was attributable, Tillett explained, to a special Library of Congress serials project. Bibliographic items with a derivative relationship grew fastest in the decades of 1960s and 1970s. Items of accompanying relationship were the least represented in the LC database but the publications with this relationship grew rapidly during the 1970s and 1980s.

In term of the occurrence of the bibliographic relationships by language, the most frequent occurrence was still the whole-part relationships across all languages examined in her study. Ranked second was the occurrence of derivative relationship for German, Italian and Russian and the sequential relationship occurrence for English, French, Spanish and Portuguese. Again, the occurrence of bibliographic records of the

accompanying relationship remained the lowest. Tillett, however, did not specifically study the Eastern languages such as Chinese and Japanese. Instead she included these languages in the "other categories", thus leaving it for further research.

Tillett's study of bibliographic relationships succeeded in presenting a much more detailed analysis of relationship types than had IFLA. However, some methodological problems were present in here study. Tillett derived her research data by using a program which examined MARC records in the Library of Congress system. Therefore, it is possible that some of the records were counted for several times in calculating the percentage of the materials that have bibliographic relationships. Further, Tillett did not examine the physical items, relying instead exclusively on MARC records as the basis for her study. Given the size of items in her study, this is certainly understandable. However, in doing so, Tillett placed her trust at the MARC records that are most likely not fully representative of all bibliographic relationships an item possesses.

C. Bibliographic relationships perceived by Vellucci

Vellucci studied the bibliographic relationships of musical publications in the collection of a large academic music library serving a music conservatory population. She hypothesized that more varied relationships would appear in the musical publications due to the frequent dramatization, novelization, different performance, different publication media, etc., thus requiring greater depth in the library catalog to collocate related items. Her empirical research methodology produced a descriptive characterization of music score bibliographic entities found in the collection. She used Tillett's taxonomy of the bibliographic relationships as the foundations for her empirical

study. The result of her study revealed that nearly 90% of music publications bear this, another, or several, bibliographic relationships at the same time. Instead of retrieving data using catalog card or online catalog for the music publications of the sample, Vellucci did examine the physical items and analyzed the data derived from this examination.

D. Other small-scale studies of bibliographic relationships

In addition to Tillett's study on the bibliographic relationships, there are other studies of a smaller scope examining only one type of the relationships, or one aspect of a relationship. One example was the study conducted by McNellis who explored one aspect of the equivalence relationship (McNellis, 1985). In order to determine the existence of multiple physical manifestations of the sample items, McNellis examined bibliographic records of the Regenstein Library of University of Chicago and compared these records with those retrieved from other online databases such as OCLC and RLIN database, and *the National Union Catalo*g. Her findings stated that between 21 percent and 33 percent of the sampled collection was found to have multiple manifestations.

Smiraglia (1992), in a study of the derivative bibliographic relationship in 1992, examined bibliographic families in the academic library catalog of Georgetown University. His study sought to reveal the characteristics and extent of the derivative relationship among works represented in that online catalog. Like Tillett, Smiraglia also developed a taxonomy of the derivative relationships. Smiraglia's study contained two important findings that were pertinent to the current study of bibliographic relationships. He found that 49.9 percent of the works in his sample exhibited a derivative relationship, a proportion more than twice the 16 percent Tillett reported. His study also suggested that

derivative relationships appeared with much greater frequency for works in the humanities.

As has been noted, the primary goal in studying the bibliographic relationships is to provide information to assist in modification of cataloging codes and make them better represent the relationships of bibliographic items. A library catalog, produced according to such a code, could be more expressive and therefore, potentially of greater value to the user. Moreover, the results of the studies of bibliographic relationships, as indicated by Vellucci (1997), will be one of the crucial elements in the design of a relational database model of the library catalog. However, when we examine the literature that was devoted to the bibliographic relationships, we found that they were almost entirely based upon the Western publications. The study of the bibliographic relationship of the Eastern publications has been largely absent in the literature except for one that deals with UNIMARC for cataloging Chinese materials in the United States in *Chinese MARC Format* (1982). Unfortunately, the text of the bibliographic relationships in the report of the Chinese MARC Format is the same as that in the UNIMARC.

This study is designed to produce a description of the characteristics of the Chinese publications in the collections in the academic library in the University of North Carolina in the United States. It is hoped that the study will enrich the literature on the bibliographic relationships for Chinese publications.

Chapter 3 Research Methodology

The scarcity of literature dealing with the bibliographic relationships of Chinese

publications demonstrates the necessity for a study designed to describe the features and

characteristics of the Chinese publications. The current study will do that and also

identify, describe and classify the bibliographic relationships on the basis of the

taxonomy given by Tillett (1987). In addition, another important objective of this study is

to discover the differences and similarities, if any, between Chinese publications and

Western publications in terms of their bibliographic relationships. This will allow

attention to be given to any special characteristics of the publications when new

cataloging codes and systems are created. A cataloging code and system that is tailored to

the traits of Chinese publications would be of great assistance to the Chinese cataloging

community in the United States and elsewhere.

3.1. Research Questions

1. What are the physical and publication characteristics of Chinese collections in the

   academic libraries in the United States? What is the predominant form, media,

   publication date and region of publication?

2. What kinds of bibliographic relationships are observed for Chinese publications?

   What proportion of these publications exhibit at least one bibliographic

   relationship? What proportion has two or more of these relationships? Are there

any differences in terms of the percentage of the items that bear bibliographic

relationships and those that do not? What proportion of Chinese publications are

members of each category of the taxonomy of bibliographic relationships?

3. What are the differences and similarities, if any, between Western publications

and Chinese ones in terms of bibliographic relationships?

3.2. Methodology

A sample of Chinese bibliographic records was derived from the catalog of the

Academic Affairs Libraries of the University of North Carolina at Chapel Hill (UNC-

CH). That sample was used as the basis for the study. Although a variety of techniques

were available to draw the sample, they were not adopted for the current study. One

option would be to have been to use OCLC or RLIN database from which to draw a

sample since they provide catalog records for Chinese publications. Thus, any research

results would be more representative of the entire population. However, the option had its

disadvantages: 1) the researcher did not have physical access to all material that would be

drawn for such sampling materials; 2) catalog records in these databases were potentially

contributed by all types of libraries, including public libraries whose catalogers might not

implement AACR2 second level cataloging. Thus, these catalog records might not be

detailed enough to include information about bibliographic relationships. Another option

was to use the catalog for the Chinese collections of the Library of Congress or Harvard

Yenqing Library which are the largest collections of these publications in the U. S.

However, there is no separate catalog for the Chinese publications in these libraries and

thus no way to draw the sample. Although it is possible to conduct a profiled computer

query to find all the Chinese items in these libraries, it would require the approval of the

heads of these Chinese collections as well as the cooperation from theirs IT departments.

Not knowing any people from those libraries and geographical distance resulted in this

approach being dismissed from further consideration. The decision to use the catalog of

the Academic Affairs Libraries at the UNC-CH has several advantages over the other

options mentioned. First, the Chinese collection in the Academic Affairs Libraries is the

largest in the American South, with over 100,000 Chinese publications. The size is large

enough for the current study to get representative data of general Chinese publications in

the humanities and social sciences. Second, that collection at UNC-CH is physically

accessible to the author, therefore, making it possible to obtain the publications

themselves to allow checking whether the catalog was sufficiently representative in terms

of describing bibliographic relationships. Third, the Academic Affairs Libraries maintain

a separate shelf list for its East Asian Resources, a big proportion of which are the

Chinese publications. This could prove useful should a backup to the online catalog prove

necessary. As a result, the catalog of the East Asia Resources is chosen for the source for

the selection of the sample for this study.

3.2.1. East Asia Resources

The East Asian Resources (EAR) was created in the 1960s to support the curriculum

of the China studies program in the University of North Carolina at Chapel Hill.

Approximately at the same time, the EAR reached an agreement with its counterpart in

Duke University on collection development in order to create a larger East Asia resources

center in the Research Triangle area that would otherwise be impossible. According to

that agreement, the EAR at UNC-CH would emphasize on the Chinese materials while that at Duke University would emphasize the Japanese and Korean languages and cultures. As a result, the predominant materials in East Asia Resources at UNC-CH are Chinese materials. As of June 30, 2000, East Asian materials in its Academic Affairs Libraries numbered 111,812 publications, of which 106,004 publications are in Chinese, 5,488 publications in Japanese and 317 publications in Korean. The largest proportion of Chinese material is language and literature, including both classical and modern literary work. The second largest proportion of materials is Chinese history ranging from the very early period to the Ming Dynasty, Qing Dynasty and post revolutionary periods. Collections on Chinese philosophy, religion, art, political science, economics and other areas of study are also found in the collection. They tend to grow steadily as persons interested in these subjects areas increase. In addition, sources on popular culture, women's studies, and media have begun to appear in the collection.

The Academic Affairs Libraries at the University use the LC classification system, thus the materials are arranged in the order of the LC classification schedule. The classes that cover the Chinese collection are A, B, D, DS, E, G, PL, PN, Q, T, and Z. The predominant format in the collection is printed monograph. The second largest volume of material is found in the microfilm publications. They total at 11,327 items. Additionally, the University libraries hold 630 current serials in Chinese, Japanese, and Korean in the humanities and social sciences. It also has a non-print collection of more than 300 films from China, Hong Kong, Taiwan and Japan. The EAR maintains a card shelf list for the Chinese materials acquired prior to 2000.

3.2.2. Sampling

As mentioned previously, the UNC-CH East Asia Resources (EAR) contained approximately 106,004 items as of June, 2000. A formula used by Vellucci (1997) and Clark (1984) was used to determine sample size. The sample size was determined to be approximately between 321-330 items for this study. They were retrieved from the collection in a systematic manner. That formula is

$$n = [z*z*n*p*(1-p)]/[n*E*E+z*z*p*(1-p)],$$

where n = sample size; z=curve value for confidence interval 95% (1.96); N = total population in sampling frame (106,004); p= expected proportion of items exhibiting relationships (70%); and E = tolerable error ± 5%. The percentage of the items exhibiting these relationships is difficult to determine since no one has explored this question for Chinese publications. Thus, it was assumed that the proportion of Chinese materials in this collection was similar to that of the western materials, i.e., 70 percent. That percentage is lower than the one found by Barbara Tillett which is 75%.

The following are considerations the research had in selecting the items out of the sample. First the sample could be selected randomly from the stacks so that the physical items could be examined for bibliographic relationship. As the EAR items are interfiled with other bibliographic items in UNC-CH Academic Affairs Libraries system, regardless of language, it would be a daunting job to actually count these Chinese materials out of the stacks. The second method would be to select the catalog records, instead of the documents themselves from the online shelf list. However, to use the online catalog to identify this online shelf list is again impossible one, as some of the items retrieved using this method are not Chinese publications. Moreover, due the size of the

collection, the shelf list would extend hundreds of screens. Therefore, that plan was also aborted. Thus, employing the latest statistic for the holdings of EAR of UNC-CH available into consideration, using the card shelf list was the most realistic means of drawing a sample for this study.

3.2.3. Data collection

Two options were available to select the 321 items from the shelf list cards. One option was to determine the first random card to be selected and then to count the every 330 items[2] and then get a card out. The other option was to measure linearly the shelf list card file and select one card out from every N centimeter. The first option requires counting every 330 cards in the total of 106,004 cards in the shelf list. It was determined to be unrealistic. Therefore, the second option was chosen as the method to draw the sample. However, there is one slight disadvantage associated with this method: the thickness of the cards produced in different times varies. However, the slight variation this causes in counting was not deemed to negate the randomness of the sample selection. Moreover, in the case of the EAR shelf list, the disadvantage did not pose much of a problem for this study as the old cards are scattered throughout the shelf list.

Several steps were involved in getting the cards for the sample. 1) Obtaining a total linear measurement of the shelf list file. The card file for the shelf list of East Asia Resources comprises 36 catalog card drawers. In order to obtain the total length of the shelf list file, a linear measurement of each individual drawer was made using a ruler and metric measurement. The length of the shelf list was 794 cm. 2) Obtaining the sample. The sample cards are retrieved in this way: The first card retrieved was the eighth card at

the beginning of the card file. Then another shelf list card was retrieved by every 2.47cm.

Use of this method of retrieval, not exact due to possible variation in the manual

measurement, was deemed acceptable in terms of randomness. Consequently, a total of

333 shelf list cards were selected for use as the study's sample, 12 extra cards which

turned out to be useful, too. 3) With the sample shelf list cards selected, the bibliographic

items needed to be drawn from the collections for the future analysis of the bibliographic

relationships. Here a problem was encountered. Many of the items in the sample were

stored in a compact storage location not accessible for clients. Use of these materials

requires special procedures to obtain these books and would be unacceptable in terms of

time. Consequently, the sample cards were used exclusively as the data for the analysis of

bibliographic relationships. But is the information on the cards adequate for this analysis?

To determine whether the catalog cards provided sufficient data on the bibliographic

relationships, 30 cards were randomly selected from the sample cards. Those 30

bibliographic items represented by those shelf list cards were retrieved from the stacks

for examination. The bibliographic relationships that existed in publications were

compared with the descriptions on the shelf list cards to determine the adequacy of the

cards in term of representing the bibliographic relationships.

One assumption in method of sample selection used is that drawing sample from a

card file arranged according to the order of the Library of Congress classification will not

have any effect upon the occurrences of bibliographic relationships in a collection.

3.2.4. Data analysis method

Microsoft Excel and Microsoft Access database software were used as the tools to analyze the data. At the time of data entry, every item published in Japan, Korea or other countries other than China, Taiwan, Hong Kong and Macau were excluded from the sample. Exclusion of these data decreased the total size of the sample involved in the study. The number excluded was small. Moreover, these cards were replaced by the extra cards retrieved in the first place due to imprecision of the manual measurement.

Chapter 4 Data Analysis

Due to the local policy of the Academic Affairs Libraries at UNC-CH, the East Asia Resources' shelf list also has interfiled publications of Japan, Korean, as well as other countries and regions. Thus these were retrieved during the sample collection phase. Data were entered into the Microsoft Excel and Access files. All non-Chinese publications were excluded from the analysis process. Consequently, a total sample of 299 items comprised the sample. Thirty-four publications, approximately 10 percent of initial sample were be non-Chinese publications and excluded. The percentage of the excluded is a slightly higher than the percentage that Japanese and Korean publications constitute of the total holdings of East Asia Resources.

4.1. General characteristics of the sample bibliographic items

The research results of previous studies (Tillett, 1987; Vellucci 1997; Smagnalia, 1992) found that factors such as publication format, publication date, country of publication, and subject matter of the publication, have direct relations to each of the bibliographic relationships category. Consequently, the description of the general characteristics of the sample provides a general view of the sample in terms of format, date, place of publication, and subject. At the same time, it prepares the way for the analysis in relations between these factors to the bibliographic relationships.

4.1.1. The format characteristics

The items in the sample consist of books, serials[3], video cassettes, music and map, that is, widely available general publications. However, electronic resources did not appear in the sample. One of the reasons might be that electronic resources are recent products of the publishing industry in China. Since the sampling population does not include items after 2000, it is possible that this accounts for the absences of electronic resources. Of these publication formats in the sample, the books (154 titles) are the largest proportion of the sample, 51.5 percent. The second most represented formats are serials, 135 titles (45.15%). It should be noted that examination of the serials reveals that most of the serials were members of numbered and un-numbered monographic series. Non monographic series constituted 6 percent of the sample (16 serials). Other formats in the sample were 4 microfilms (1.34%), 2 music titles (0.66%), 3 video recordings (1%) and 1 map (0.33%). Table 1 shows the composition by format of the sample.

Table 1: Number of bibliographic titles by format

Format of the Records	Number	Percentage
Books	154	51.50
Serials	135	45.15
Microfilm	4	1.34
Video Recordings	3	1.00
Music	2	0.66
Map	1	0.33
Total	299	100

One major difference in terms of format between the sample data for this study and that of Tillett's study needs to be point out here. The number of serials in Tillett's sample was 321,646, 11.3 percent of the total of 2,854,252 records. That percentage of serials is

much lower than in current study[4]. This is accounted for by the difference between the Chinese collections at UNC-CH and the Western publications of the Library of Congress used in Tillett's study. Although the EAR collection has a focus on Humanities and Social Science, academic fields that are considered not as dependent on serials as are hard sciences e.g., chemistry, physics, etc., the percentage of serials exceeds their presence in western publications. One major reason is the publishing pattern in China: publishers use publication in series as a major advertising method to enhance sales. This method is very suitable for the humanities and social sciences works about China. Series like "Mini History Series" that covers the lengthy history of China appears frequently for the history cannot be depicted in a few volumes. Series publications that fall into this category predominate in Chinese publications. The culture, literature, and history of China are very rich and literary works on any of the subject could cause publishers to create lengthy series. Another frequent series titles use this pattern of titling: "Publisher's name + Series". This approach is especially effective if the publishers are well-known so that the use of their name conveys that the content of the items must be good and the work is well written. In the sample of the current study, the titles that belong to this category reach 50 titles, 37 percent of the total number of serials in the sample.

4.1.2. The publication date characteristics

Publication date is also a very important aspect of the characteristics of a bibliographic item. This information helps in analyzing the characteristics of the bibliographic relationships in different periods of time. The EAR collection began in the 1960s, thus it is reasonable to assume that most of the publications in the collection were

published after 1960 since the EAR does not support an ancient rare book collection, nor

do much antiquaries or retrospective purchasing. This assumption is supported by the

data presented in the Table 2.

Table 2 shows the numbers of publications in each decade in the 20th century in the

EAR sample. The publications are grouped by decades if they were published after 1900.

The EAR sample did not contain bibliographic items published prior to 1900.

Table 2: Number of bibliographic items published in by decade

Publication Date	No. of Record	Percentage of the Total
No Date	14	4.68
1900-1909	0	0
1910-1919	1	0.30
1920-1929	0	0
1930-1939	3	1.00
1940-1949	4	1.33
1950-1959	14	4.68
1960-1969	26	8.69
1970-1979	48	16.05
1980-1989	115	38.46
1990-1999	73	24.41
Total	299	100

This table indicates that the East Asia Resources began its collection in 1960. It has

relatively few publications before that date, 7.31 percent of the sample. After 1959, the

collection increases at a steady pace until the 1990. Based on the date in the sample,

acquisitions of publications in the 1980s increased notably and form the bulk of the EAR

collection. Several reasons account for. First, the programs of Chinese studies at the

University of North Carolina as well as in Duke University became more mature in the

1980s and thus required more resources to support their teaching and research activities.

Second, there is a political aspect. During the 1960s and 1970s, the Culture Revolution

was active across all China. One of the focuses of the revolution was to destroy the feudalist and superstitious culture and history of the "Old China" as well as to eliminate capitalist influences upon China. Under the mask of this goal, many manuscripts and books about Chinese history were destroyed while books about foreign countries, social and culture institutions and politics were forbidden. Consequently, the publishing industry received a harsh blow during the Cultural Revolution and, its production decreased to a large extent. Additionally, the movement had negative consequences for the domestic culture, educational market, and related foreign markets, such as the market for East Asia materials across the North America. It was not until the late in 1970s that the revolution was stopped and conditions began to return to normal again. This perhaps helps to explain the distribution of bibliographic items in the collection in terms of date of publications. .

A decline in publication acquired occurs in the 1990s. This decline might be attributable to a major decline in funding for the purchase the East Asia materials. No reason other than the local library policy and management decisions would seem to explain it. For 4.7 percent of the sample the publication date could not be determined. Four of these publications were journals whose first publication date was unknown. None of the three video tapes bears publication date. Although the approximate date could have been conjectured, the catalogers of these works chose not to do so. The remaining bibliographic items with unknown publication dates are monographic items. Their publication dates could not be ascertained from either the shelf list cards or the publication itself. As the publishing practices in China becomes more standardized,

publications lacking a date will likely become fewer. The distribution of the Chinese

publications through the last century can be better shown with the following chart.

Chart 1: Number of bibliographic items published in each decade

No. of Records
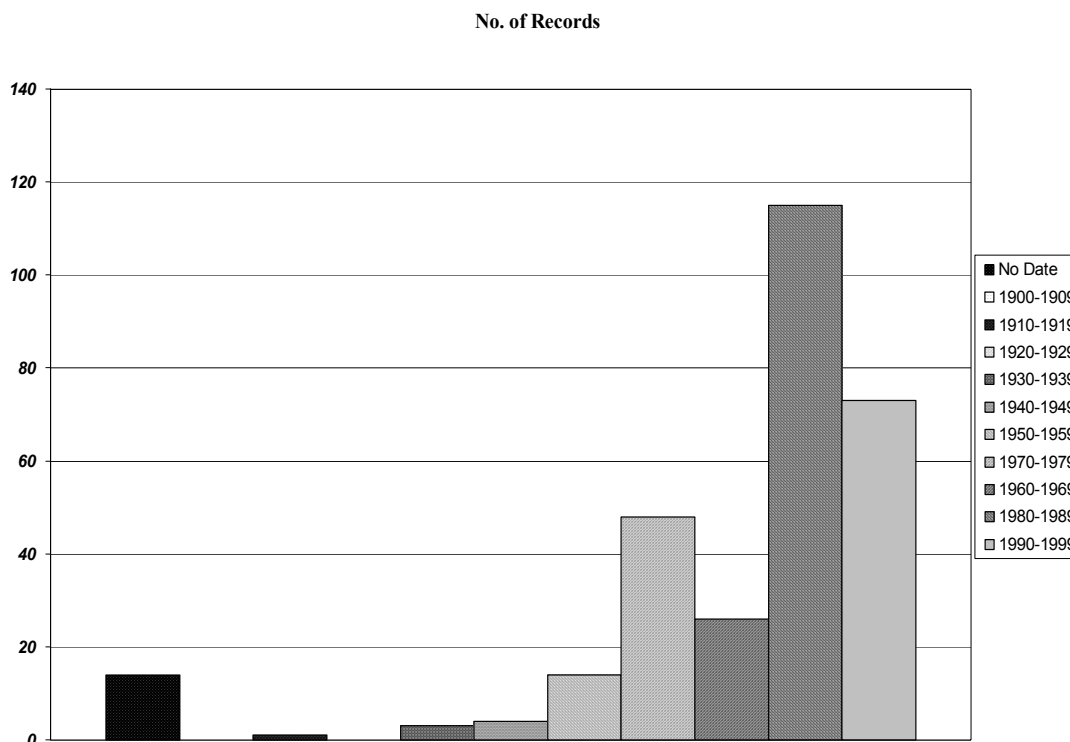
4.1.3. Characteristics of publications by place

In both Tillet's and Vellucci's studies, the country of publication was considered a

variable that would impose different features on the publications. Though China is

considered one country from the view of politics and culture, there are still great

geographic and historic differences that have effect upon the patterns of publishing and

thus, its publications. For the purpose of this study, the bibliographic items are clustered

into to four groups: those published in Mainland China, Taiwan, Hong Kong and Macau.

This geographic division is most appropriate for the current study in that the differences

between these four areas did not occur until the mid-20th century. After the end of Second

World War in 1945 and the Chinese Civil War in 1949, mainland China was under the

control of the Communist Part led by Mao Zedong. Numerous Chinese fled to Taiwan

and the rise of Guo Min Dang in gaining the political power. At the same time, Hong

Kong remained under the control of Great Britain until 1997. Similarly Macau remained

under the control of Portuguese until 1999. It seems a norm in Asia that politics are

bound to exert a great influence upon the culture. That influence will be discussed in the

next section when the relationships between two variables, i.e., the bibliographic

relationship and the publication place, are analyzed. In this section, the number of

publications in each region will be presented in the following table.

Table 3: Number of bibliographic items for each region

Place of Publication	Number of Records	Percentage of Total
Mainland China	171	57.19
Taiwan	100	33.44
Hong Kong	23	7.69
Macau	1	0.33
Unknown	4	1.33
Total	299	100

4.1.4. The subject characteristics

As indicated previously, the EAR Chinese collection has a focus on the humanities

and social sciences. However, dividing the sample cards into humanities and social

sciences is too broad and insufficient to provide a detailed view of the subject

distributions of the Chinese collection. Both Tillett (1987) and Smiraglia (1992)

determined that high frequencies of different bibliographic relationships appeared in

bibliographic items in different subjects. Therefore, a view of the distribution of the

sample in terms of the subject will be helpful. The subjects are identified by their Library of Congress classification assignment. Table 4 provides the distribution of bibliographic items for each subject of the sample.

Table 4: Number of bibliographic items by subject[5]

Subject of Publication	Number of Records	Percentage of Total
A - General Works	18	6.02
B - Philosophy & Religion	15	5.01
C - Auxiliary Sciences of History	3	1.00
D, DS - History	75	25.08
G - Recreation, Maps, Geography	4	1.33
H - Social Science	30	10.03
J - Political Science	9	3.01
K - Law	4	1.33
L - Education	2	0.68
M - Music	3	1.00
N - Fine Arts	8	2.68
PL, PN - Literature	98	32.77
Q - Science	3	1.00
R - Medicine	5	1.67
T - Technology	2	0.67
U - Military Science	1	0.33
Z - Bibliography, Library Science	8	2.68
Unclassified	7	2.34
Total	299	100

The bibliographic items in the humanities, i.e., in Chinese literature, history, music, fine arts, philosophy, and religion, represent over 66 percent of the total sample. The proportion of the Chinese collections in humanities subjects can be understood by taking two facts into consideration. China has a great tradition focusing on the literal writing and history throughout the many dynasties in its long history. Additionally, printing was introduced and distributed in China almost thousand years ago. Undoubtedly, printing helped to increase the number of copies of literary and historical works. Consequently,

much of this work, even though some was destroyed in wars, was able to be passed to the current generation. Secondly, attracted by the richness of Chinese culture and history, many early China studies scholars focused upon the study of the humanities. This accounts for why bibliographic items in the humanities predominate in the Chinese collections of the EAR. This is also true for other Chinese collections in North America. This high concentration in the subjects of humanities is dependent upon local policies of a library too. The cooperative collection development agreement between the University of North Carolina at Chapel Hill and Duke University also plays a role in subject distribution of the EAR.

Table 4 shows that the social science collections of EAR represent only 10 percent of the total collection. This percentage is much lower than that in Tillett's study (38.4%). Also Tillett's study had bibliographic items in humanities represent 36 percent of the sample, a figure lower than that for the social sciences. The large holding difference in the social sciences between the oriental and the western publications as reflected in Tillett's study lies in the difference of academic disciplines between the West and the East. The social sciences are relatively young disciplines for China. They developed in rapidly only after 1978, when China began its Reform and Open Policy which boosts academic and educational exchange between the West and the East. The time span in which the Chinese social sciences grew is much shorter than that of the Western. Therefore, it is not difficult to understand why sharp differences exist. If subject has a great effect upon the occurrence of bibliographic relationships, these relationships in the Chinese collections in the EAR likely will have a different pattern from the western one.

4.2. Frequency of occurrence of relationships

The frequency of occurrence of relationships are examined in this section by considering factors abovementioned, that is, the format of publication, the publication date, region of publication, and the subjects of the publication. It is intended to identify the structure of the bibliographic relationships in Chinese publications present in the North American Chinese studies collections and further to identify the discrepancies in the patterns of bibliographic relationships compared to those of Western publication. In the process of comparison and contrast, the research results of Tillett are cited as representative of Western publications. It is hoped that these research results may provide valuable information for the IFLA and OCLC as they work on a new catalog structure designed on a relational database model.

4.2.1. The method of counting the frequency of occurrence of bibliographic relationships

The bibliographic descriptions of each shelf list card were analyzed to discover bibliographic relationship or relationships the bibliographic item had, and frequency is thus determined according to the description.

4.2.2.. Occurrence of bibliographic relationships in the study

One of the research questions of the study is asked the percentage of items that bear any kind of bibliographic relationships among the sample. Table 5 displays these figures. The occurrence of each bibliographic relationship is presented in Table 6. The analysis of shared characteristics relationships involves many standards and aspects of the study of

books. It goes beyond the purpose of the current study, and therefore, it is not included here.

Table 5: Occurrence of bibliographic relationships[6]

Number of Relationships a Bibliographic Item shows	Number of Occurrence	Percentage of Total
1 relationship	96	32.11
2 relationships	69	22.07
3 relationships	36	11.37
4 relationships	4	1.00
Subtotal	206	68.89
0 relationship	93	31.11
Total	299	100

Table 6: Occurrence of bibliographic relationships

Bibliographic Relationship	Number of Occurrence	Percentage of Total
Equivalent relationship	44	14.72
Derivative relationship	29	9.70
Descriptive Relationship	16	5.35
Whole-part Relationship	161	53.85
Accompanying Relationship	16	5.35
Sequential Relationship	93	30.76
Items that bears relationship(s)	206	68.89

Tillett's results showed an equivalent of 75 percent of the records in the Library of Congress Database containing a bibliographic relationship. The current study has slight more than 68.9 percent of the sample having a bibliographic relationship. Results of the two studies are close. One new finding of the current study is that items that bear 2 or more bibliographic relationships exceeds one third (34.4%) of the total sample. This should be considered when a new catalog structure is designed. Similar to earlier studies (Tillet, 1987; Vellucci 1997), the predominant bibliographic relationships in the Chinese collections is the Whole-Part relationship. That relationship exceeds half of the total (53.85%) bibliographic items in this study.

4.2.3. Publication format and bibliographic relationships

The occurrence of each bibliographic relationships found in the sample are examined across the publication formats, that is, books, serials, maps, music, microfilm, and video recordings. The occurrence of each of the relationships is contrasted to the total items within the same category of the bibliographic relationship. The findings are presented Tables 7 and 8 and Chart 2.

Table 7 Number of bibliographic records displaying relationships by format

Bibliographic Relationship	Book	Serials	Maps	Music	Video	Microfilm	Total
Equivalent	16	27	0	0	0	1	44
Derivative	17	9	0	1	2	0	29
Descriptive	8	6	0	1	1	0	16
Whole-part	22	135	0	1	0	3	161
Accompanying	5	11	0	0	0	0	16
Sequential	2	87	0	1	1	2	93
Total of Items by Format	155	135	1	2	3	4	299

Table 8 Percentage of bibliographic records displaying relationships by format

Bibliographic Relationship	Book	Serials	Maps	Music	Video	Microfilm	Total
Equivalent	36.36%	61.36%	0%	0%	0%	2.27%	100%
Derivative	58.62%	31.03%	0%	3.45%	6.90%	0%	100%
Descriptive	50.00%	37.50%	0%	6.25%	6.25%	0%	100%
Whole-part	13.66%	83.85%	0%	0.65%	0%	1.94%	100%
Accompanying	31.25%	38.75%	0%	0%	0%	0%	100%
Sequential	2.15%	93.55%	0%	1.07%	1.07%	2.15%	100%
Total	51.50%	45.15%	0.33%	0.66%	1.00%	1.34%	100%

Chart 2: Percentage of bibliographic records displaying relationships by format
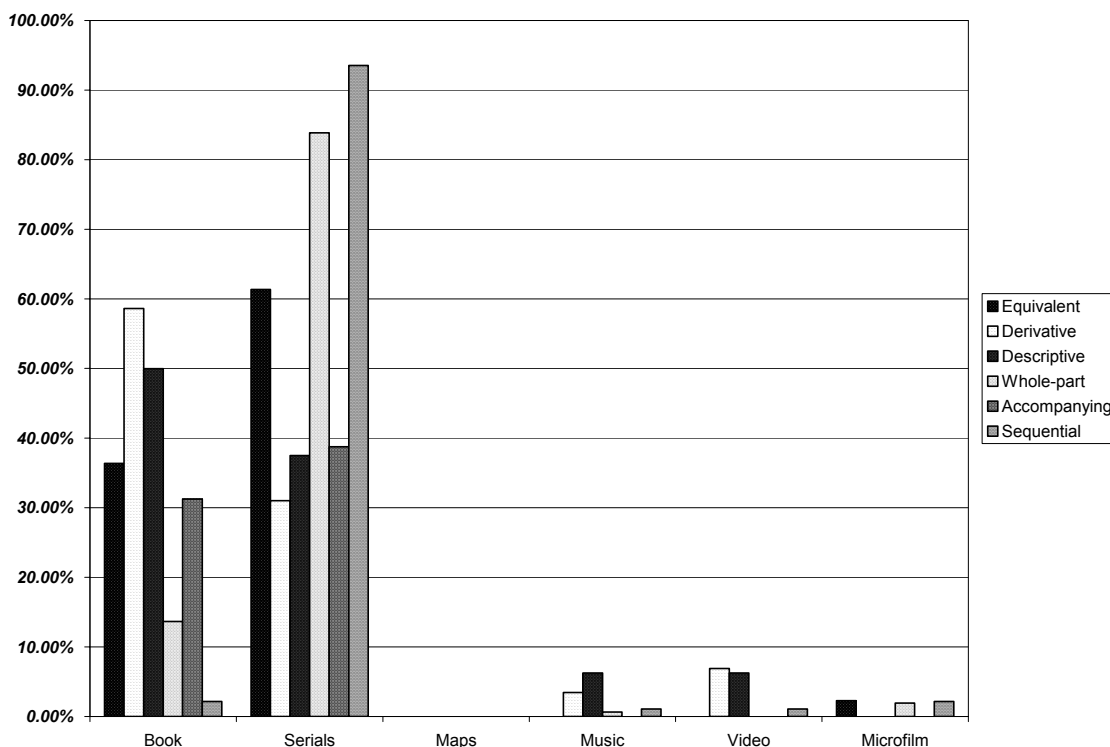
As shown in Table 7 and 8 and Chart 2, the majority of the records having an

equivalent, descriptive, whole-part, accompanying and sequential relationships are

serials, followed by books. The status of serials is attributable to the serials being

monographic series. This result is by great contrast to Tillett's findings that had books

leading in these relationships. Most of records for series that bear the equivalent

relationship belong to reprint type. For example, several publishers published series as

the reprint of "Wen Yuan Ge Manuscript", which is itself a large literary work of great

value in the Qing Dynasty. Serials also lead in the whole-part relationship because the

base number of the serials are large and also because whole-part relationships occur for

every serials in the sample. The big difference exists between the number of serials that

bear whole-part relationships and those that bear the sequential relationship. The

difference of 48 titles is nearly one third of the serials in the sample. Unnumbered series titles such as "Mini History series" are large responsible for this. Most of the bibliographic items that exhibit the accompanying relationship have a mini literary work that augments the content, explains the context, or introduces more resources related to the item. Regarding the sequential relationship, not all serials of Chinese origin bear either a chronological or other sequential designations. This is attributable to unnumbered monographic series in the sample which by definition are serials. For journals, the sequential relationship occurs for 100 percent of them.

Conversely, for the derivative relationship, the majority of items in the sample are books (58.62%). This finding is the same as that of Tillett's study, though the percentage is not as high as that in her study (79.03%). The three video recordings in the sample are worthy of comment here. Two of them have a derivative relationship. Assuming that these three video recordings representative of Chinese video productions, then visual materials would feature a derivative relationship given that many are adapted from other works.

4.2.4. Publication date and the bibliographic relationships

The occurrence of each type of bibliographic relationships was counted for each decade of the 20th century. Table 9 shows the distributions of the relationships across the decades.

Table 9 Occurrence of the bibliographic relationships by decades

Date	Equivalent	Derivative	Descriptive	Whole/Part	Accompanying	Sequential	Total
NV	4	4	0	13	0	10	13
1900-09	0	0	0	0	0	0	0
1910-10	0	0	0	1	0	1	1
1920-29	0	0	0	0	0	0	0
1930-39	0	0	0	1	0	1	3
1940-49	1	2	0	2	0	1	4
1950-59	1	0	0	6	0	4	14
1960-69	6	2	2	15	4	89	26
1970-79	16	5	3	27	2	20	48
1980-89	12	12	8	50	8	29	115
1990-99	4	4	3	46	2	19	74
Total	44	29	16	161	16	93	299

As shown in Table 9, skewing appears in the figures for all occurrences of most of the bibliographic relationship types in that they cluster from 1970 to1999. Tillett (1987) found that a significant difference existed between the occurrences of different relationships and publication date. A conclusion similar to hers cannot be made here even tough Table 9 shows a pattern similar to hers. This is because the EAR Chinese collections' holdings are predominantly from later decades of the 20th century. And it would be a wrong conclusion if the occurrences were used for the comparison given this unequal distribution of the collection by date. Therefore, it is not appropriate to use the data in Table 9 as the basis for conclusion about trends for the occurrence of bibliographic relationship across these decades.

Table 10 was developed to correct the problem when examining the significance between bibliographic relationships and date of publication. The percentage in each cell in the table was obtained using the following formula:

(Occurrence of type of relationship / total records for the decades) * 100% = %

Use of a percentage as the basis for comparison solves the problem of collection skewedness. Chart 3 presents another angle to see the distribution of each of bibliographic relationships across the decades.

Table 10 Percentage of occurrences of the bibliographic relationships type by decades

Date	Equivalent	Derivative	Descriptive	Whole/Part	Accompanying	Sequential	Total
NV	30.8	30.8	0	100	0	76.9	100
1900-09	0	0	0	0	0	0	0
1910-10	0	0	0	100	0	100	100
1920-29	0	0	0	0	0	0	0
1930-39	0	0	0	33.33	0	33.33	100
1940-49	25	50	0	50	0	25	100
1950-59	7.14	0	0	42.86	0	28.57	100
1960-69	23.08	7.69	7.69	57.69	15.38	30.67	100
1970-79	33.33	10.42	6.25	56.25	4.17	41.67	100
1980-89	10.43	10.43	6.96	43.48	6.96	25.22	100
1990-99	5.41	5.41	4.05	62.16	2.70	25.68	100

Chart 3 Percentage of occurrences of the bibliographic relationship type by decades
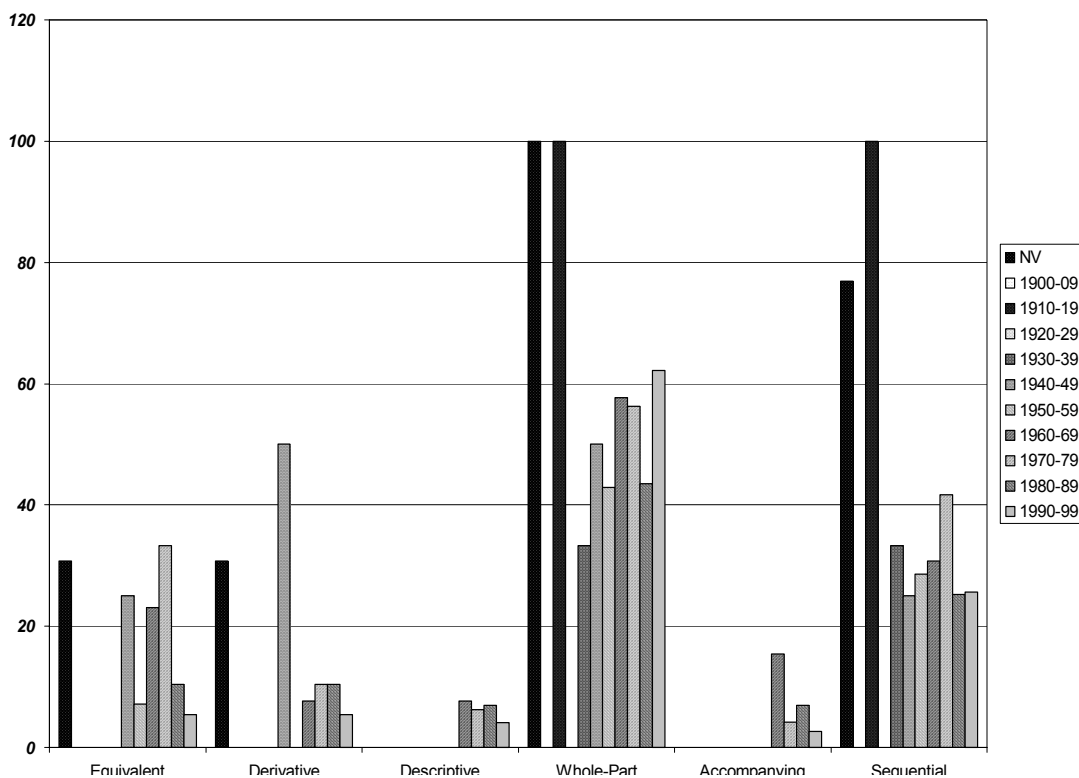
Table 10 indicates that whole-part and sequential relationships have existed since the beginning of the century. The percentage of occurrence for both of the bibliographic relationships in 1910-1919 is 100 percent. This can be misleading in that it is accounted for the only sample item retrieved for that decade which has both relationships. The sample drawn was insufficient to represent the publication pattern before 1950. Thus any relationships between the date of publication and bibliographic relationships can only be drawn for the period between 1950 and 1999. The only relationship type that shows an occurrence trend is the whole-part relationship. It increases in a stable manner. However, Table 10 and Chart 3 show that the bibliographic items that bear whole-part and sequential relationships comprise a large portion of the sample. That is, the Chinese publishers have produced journals, series, conference paper and books of collections of articles during the recent decades more than other format. These forms of publication seem to have established itself as the standard media for the publishing industry in China, Taiwan, Hong Kong and Macau.

For the equivalent, descriptive, derivative, and accompanying bibliographic relationship types, none predominates in any decade and no trend is observed of a growing number of occurrences chronologically. For the descriptive and derivative relationships, the appearance of these relationships is very dependent upon the author's intention for his/her literary work. Obviously, author's intention is the hardest thing to predict and therefore, it is impossible to predict in this study, either. With regard to the equivalent relationship, it is not predictable either. Tillett found that bibliographic items that are reprints, photocopies, etc., exhibit the equivalent relationship. Unless demand for a particular bibliographic item arises, there will not likely be any reproduction of it. It

appears that demand for the republication of Chinese literary works varies in each decade, thus leaving it impossible to detect any trend.

The accompanying relationship is worthy of special attention. The accompanying materials in the sample are mostly bibliographies, short stories or biographies related to the subject matter of the base item. It appears to be either the author's or publisher's decision whether or not to include these materials within the item or have them appear separately. Therefore, it is difficult to predict the appearance of this type of accompanying material. However, according to Table 10 and Chart 3, the bibliographic items that bear this bibliographic relationship seem to be decreasing in occurrence. On first examination this would appear to contrast greatly with the current popular perception that the frequency of accompanying relationships is increasing with the rise in the production of electronic resources, such as CD-ROMs and DVDs. This decreasing trend, however, can be explained by considering the current condition of the Chinese publishing industry and the sample chosen for the study. The publishing industry in China just began to produce CD-ROMs and DVD. The product of that industry in the sample did not reflect this change in publication with the cut off date of 1999.

Notable occurrence between bibliographic relationships and the date of publication only exist for the whole-part and sequential relationships. There is a hint of a co-occurrence between date of publication and the accompanying relationship, but it would require the data for publication more recent than the limitations of this study allowed. For the other types of bibliographic relationships with date, no relation appears to exist.

4.2.5. Region of publication and bibliographic relationships

Due to differences in geography, politics, and sub-culture, it is anticipated that some differences in publishing patterns would appear among regions of the "greater" China: China, Taiwan, Hong Kong and Macau. In Table 11, the occurrences of each relationship type are reported for each geographical region. Table 12 provides the percentage value of these bibliographic relationships.

No occurrence of bibliographic relationships exists for publications of Macau. Therefore, those publications are not further discussed in this section.

Table 11: Occurrence of bibliographic relationships by region

Relationship	China	Taiwan	Hong Kong	Macau	Unknown	Total
Equivalent	15	25	3	0	1	44
Derivative	16	10	2	0	1	29
Descriptive	10	5	1	0	0	16
Whole-part	72	72	14	0	3	161
Accompanying	8	8	0	0	0	16
Sequential	33	50	7	0	3	93
Total Records	171	100	23	1	4	299

Table 12: Percentage of occurrence of bibliographic relationships by region

Relationship	China	Taiwan	Hong Kong	Macau	Unknown	Total
Equivalent	8.77	25.0	13.04	0	25.0	100
Derivative	9.36	10.0	8.69	0	25.0	100
Descriptive	5.85	5.0	4.35	0	0	100
Whole-part	42.11	72.0	60.87	0	75.0	100
Accompanying	4.68	8.0	0	0	0	100
Sequential	19.29	50.0	30.43	0	75.0	100
Total Records	100	100	100	100	100	100

As shown in these two tables, the frequency of the equivalent relationship for Taiwan publications almost triples that of the Mainland China. A close examination of the sample items reveals that most of the bibliographic items of the equivalent relationship are reprints of valuable manuscripts created of the Qing Dynasty. The purpose of having

them reprinted is tow fold. First, it protected the original, and second, it met research demand. However, why does it happen more frequently in Taiwan than in China? Where is the place of origin of the manuscripts? The question can only be answered from the historical point of view. When Guo Min Dang led by Jiang Jieshi lost the Civil War to the Communist Party and fled to Taiwan, they took with them numerous treasures. Many of them were antiques, gold, and cultural artifacts. Moreover, they obtained support from the United States to assist them in developing their economy and culture. Further, many of their leaders were well-educated people who were knowledgeable of, and appreciative of, ancient Chinese literary work. This combination of conditions provided the needed financial resources and intellectual support for the establishment of a mini-Chinese culture in Taiwan. The Taiwanese publishing pattern reflects the historical development in Taiwan to some degree.

For derivative and descriptive relationships, there is no notable difference among the three major regions. It again supports the conclusion that the frequency or appearance of these two bibliographic relationships is independent of external factors such as region or date.

For the whole-part and sequential relationships, again Taiwan leads, followed by Hong Kong and then China. Publishers in Taiwan and Hong Kong were influenced by Western publishing styles from an early on. Thus, publication of series has long been one of their major means of advertising their works and thus achieved increased profitability. There is little wonder that Taiwan and Hong Kong's publications exhibit more occurrences in these two types of bibliographic relationships than does China which opened its door to the West and the methods of the western economy much later.

For each region in the study, the whole-part relationship is ranked first, followed by the sequential relationship, then by either the descriptive or the derivative relationship. The least frequent bibliographic relationship is always the accompanying relationship for Chinese publications to date. The order of the frequency of appearance of bibliographic relationships exhibits no sizable difference by region.

4.2.6. Subjects of publication and bibliographic relationships

The former studies of bibliographic relationships in Western publications reveal that the frequencies of each type of bibliographic relationships differ for the disciplines, e.g., the humanities, social sciences, etc. The following reports the pattern of the occurrence of each relationship for each broad category of disciplines.

The sample records for the current study were grouped into five categories: General, Sciences, Humanities, Social Sciences, and Unknown.

- General category:
  - A—the general works
  - G—Recreation, Maps, Geography
  - Z—Bibliography, Library Sciences;
- Sciences:
  - C—Auxiliary Sciences of History
  - Q—Science
  - T—Technology
  - U—Military Sciences;
- Humanities:
  - B—Philosophy and Religion
  - D — History (Including DS History of China)
  - M—Music
  - N—Fine arts
  - PL and PN—Chinese literature;
- Social Sciences;
  - H—Social Sciences
  - J—Political Sciences
  - K—Law
  - L—Education
- Unknown: works not classified in the EAR Chinese collection.

Table 13 presents the occurrence of the bibliographic relationships for each subject

group. Table 14 provides the percentage values of sample records having bibliographic

relationships.

Table 13 Occurrence of bibliographic relationships by subject groups

Relationship	General	Sciences	Humanities	Social Sciences	Unknown	Total
Equivalent	16	0	22	5	1	44
Derivative	3	2	19	2	3	29
Descriptive	2	0	13	0	1	16
Whole-part	23	3	106	22	7	161
Accompanying	1	0	14	0	1	16
Sequential	18	1	54	16	4	93
Total	36	9	197	46	11	299

Table 14 Percentage of occurrence of bibliographic relationships by subject groups

Relationship	General	Science	Humanities	Social Sciences	Unknown	Total
Equivalent	44.44	0	11.16	10.86	9.09	100
Derivative	8.33	22.22	9.64	4.38	27.27	100
Descriptive	5.55	0	6.59	0	9.09	100
Whole-part	63.89	33.33	53.81	47.83	63.63	100
Accompanying	2.77	0	7.11	0	9.09	100
Sequential	50.0	11.11	27.41	34.78	36.36	100
Total	100	100	100	100	100	100

It is unexpected that the general category would be ranked first for equivalent, whole

part and sequential relationships. For derivative relationships, the unknown category

ranked first. Tillett (1987) and Smiraglia (1992) found that the derivative relationship

appeared most frequently in the humanities. In contrast, the humanities category in this

study is ranked in the second position. This is likely attributable to the fact that the

bibliographic items in this category are microfilms and video recordings that are based on

other works, making the rate of incidence of the derivate type high. In terms of the

equivalent relationships, most occur in items in class A where ancient Chinese general

works are classified. Due to the high demand of this type of publication, the reprint rate is thought to be very high: 13 of the 19 sample items classified in A schedule have the equivalent relationship, nearly 70 percent share. Moreover, it is the norm for the publishers to issue items in this category in the form of series or serials. This makes the category rank first for the whole-part and sequential relationships.

The descriptive bibliographic relationship appears most frequently in both the humanities and the general subject group[7]. It could be understood it by considering the language evolution in China. Most of the literary work in China in philosophy, literature, history, and general works were written in ancient Chinese, a language that does not bear great similarities to modern Chinese. Therefore, in order to study the literature, many current works are intended to give annotations, descriptions, and explanations for the original works in ancient Chinese. This accounts for the fact that the descriptive relationship occurs most frequently in these two subject groups.

Again for each of the subject group, the whole-part relationship ranks first, followed by the sequential relationship. This pattern is very similar to that of Western publications. The accompanying relationship remains the least frequently occurring bibliographic relationships in the subject groups.

4.3. Summary of the findings of bibliographic relationships

In general, bibliographic items in the sample having bibliographic relationships constitute 68.9 percent of the whole sample. That percentage is approximately the same as for the Western publication used in the Tillett study. Among these items, 36.5 percent

bear 2 or more bibliographic relationships. The percentage of this occurrence is unknown

for Western publications.

For each type of bibliographic relationship, there are both great similarities and

difference in terms of the occurrence pattern of bibliographic relationships between

Western publication and the Chinese ones.

For the equivalent relationship, the highest frequencies of this relationship is found

for the serials (61.36%), followed by books (36.36%). The order of these two formats is

the reverse of that of the to the Tillett study. In her work the largest portion of this

relationship appeared in the books. Moreover, the equivalent relationship did not appear

until the 1950s for the Chinese publication. The variation of the frequencies of its

occurrence from 1970 to 1989 is not large, with the highest rate appear in the 1970-1979

(33.33%). For regions of publication, the bibliographic relationship appears most

frequently in Taiwan's publications (25%), followed by the publications in Hong Kong

(13.4%). Mainland China does not appear to reproduce its publications frequently, with a

rate of 8 percent. When considered by subject group, the relationship occurs in the

general subjects most frequently (44%), higher than the humanities, the subject group that

has the largest proportion of this relationship for the western publications.

For derivative relationship, 58.6 percent are for books, followed by serials (31.0 %).

This finding is similar to those of Tillett. Its rate of occurrence rate does not vary much in

the last four decades (1960-1999) in which most of the sample clusters. The decade with

the highest occurrence is the 1980s (10.54%). Notable variation in the derivative

relationship does not occur across the region of publication. This leads to the conclusion

that the occurrence of the derivative relationship is independent of external factors such

as time and place. This was attributable to the large number of items in the sample from the humanities although its percentage rate is not the highest. Rather, the highest rate appears in the unknown subject group, to which microfilm and video recordings belong. This finding is not in agreement with the previous studies which found that the humanities are leading the area for the derivative relationship.

For the descriptive relationship, 50 percent of the documents displaying it are for books, followed by serials (37.50%). There is no notable variation in terms of the occurrence of the descriptive relationship by region of publications or date of publication. Thus, like the derivative relationship, it is independent of external factors such as time and place. The descriptive relationship appears most frequently in the humanities and general subject groups for the Chinese publications due to the special literary characteristics and evolution of the Chinese language.

For the whole-part relationship, 83.9 percent are for serials. This result is again in great contrast to Tillet's results. The difference is attributable to two causes: One is that the serials in this study included all kinds of serials, including monographic series. The other reason is again related to the special characteristics of Chinese literary works and their publishing patterns. The occurrence rate of the whole-part relationship is always the highest whether by time, place, or subjects group. This finding is very similar to those for Western publications.

The accompanying relationship does not occur frequently among the Chinese publications. In terms of format, serials are more likely to bear this relationship than other formats. This is again different from the results of Tillett's study. It found visual materials had the accompanying relationship most frequently. The difference of this for

Chinese vs. Western publication is attributable to the publishing industry for visual

material in China being not advanced as in the West until very recent years. The

occurrence of the accompanying relationship does not exhibit great differences in terms

of place of publication.

For the sequential relationship, 94 percent of the documents having this relationship

are for serials, followed by books. This bibliographic relationship occurs most frequently

in the 1970s for Chinese publications. In terms of regions of publication, Taiwan's

publication of works with the sequential relationship is again in the leading position,

followed by Hong Kong, then by China. It is explained that Taiwan and Hong Kong

began the serials publishing earlier than did the Mainland China. The sequential

relationship appears most frequently in the general subject group (50%). This is partly

due to the special features of Chinese literary work, and partly due to the number of

records retrieved for that subject group.

Chapter 5 Limitations and Suggestions

5.1. Limitations of the Current Study

Two major limitations are associated with the current study, which are hard to correct due to characteristics of the collections and the limited time restrictions for conducting the study.

First, the Chinese collection in East Asia Resources of the University of North Carolina at Chapel Hill might not be large enough to be representative for Chinese publications. It does not have enough items produced before 1950s or items in the social sciences. The items from Hong Kong are not numerous enough for effective comparison to the other three major regions in the "greater" China. In terms of formats, the collection lacks audio publications while the video collection is not large. These deficiencies in the populations from which the sample was drawn might be a factor that impacts on some of the results of this study.

Second, the physical items were not retrieved for the study. Consequently, the data used were all derived from the shelf list cards. It is possible that the catalogers of these publications forgot to indicate bibliographic relationships in the catalog. Thus, the occurrence of bibliographic relationships could be higher. A test of this possible problem's occurrence revealed that the shelf list cards and the bibliographic items were in agreement in indicating bibliographic relationships for 96.7 percent records examined in the test. Thus, this limitation is considered minor and insignificant.

5.2. Suggestions for Future Study

Two suggestions are provided here for future studies of the bibliographic relationships among Chinese collections. One is the application in future catalog of the relational model. For example, how could the specificity of bibliographic relationships among Chinese publications be better mapped into a new catalog? What features should be added to the new catalog to represent the Chinese publications? Additionally, more works can be done on the linking devices that represent the bibliographic relationships in the catalog. Are these linking devices provided in AACR2 suffcient? If not, what techniques could be developed to make the linking devices richer and better compatible to the Chinese publications?

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Appendix I: Linear Measurement of the Shelf List of the East Asia Recourses Collection

Drawer Number	Card File Length of the Drawer (cm)	Drawer Number	Card File Length of the Drawer (cm)
1	22.5	19	26.0
2	22.5	20	25.5
3	25.5	21	23.0
4	27.5	22	27.3
5	23.5	23	29.5
6	23.5	24	27.0
7	27.7	25	24.0
8	26.5	26	25.0
9	22.5	27	20.0
10	18.0	28	19.0
11	17.5	29	26.5
12	20.5	30	19.5
13	15.5	31	22.5
14	19.5	32	20.5
15	18.0	33	17.0
16	18.5	34	24.0
17	21.0	35	20.5
18	18.0	36	9.0
Total: 794 cm			

Notes:

[1] The Catalogue of Printed Books in the British Museum (London, 1841), vol. I, pp. [v]-ix. Found in the appendix of *The Great Debate on Panizzi's Rules in 1847-1849: The Issues Discussed* (Brault, 1972)

[2] This number was obtained by dividing the total number of the publication of the Chinese collection by 321.

[3] Serials is defined according to the AACRII 2002 revision which considers periodicals, newspapers, annuals, journals, memoirs, proceedings, transactions and numbered and unnumbered monographic series as serials.

[4] After excluding the un-numbered series, the percentage is still as high as 31%.

[5] Four items in the sample selected were classified using Dewey Decimal Classification. For this study of this purpose their classes were converted to the corresponding LC classification.

[6] Over 100 items in the sample bear two or more than two bibliographic relationships. Therefore, the simple addition of the occurrence of each category of the bibliographic relationships would be larger than the total number of items in the sample. Therefore, this is not counted in the study.

[7] The percentage of unclassified works in the sample is high. This may be caused again by the small sample size and the coincidental retrieval of the items that bear this relationship, thus making its percentage high.