CHAPTER

DIGITAL LIBRARY COLLECTION DEVELOPMENT

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COLLECTION DEVELOPMENT INTRODUCTION

HISTORY

In the book *Fundamentals of Collection Development and Management*, Johnson (2009) provides an overview of collection development history. Collection development started with the emergence of libraries, although there is no recorded information regarding collection development policy in ancient times. During that time, libraries served as storage places rather than information dissemination centers. The goal of the library was to achieve a comprehensive and complete collection. The emergence of theories of selection indicates the birth of collection development. Thaddeus M. Harris drafted the first American guide for selection in 1793. Systematic philosophies of library materials selection were only discussed around the end of the 19th century. The goal was to achieve a balance between comprehensiveness and the most relevant materials for collection development in libraries. Collection development became a specialized area in the 1970s. Starting in the late 1970s, the enormous growth of publications and rising costs challenged library budgets. The explosion of electronic resources and the corresponding legal issues raised even more challenges in the late 1990s. Digitization projects and the preservation of digital information are the main themes for libraries in the 21st century. This new trend also has led to the new collection development policies.

Nisonger (2000) points out that the complexity of collection development is caused by the emergence of new technologies and new formats for information. Corrall (2012) illustrates four phases of collection development informed by digital technology. During late 1960s–70s, automation and computer-based operations affected collection development in relation to an increase in the efficiency of the collection process. During the 1980s and early 1990s, innovation of computer-based services made it possible for users to access local and consortia collections remotely. During late 1980s–90s, digitized collections led to the birth of digital and hybrid libraries. Since the 2000s, collaborative and network-based collections have resulted in the development of digital library management systems, institutional repositories, and data curation.

Beginning in the 2000s, digital collection development has gained a fresh, new momentum. Bullis and Smith (2011) review collection management and development literature from 2004 to 2008, and identify four areas of foci: (1) the changing nature of local collections, (2) redefining collection management responsibilities and practices, (3) cooperation and collaboration, and (4) collection assessment and evaluation. With respect to changing local collections, the main characteristic is the shift from print resources to electronic resources. Open access becomes an important and unsolved issue for collection development. The emergence of a large quantity of electronic resources has required libraries to review their collection development policies and procedures and change their organizations, responsibilities, education and training, by building digital collection and appropriate selection of processes and tools. Different levels of cooperation and collaboration are implemented to deal with challenges. The influx

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of digital resources calls for the need for new models and tools for collection assessment and evaluation. Due to declining budgets, diverse users and the responsibility of libraries for information access, Wu (2011) also suggests that a collaborative digital collection should be the direction of libraries.

DEFINITIONS

In order to understand collection development, we first need to understand what a collection is. Gorman (2000) defines a collection as objects in the collection including tangible objects and local intangible resources owned by the library, as well as tangible objects and remote intangible resources owned by other libraries but accessible by the users of the library. According to Lee (2000, 2005), there is no standard definition of a collection. Different entities have different perspectives on a collection. The key elements of a collection from the user perspective are: a group of information resources, a defined user community, a clear collection development policy, and an integrated retrieval system. Users consider the following parameters to define a collection: instant availability, selectivity, physical collocation, catalog representation, user privilege, material stability and parameters for subcollections (Lee, 2000, 2005). Drawing perspectives from different stakeholders, Corrall and Roberts (2012) develop a collection development hierarchy for use in the digital world. At the management level, a collection is defined as a thing, and examples include prioritizing subject areas and defining the scope of the collections, collaborative collection, and preservation. At the tactics level, a collection is defined as access, and examples consist of links to web-based collections, interoperable systems and integrating libraries into nonlibrary networks. At the operations level, a collection is defined as a process, and examples include user-oriented collections, supporting collections created by communities, and linked data.

Even though there is no standard definition of collection development, the following represents the typical definition:

> Collection development is a term representing the process of systematically building library collection to serve the study, teaching, research, recreational, and other needs of library users. The process includes selection and deselection of current retrospective materials, planning of coherent strategies for continuing acquisition, and evaluation of collections to ascertain how well they serve user needs (Gabriel, 1995, p. 3).

Shaw (2012) provides a concise definition of collection development policy: "A collection development policy is a formal policy document or statement which maintains a commitment to systematic collection building and development" (p. 165).

After reviewing the relevant literature on collection development, Corrall (2012) concludes that despite the changes in the format and location of resources, the principles of selecting materials to meet the diverse needs of users are unchanged. Fieldhouse (2012) illustrates a list of collection development activities: selection and acquisition, budget management, electronic resource management, storage and preservation, weeding, collection assessment, and collaborations with different stakeholders of collections. The main characteristics of collection development can be summarized as follows:

- Satisfy user needs
- Systematically select relevant collection items
- Systematically deselect collection items
- Strategies for planning of acquisition
- Assessment of the collection

DIGITAL COLLECTION DEVELOPMENT POLICY

COLLECTION DEVELOPMENT POLICY

Based on the ALA model, Shaw (2012) specifies the main sections of a collection development policy: "introduction, purpose of the collection development policy, mission statement, clientele, content, special collections, collection depth, evaluation, cooperation, intellectual freedom and review" (p. 168). Clarity, consistency, and continuity are the requirements for effective collection development policy.

Digital library collection development policy in general consists of goals/purposes, scope/types of content, priorities, and selection criteria. Parfrey (2013) describes the collection development framework of the California Digital Library: "The California Digital Library (CDL) is a 'co-library' of the University of California (UC) whose primary collection responsibility is to develop electronic content and make it available to all faculty members and students. Some of the electronic content will be licensed and acquired from commercial sources, and some will be produced by digitizing university collections. The same three considerations used to develop library collections in the ten UC campus libraries that guide collection development for the CDL are:

- The user base
- The programs that are to be supported
- The resources available to support those users and programs" (para. 1)

In determining collection development, the main focus is on the users, associated programs, and available resources.

- Make sure collection development meets faculty's and students' information needs
- Organize digital resources and offer guidance, and include them as part of the library services
- Justify the selection of digital formats in the selection of digital resources

Balance and prioritization are the keys for digital collection development. It is important to balance different disciplines, different formats of digital resources, research and teaching, and different campuses. Priorities are given to the content that users need the most and add significant value over print materials.

Each digital collection development policy has a scope of the types of materials covered. For example, the University of Texas Libraries (2011) has different collection development policies for materials obtained or produced in different ways as follows:

- Purchased or licensed material
- Digitized materials by the University of Texas Libraries or the University
- Links and pointers of substantial scholarly value

Different types of resources have their specific collection development policies. For example, e-books in general have their own unique collection development policy. Moore (2015) offers an outline for e-book collection development policy:

- Coverage of the policy
- Selection personnel
- Collection funding
- Selection criteria
- Duplication checks

- Purchasing model preferences
- Collection access and maintenance
- Download ability
- Reading devices
- Weeding

Simultaneously, different types of digital libraries/repositories have their distinctive collection policies as well. Brown (2012) discusses the uniqueness of collection development in institutional repositories. The main point is that researchers are content suppliers as well as users. That factor changes collection policy from acquiring needed items as previously done, to requesting materials from authors without offering financial compensation (Genoni, 2004). Another uniqueness is that an enormous amount of materials will be submitted if there is an institutional mandatory submission policy, potentially posing difficulties for the institutional repository system. However, if there is no mandatory policy, promoting institutional repositories is a challenge for the collection development. Third, different stakeholders of institutional repositories have different views of institutional repository uses. It is a critical issue in terms of how to develop a coherent and coordinated approach for collection development (Ayris, 2009). Detailed discussion of selection criteria for different types of digital materials and for different types of digital libraries/repositories follows.

Collection development policy is not a one-stop task; instead, it needs to adapt and reflect the changes in the environment. Miller (2000) stresses the need for the collection development policy to evolve as technology changes and user needs change. A review of twenty years of literature indicates that collection policies need to expand to consider the change of technology; hardware and software compatibility; the perpetuity of materials, costs, training, and support; and limited access. Douglas (2011) identifies publishing trends, budgeting, and users' information needs as important elements that any modification to collection policy needs to take into consideration.

COLLECTION DEVELOPMENT CRITERIA

Collection development criteria are the central component in collection development policy. Hollman (2000) emphasizes that four basic selection criteria for library materials are still relevant for electronic materials: quality, library relevancy, aesthetic and technical aspects, and cost. Gessesse (2000) highlights three main properties of collection items: relevance, quality, and timeliness of the materials. Metz (2000) points out some new meanings of the traditional standards for electronic resources. For example, currency refers to the updating frequency. The degree to which resources may be shared refers not just to how many people can share the same information, but what also should be kept in mind is the number of the so-called information poor, those lacking technological literacy or having restricted access to digital resources. New important criteria are introduced related to cost, licensing, functionality, and archiving. Cost is difficult to estimate, as there are many contributing factors, such as the allowable number of simultaneous users, defined user communities, joining consortia, etc. Licensing is determined by the extent of resources being acquired or accessed, people who use the resources, their purposes of use and monitoring mechanisms for the licensing terms. Functionality requires the provision of clear documentation for electronic information access, an up-to-date system and network infrastructure, platform-independent information resources, compliance with the Disabilities Act, etc. Archiving is associated with solving the problem of long-term access because of technological changes, licensing resources, and lack of control of resources.

There are different types of electronic resources coming from many different disciplines. Selection criteria may vary from discipline to discipline. Case (2000) identifies four new criteria for the selection of electronic resources based on the relevant literature: price, demand and use, library infrastructure, and product interface. He also discusses the problems of applying these criteria in selecting humanities e-texts. Some of the electronic resources are very expensive; however, price should not be the main concern if users need the resources. Simultaneously, demand and usage data are not the correct indicators for selection decisions in humanities e-texts. The key is how to promote electronic resources to humanities scholars. Many libraries do not have adequate support for electronic resource use, in particular humanities e-texts. Libraries need to engage vendors, librarians, and users to enhance the support. Functionalities and ease of use are suggested by library literature as one of the key criteria for electronic resource interfaces, but user need should still be the main consideration for collection selection. In actuality, both technology and individual user's needs have to be considered in determining selection criteria. Different electronic resources also require specific selection criteria. Vasileiou et al. (2012) find that the most cited selection criteria for e-books in academic library literature are the cost of e-books and the high usage/demand, followed by licenses, business models, platform interfaces, and subject coverage. Their study is in agreement with the early studies regarding the most cited criteria: business models, licenses, price, platform interfaces, subject coverage, and reading lists. Librarians face the challenges of issues related to business models, licenses, and the pricing of e-books.

Digital collections also have their own unique selection criteria. Gertz (2011) summarizes several of the most cited digital collection selection criteria, including value and demand, copyrights, technical feasibility, infrastructure, added value, and cost:

- Does the item or collection have sufficient value to and demand from a current audience to justify digitization?
- Do we have the legal right to create a digital version?
- Do we have the legal right to disseminate it?
- Can the materials be digitized successfully?
- Do we have the infrastructure to carry out a digital project?
- Does or can digitization add something beyond simply creating a copy?
- Is the cost appropriate? (pp. 98–99)

Collaboration with other institutions became the new emerging selection criterion. Kellerman (2014) considers the following selecting criteria for digital projects: (1) project goals in relation to the institution's mission, (2) the intended audience in relation to targeted user groups, (3) the final product with valued-added features or options, (4) the requirement of collection preservation, (5) the scope of the collection to be scanned, (6) check any overlap of the digital collection on the Internet, and (7) potential collaboration with partners to share similar resources.

Of course, selection criteria might be more particular for specific types of digital libraries. For example, Kastens et al. (2005, para. 10) present seven selection criteria for an educational digital collection:

- Scientific accuracy
- Pedagogical effectiveness
- Completeness of documentation
- Ease of use for teachers and learners

- Ability to inspire or motivate learners
- Importance or significance of the content
- Robustness as a digital resource

Another example is related to collection development for the International Children's Digital Library. The primary challenge in the International Children's Digital Library project arises mainly because national libraries, publishers, and creators have different policies regarding copyrights. The other critical issue is how to deal with unsolicited books. The collection development goal is to obtain award-winning children's books, but unsolicited books were at times submitted in different languages. Advisory board members and children's literature organizations are used to determine the relevance and acceptability within a culture (Hutchinson et al., 2013).

Even though large-scale digitization projects' collection policies are commonly considered quite comprehensive and broad, they still have specific guidelines. For example, the National Science Digital Library's (NSDL) quality of selection criteria are:

- Relevant to STEM education or research
- Scientifically accurate
- Clear creator and creation information
- Functional and operational materials
- Well-documented educational resource
- Instructionally valuable
- Significant contribution to learning
- Complete documentation
- Easy to use
- Engaging learners
- Free of advertising
- Wide accessibility to users (Miller, 2007)

These selection criteria concentrate on digitizing accurate, relevant, easy-to-use, and inspiring digital items.

It is also worth noting that each institution needs to develop its strategic plan and priorities for digital collection development that correspond to its mission and goals. Different missions and goals lead to different collection development policies. These selection criteria are not just applied in one step. Collection item selection, in general, goes through several phases. Here is a typical example of three phases of collection item selection (Vogt-O'Connor, 2000):

- Identifying materials for inclusion and exclusion
- Assessing materials for digitization using selection criteria
- Prioritizing the selected materials based upon the criteria of value, use, and risk

The overall objective of going through the three phases is to make sure that the most important materials are digitized first. Kellerman (2014) offers more detailed steps for preparing resources for digital projects: (1) select materials, (2) clear rights, (3) locate and retrieve materials, (4) inventory, collate, and stabilize the materials, (5) determine digital content management platform for display and access, (6) determine file naming convention, (7) collect metadata, (8) scan, (9) collect structural metadata, (10) access and treat original materials, (11) return original materials (pp. 356–357). Each

institution needs to create its own selection criteria and specific steps for the development of digital collections based on the mission and goal of the institution, the nature of materials, and targeted user needs.

COLLECTION ASSESSMENT

Collection assessment is part of collection development and is comprised of collection maintenance, assessment, and weeding (Shaw, 2012). It is critical to assess whether a collection satisfies the objectives in the collection development policy. Based on the relevant literature, Schroeder (2012) characterizes criteria to assess patron-driven collection development and acquisition: (1) cost, (2) usage data, (3) appropriateness to the collection, and (4) holdings of peer institutions. Collection data are the key data that are used in decision making and assessment in electronic collection development. Morrisey (2010) suggestes using the Standardized Usage Statistics Harvesting Initiative data and electronic resource management system data. Quantitative data can help identify duplications and titles that are not accessed. In addition to quantitative data, qualitative data are also critical to make the final decision for collection assessment.

The emergence of electronic resources makes the prominence of print collections less important. Jacob et al. (2014) summarize the main reasons to weed in libraries: (1) relevance to institutional needs, (2) offering reliable and accurate information, (3) providing up-to-date information, (4) reflecting collections changes, (5) removing worn materials, (6) increasing circulation rates, (7) accessibility for staff, (8) creating space, (9) informing staff about use of the collection, (10) balancing new and old materials, (11) providing feedback for budget decisions. Tyckoson (2014) identifies the main motivations for weeding: retention policies, space, and obsolescence. The weeding of print resources focuses more on removing materials that have not been used or have been used relatively less, old editions, duplicates, and outdated resources.

Weeding in digital collections has a different meaning. Although shelf space is no longer an issue, weeding to keep currency of the collection is still important, in particular in some disciplines, such as health sciences disciplines, where outdated information is misleading and potentially dangerous (Hightower and Gantt, 2012). Many of the weeding criteria that are applied to print collections, such as currency and the quality of the content, also apply to digital collections. The difference between weeding e-books and printed books is that search results need to be populated with relevant results mainly because users access e-books via search interfaces (Waugh et al., 2015). Space is not a main concern any more; instead, it is vital to provide reliable, accurate, and current information. In addition, it is not the obsolescence of materials, rather the obsolescence of formats becomes the main concern.

LEGAL ISSUES IN COLLECTION DEVELOPMENT

COPYRIGHT PROTECTION

Copyright is a form of legal protection for the authors of original works in both published and unpublished formats. The Statute of Anne was England's first copyright law and also influenced the United States' copyright clause drafted at the Constitutional Convention of 1787. The objective of the United States' Copyright Clause was to promote the advancement of learning and public knowledge rather than to protect authors (Wu, 2011).

The three most important US copyright laws include the 1976 Copyright Act, the 1998 Copyright Term Extension Act (Sonny Bono Act), and the 1998 Digital Millennium Copyright Act (DMCA). The 1976 Copyright Act provides the basic rules for copyright protection and increases the length of protection from a 56-year maximum to the life of an author plus 50 years. In 1998, the Copyright Term Extension Act extended copyrights for another 20 years, which, in total, made authorship copyright the life of the author plus 70 years. The Copyright Term Extension Act was established to meet some specific distributors' interests. The DMCA was enacted to enforce criminal sanctions for anyone bypassing some technological protection on digital content, although it also provides some protection for nonprofit organizations.

Hirtle et al. (2009) highlight four underlying principles of copyright law: the copyright/property distinction, the "public domain," the "idea/expression dichotomy," and independent creation. Regarding the copyright/property distinction principle, it is important to note that ownership does not equal copyright. The donor, seller, or depositor of digital objects may not have the copyrights of these items. The "public domain" principle means that, when a copyright expires, the work moves to the public domain. With respect to collection development, it means that an item in the public domain can be added to a collection without obtaining permission from anyone. In addition, documents prepared by an officer or employee of the United States Government as part of his/her duties are also in the public domain. For the idea/expression dichotomy, copyright protects the expression of ideas instead of the ideas themselves. The independent creation principle requires a plaintiff to demonstrate that a copyright infringement has arisen from his/her original work. There are also prerequisites for the protected item. The item has to be in a tangible form in original works of authorship, and the authorship or publication has to be associated with the United States.

The main function of US copyright laws is to protect copyrighted works. 17 U.S.C. §106 specifies the exclusive rights in copyrighted works (Copyright Act of 1976, 2006):

- Reproduction of copyrighted works
- Preparation of derivative works, for example, reproduce art works, translations, etc.
- Distribution of copyrighted works publicly
- Performance of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works publicly
- Display of literary, musical, dramatic, and choreographic works, pantomimes, and motion pictures and other audiovisual works publicly
- Performance of sound recordings through digital audio transmission

Based on 17 U.S.C. §106, the following types of works are protected by copyright:

- Literary works
- Musical works
- Dramatic works
- Choreographic works and pantomimes
- Motion pictures and audiovisual works
- Pictorial and graphic works
- Sculptural works
- Sound recordings

Not all works are protected by copyright laws. The following three types of works are not protected by copyright laws:

- Basic facts, names, titles, basic forms, etc.
- Resources published by the US government
- Works in the public domain either because the copyright of the work expires or the copyright owner intentionally or unintentionally lets the copyright lapse

Because of the three copyright acts, it can be quite complicated for the general public to identify the length of copyright protection on a publication published at different times or under diverse conditions, often involving issues of copyright notice or renewing registration. Adapted from Hirtle et al.'s (2009) work, Table 2.1 presents the duration of copyright protection under different publication years and diverse conditions. The general principle is that copyright protects a work for life of the authors plus 70 years.

EXEMPTIONS FOR LIBRARIES AND ARCHIVES

Libraries and archives are offered exemptions on exclusive rights. 17 U.S.C. §108 illustrates the limitations on exclusive right by libraries and archives (Copyright Act of 1976, 2006). In order to be eligible for the exemption, the library or archive needs to be open to the public, and the reproduction should have no direct or indirect commercial advantage. In addition, the institution desiring the exemption must place a copyright notice on the reproduced copy or incorporate a legend stating that the work may be protected by copyright [17 U.S.C. §108(a)]. For unpublished works, up to three copies can be made for preservation and security purposes or for research use in another library or archive [17 U.S.C. §108 (b)]. For published books, up to three copies can be made for damaged, deteriorating, lost, stolen or obsolete formats if no unused replacement is available at a fair price [17 U.S.C. §108(c)]. Digital copies can be made for the preservation of unpublished works and the replacement of published works. However, the digital copy cannot be further distributed in the digital format. Most importantly, the digital copy cannot be used outside of the library or archive premises [17 U.S.C. §108 (b) (c)].

Patrons of a library or archive can also request the reproduction of either part or all of copyrighted works. The requested work should be in the collections of the library or archive. A notice needs to be provided that the copy can only be used for private study, scholarship, or research. There is also a limit of one article from within a given periodical issue [17 U.S.C. §108(d)]. If a complete work or substantial amount is requested, the same notice needs to be provided to the requester. Moreover, the library or archive needs to demonstrate that the copyrighted work cannot be obtained at a fair price [17 U.S.C. §108(e)].

One provision in 17 U.S.C. §108 (h) is closely related to digital library development. Libraries or archives, as well as nonprofit educational institutions, can reproduce, distribute, display, or perform copyrighted works including digitizing these works. The only restriction is that the published works should be within the final 20 years of the copyright term. In addition, the following conditions need to be satisfied:

- The work is subject to normal commercial exploitation.
- A copy cannot be obtained at a reasonable price.
- The copyright owner or agent has provided notice that both of the above conditions apply.

Table 2.1 Copyright Terms for Published and Unpublished Works in the United States

Date of Publication	Conditions	Copyright Term
Before 1923	None	None: in the public domain due to copyright expiration
1923 through 1977	Published without a copyright notice	None: in the public domain due to failure to comply with required formalities
1978 to Mar. 1, 1989	Published without notice, and without subsequent registration	None: in the public domain due to failure to comply with required formalities
1978 to Mar. 1, 1989	Published without notice, but with subsequent registration	70 years after the death of author or, if work of corporate authorship, 95 years from publication
1923 through 1963	Published with notice but copyright was not renewed	None: in the public domain due to failure to comply with required formalities
1923 through 1963	Published with notice and the copyright was renewed	95 years after publication date
1964 through 1977	Published with notice	95 years after publication date
1978 to Mar. 1, 1989	Published with notice	70 years after death of author or, if work of corporate authorship, 95 years from publication
After 1977 but before 2003	Works created before 1978 that were published after 1977 but before 2003	Life of the author +70 years or 31 Dec. 2047, whichever is greater
After Dec. 31, 2002	Works created before 1978 that were published after Dec. 31, 2002	Life of the author +70 years
After Mar. 1, 1989	None	70 years after death of author or, if work of corporate authorship, 95 years from publication
Unpublished works with author(s)	None	Life of the author +70 years
Unpublished anonymous and pseudonymous works, and works made for hire (corporate authorship)	None	120 years from date of creation
Unpublished works when the death date of the author is not known	None	120 years from date of creation

Adapted from Hirtle et al. (2009), table 3.2.1 and table 3.2.2 (p. 42, p. 45).

THE DIGITAL MILLENNIUM COPYRIGHT ACT (DMCA)

In 1998, under pressure from copyright owners, Congress passed the DMCA. On the one hand, criminal sanctions are added for anyone bypassing some technological protections on digital content; on the other hand, it offers some protection for nonprofit organizations. The DMCA prohibits circumventing a

technological measure that effectively controls access to a protected copyright work [17 U.S.C. §1201 (a) (1)]. Moreover, it also forbids the manufacture of hardware and software for the purpose of circumventing a technological measure that effectively controls access to a protected copyright work [17 U.S.C. §1201 (a) (2)]. At the same time, the DMCA offers the opportunity for nonprofit libraries, archives, or educational institutions to circumvent copyright to access to copyrighted works for the purposes of making decisions about whether they would like to acquire a copy of the work. However, the exemption is offered on the following conditions: (1) the work may not be retained longer than necessary to make such good faith determination; and (2) the work may not be used for any other purpose [17 U.S.C. §1201 (d) (1)]. In addition, the exemption only applies to a work when an identical copy of that work is not reasonably available in another form [17 U.S.C. §1201 (d) (2)].

Multiple challenges to the DMCA have been raised, but most of the court challenges were not successful. Gathegi (2012) summarizes three challenges:

- The DMCA is not consistent with the Constitution's intellectual property clause.
- The DMCA challenges the First Amendment.
- The DMCA prohibits access to unprotected materials.

In the DMCA provision for libraries, libraries are allowed to make digital copies of deteriorating works for preservation purposes. However, the question is whether the digital copy can only be used in the physical library or also in the digital library (Ferullo, 2004).

FAIR USE

Copyright and fair use are two sides of a coin. While authors and publishers, in general, downplay fair use, it is a powerful tool for using these works without obtaining permission. Fair use balances the requests of public access to information and the need to provide incentives for the creation and advancement of knowledge (Gathegi, 2012). The exceptions for the exclusive rights of the copyright owners is also the vital part of the copyright system. Fair use fulfills the purpose of copyright to advance science and public knowledge. Moreover, it protects free speech from otherwise being restricted by the copyright offered to the copyright owner. Although it may be complex to determine, use of a copyrighted work may be considered fair use if the use is deemed to satisfy one of these aforementioned purposes.

In the creation and development of digital libraries, the greatest challenge is to determine whether an item can be selected to be included in a digital collection for public access. Weiss (2014) puts it well: "Fair use is probably the strongest of all the exemptions to copyright, and it is the most flexible, blurred, and ultimately misunderstood of the exemptions" (p. 75). Even though 17 U.S.C. §107 defines four factors as the keys for the determination of fair use, it is still difficult for creators of digital libraries to make these judgments because interpretation of the four factors can be quite different. As Hirtle et al. (2009) point out, "Although it is possible to analyze existing case law, each fair-use case is judged on a case-by-case basis" (p. 89). Each case is determined by a judge based on his/her reasoning, as well as by legal precedents. As such, uncertainty and misunderstanding are still the main problems of applying fair use in digital library creation.

17 U.S.C. §107 defines four factors that determine fair use (Copyright Act of 1976, 2006):

- The purpose and character of the use, including whether such use is of a commercial nature or is for nonprofit educational purposes.

- The nature of the copyrighted work.
- The amount and substantiality of the portion used in relation to the copyrighted work as a whole.
- The effect of the use upon the potential market.

These factors have to be considered as a whole in determining copyright infringement or fair use.

Diaz (2013) further illustrates the four factors. In dealing with Factor 1, the more transformative a work, or the more likely the purpose of the use is different from the purpose of the original copyrighted work, the more it moves toward fair use. Regarding Factor 2, the nature of the copyrighted work is determined by how creative the works are. The use of factual works is more likely to be considered as fair use. In addition, works unavailable for purchase, such as "out of print" works, are more likely to be considered as fair use. With respect to Factor 3, the amount and substantiality are determined more on the purpose and market substitution, while also considering the quantity and quality of the use of the original copyrighted work. Factor 4 is the most important factor of fair use, although it does not automatically protect copyright owners. Courts consider reasonable markets including both traditional and potentially developed.

Lipinski (2011) points out that the first and third factors are under the control of the user while the second and fourth factors are external and cannot be changed. Even though the user cannot change the second and fourth factors, the user can control his or her use to limit the negative impact on that market or potential market or value of the work. Good purpose influences the remaining factors, often resulting in a conclusion by the court that the use is a fair use. Fair use activities include scholarship, education, use of existing works to offer illustration, example, or documentation, archiving and preservation, and social comment or critiques in art and literature, etc. Hirtle et al. (2009) highlight three characteristics of fair use:

- Fair use can be applied to all the exclusive copyrights, and it is not limited to reproductions.
- Fair use is neither an infringement of copyright nor an excuse for infringement.
- Certain uses, such as criticism, news reporting, or scholarship can be often be considered as fair use even though other uses can be found as fair use.

COPYRIGHT INFRINGEMENT AND FAIR USE CASES

Copying copyright-protected work is infringement. Infringement of copyright can be considered as direct infringement or indirect infringement. Copyright is considered directly infringed when all of the following have occurred: (1) a person is not the owner of copyright, (2) a person accesses a copyrighted work, (3) a person violates the exclusive rights in a substantial way, (4) the access is beyond the permission of the statutory exemptions, and (5) the access is without the permission of the copyright owner (Hirtle et al., 2009). Moreover, knowledge of the infringing activity is not required to assert copyright infringement. A direct infringement claim needs to be established before an institution can be charged for indirect infringement (Lipinski, 2006).

Two types of indirect infringements are identified: contributory infringement and vicarious infringement. Contributory infringement refers to inducing, causing, or contributing to the infringing act by third parties. Offering the instruments for infringing acts may lead to contributory infringement. The key concept of contributory infringement is that no intent is required. Vicarious infringement occurs when one benefits from the direct infringement without taking any precautions to stop or limit the infringement. Libraries are not liable for vicarious infringement liabilities if unsupervised reproduction equipment is used by a third party as long as copyright notice is displayed there (Gathegi, 2012).

One typical example of copyright infringement versus fair use can be found in *Authors Guild v. HathiTrust.* Members of HathiTrust allowed Google to digitize their collection items in exchange for the use of digital copies. The Authors Guild sued HathiTrust for copyright infringement for the following:

> 1) the mass digitization violated §108 and §106 of the Copyright Act; 2) the fair use defense was not available to libraries also invoking §108; 3) injunctive relief was necessary prevent HathiTrust libraries from making their works available to the Google Books project; 4) the planned orphan works project would lead to mass infringement and should therefore be prohibited from continuing, and 5) HathiTrust should be ordered to return all of the unauthorized digital copies within its possession (Diaz, 2013, pp. 699–700).

The district court ruled that libraries seeking §108 protection can also use the fair use defense. The court applied §107 and concluded that fair use protects the search indexing and the providing of access to print-disabled items. A district court ruled that copyright had been infringed upon in this case. Believing that they were acting according to fair use principles, HathiTrust in June 2014 appealed the decision to the Second Circuit Court of Appeals. The Appeals Court decided that providing access along with a full-text searchable database, in fact, was an instance of fair use and ordered the original district court to reevaluate whether or not the preservation of the resources is a fair use. The two parties reached an agreement regarding the lingering issue of preservation in January 2015 in which the libraries stated that they only duplicated materials that were unusable due to either a poor physical condition or the material had gone missing. Furthermore, for a period of 5 years, the libraries agreed to inform the Authors Guild in the event they did not live up to this agreement. According to Cox (2015), the implications of the victory are significant. The decision offers a compelling confirmation that mass digitization does not negate fair use. The concept of functional transformation is introduced in this case wherein a use can be judged as transformative if the purpose of the use is substantially different from its original market purpose. In addition, the court rejected the claim from the Authors Guild that §108 of the Copyright Act limits fair use (Cox, 2015). This case illustrates well how difficult determining issues of fair use can be; even judges sometimes do not agree.

Another well-known case is *Authors Guild v. Google Books*. Even though Google Books is not a digital library, the case has a huge impact on digital libraries. The key issue is whether fair use can be applied to Google's digitization of millions of books. Google started digitizing books in the early 2000s, and Google Books became searchable in 2004. The Authors Guild charged Google with copyright infringement in 2005. A settlement agreement was proposed and amended, but was rejected by courts on several grounds (Weiss, 2014). Judge Denny Chin ruled that the fair use employed by Google Books provides a significant public benefit (Chin, 2013). He discussed the case from the perspective of the four factors of fair use. As to the purpose of the use, it strongly leans toward fair use because it transforms text into a word index, like snippets, and it displays only snippets for search. Moreover, it does not supersede or supplant books. As to the nature of the copyrighted works, Google Books covers all types of books, but mainly nonfiction books, and all are published books available to the public. This also favors the finding of fair use. As to the amount of use, Google scans the full text of books, but it limits the amount of text displayed in the search result. This factor weighs slightly against fair use. As to the effects of use, Google Books promotes the use of the books, which ultimately benefits the copyright holders of these books. This factor strongly favors fair use. Overall,

Judge Chin (2013) ruled that the Google Book project "advances the progress of the arts and sciences, while maintaining respectful consideration for the rights of authors and other creative individuals, and without adversely impacting the rights of copyright holders" (p. 26). These two cases greatly encourage the development of large-scale of digital libraries and serve as perfect examples for the argument of fair use.

COLLECTION SHARING AND LARGE-SCALE DIGITAL LIBRARIES

COLLECTION DEVELOPMENT IN CONSORTIA AND LARGE-SCALE DIGITAL LIBRARIES

Burgett et al. (2004) describe the history of cooperative collection development: "Discussion of local lending arrangements has been documented as early as 1851, and formal cooperative cataloging ventures date at least to 1876" (p. 8). Electronic resources are a driving force for cooperative collection development not only for reducing cost but also for effective document access and delivery (Haar, 2003). In 2007, the American Library Association created a Cooperative Collection Development Committee to study, promote, and support cooperative collection development. Many consortia established their own collection development committees to deal with the issues of collection development. For example, in 2005, the VALE New Jersey Academic Library Consortium founded the Cooperative Collection Management Committees to address the challenge of the increase of electronic resources (Mallery and Theus, 2012).

Collaboration between libraries in building comprehensive print collections has been well established. Recently, it has evolved into collective collection development for electronic resources. Turner (2014) discusses the advantages of consortia e-resources:

- Offer wide access to content that each individual library cannot afford
- Provide more choices for full texts of journals or e-books
- Cost sharing and containment
- Value the opportunity for the consortia to negotiate with content vendors
- Promote e-resource collections

At the same time, she also specifies several challenges of consortia e-resource collection development:

- Reduce local autonomy and flexibility in collection development
- Increase workload for consortia staff and library staff
- Increase the conflict between revenue-driven publishers and the budget-limited academic institutions. One possible solution is to promote open access and scholarly communication.

Kinner and Crosetto (2009) highlight similar challenges for academic library engagement at the consortia levels. They emphasize that it is vital to maintain individual members' identity and balance individual members' and the consortium's needs in collection development. Sayed and Burnett (2014) discuss both the benefits and challenges in sharing electronic resources among three institutions. On the one hand, they can provide more coverage to users at lower cost; on the other hand, usage data for electronic resources need to be identified for different institutions. There is also a critical issue in terms of how to build collections to satisfy the unique needs of each institution.

Because of the budget demand and technology development, it is a trend for organizations to build collaborative digital projects. Eight educational institutions in Minnesota used the existing consortia to

build a shared digital collection (Wagner and Gerber, 2011). The following Dickeson's (2010) criteria have been applied to assess the program:

- History, development, and expectations of the program
- External demand for the program
- Internal demand for the program
- Costs and other expenses associated with the program
- Impact, justification and overall essentiality of the program (p. 66)

While the collaboration helps relieve the cost burden, it also requires strong communication, trust, and iterative assessment of costs and user and institutional needs (Wagner and Gerber, 2011).

New technologies make it possible to digitize collections at a large scale. Beaman and Cellinese (2012) underline the key elements of infrastructure for large-scale digitization of scientific collections:

- Set priorities and identify user need
- Identify stakeholders, collaborators, and communities
- Select computational infrastructure and associated technical requirements
- Determine standards for interoperability
- Consider management, organizational structure, and sustainability issues
- Assess risks

Balke et al. (2013) propose the creation of a global natural history "meta collection" to enable access to the morphology of tens of millions of specimens now in museums worldwide.

Large-scale digitization projects are the products of collection sharing. One of the key objectives of the Digital Public Library of America is to share public resources. Moreover, several of the large-scale digitization projects also consider collaboration. For example, the Digital Public Library of America has collaborated with Europeana, the pan-Europe digital library, to create the exhibition "Leaving Europe: A New Life in America," which presents the journey of European immigrants to the United States in the 19th and early 20th centuries. It also shows related collections in the National Archives and Records Administration, Harvard University, New York Public Library, and University of Minnesota Immigration History Research Center (Palfrey, 2013). Taylor et al. (2013) examine the benefits of the creation of the Digital Library of the Caribbean (dLOC). Many of the dLOC materials are unique and have significant importance for specific research areas, but they are in remote collections/archives and with additional access restrictions. The development of dLOC removes the main barrier to access. One important step for collection development is the need for full attribution for the content creators and the partners that provide access to the content. Collection items come from partners as well as scholars. Most importantly, scholars work on academic research using dLOC materials to expand scholarship.

Although large-scale digitization projects increase the availability of cultural information and promote scholarly activities (Crane, 2006; Hawkins and Gildart, 2010), Gooding et al. (2013) outline several criticisms of mass digitization: (1) inadequate technology and implementation, such as low accuracy rates of the OCR software, (2) inaccurate metadata, such as inaccurate automatically generated metadata, and (3) cultural dominance of Anglo-American material.

LARGE-SCALE DIGITIZATION PROJECTS AND COLLECTION DEVELOPMENT POLICY

In large-scale digitization projects, multiple institutions collaborate together. Their collection development policies have not only characteristics of digital library collection policies of participating institutions but also unique characteristics of large-scale digitization projects. Here is the list of main components of the NSDL collection development policy (Miller, 2007, para.1):

- Mission of the library
- Communities served
- Resource ownership, management, and description
- Collection scope
- Quality guidelines
- Selection responsibility
- Accessioning
- Deaccessioning
- Terms of participation

This includes broad subject areas, materials from the United States and other countries, and diverse types of materials ranging from teaching and research materials to datasets and events materials. Its sources of content are also quite diverse from research and teaching institutions, to STEM publishers, STEM companies, NSDL's own productions, as well as user-suggested resources.

In large-scale digitization projects, in particular in the archival area, there is a trend to include all items without collection selection. The purpose of Greene and Meissner's (2005) proposed "More Product, Less Process" (MPLP) approach is to save costs, and it has received both praise and criticism in the field. The advantages and general principles of adopting the MPLP approach can be summarized as follows:

- Make user access paramount: get the most material available in a usable form in the briefest time possible
- Expend the greatest effort on the most deserving or needful materials
- Establish an acceptable minimum level of work, and make it the processing benchmark
- Embrace flexibility: do not assume all collections, or all collection components, will be processed to the same level
- Do not allow preservation anxieties to trump user access and higher managerial values (Greene and Meissner, 2005, pp. 175–176)

Different techniques are used to make the MPLP process efficient. Miller (2013) explores the idea of mass digitizing entire archival collections using optical character recognition software for full text searching. In that way, the archival processing would be skipped. This approach speeds up the digitization process and can provide information to users more effectively.

In developing large-scale digital libraries, sometimes referred to as large-scale digital initiatives (LSDIs), the focus is on categories instead of individual items. According to Rieger (2010), "selection decisions for LSDIs are usually made based on broad categories rather than individual assessment of titles" (p. 15). The author provides examples of the Southern Historical Collection at the University of North Carolina at Chapel Hill and the Archives of American Art, a unit of the Smithsonian Institute, in which digital collections contain every item of the collections. There is no selection of items for these projects because the selection process is completed when the special collections were created.

Recently, museums also adopted the rapid capture approach. The Free and Sackler Galleries became the first Smithsonian museum to make their entire collection of 40,000 works available in digital formats. The National Museum of Natural History also digitized its Bumbles Collection (Kutner, 2015).

The ultimate goal of developing large-scale digital libraries is to satisfy user needs. In addition to including all items in a collection, Schaffner et al. (2011) propose a user-initiated digitization approach. They stress that user need is the driving force for collection building, and scanning and delivering can efficiently distribute the requested information to users. It is an effective approach to consider user requests in selecting collections and collection items to digitize (Poole, 2007). "Mass representation" is used by Custer (2009) to characterize the relationship between selection and user-initiated digitization of special collections. His own research shows that the top 10% of requested images online attract over 50% of the users. However, different institutions, different policies, and different resources need to be analyzed for user-initiated collection item selection decisions. Mills (2015) investigates user impact on digital collection selection and development, in particular how to balance user needs and institutional interests in the digital collection development process. Chapter 3 further discusses the rapid capture approach and its potential impact on collection development.

CHALLENGES OF COLLECTION DEVELOPMENT

LEGAL CHALLENGES

The practice in digital library development has been cautious relative to copyright. Koulouris and Kapidakis (2005) analyze the access and reproduction policies of digital collections in 10 worldwide leading universities' digital libraries. They find that libraries prefer to digitize items for which they own the copyright or are in the public domain. Most of the born digital materials are obtained through licenses or are purchased from copyright owners. Libraries offer different types of access depending on the copyright of the items. If a library owns the copyright, reproduction for private use is free or with a credit to the source, but commercial use is charged a fee and written permission is required. However, librarians have not been very good at presenting copyright information in their digital collections. Schlosser (2009) surveys copyright statements in 786 digital library collections in 29 institutions. The results show that about 50% of them present copyright statements. However, these statements are vague and sometimes misleading. Moreover, there is a fuzzy line between copyright and a use statement. It is difficult to differentiate copyright statements from terms of use. The common elements for these statements are a specific ownership statement, a vague ownership statement, what users can or cannot do, and protecting the users and institutions. It is not an easy job for users to understand copyright and fair use. Many libraries hesitate to offer detailed and specific copyright statements because they do not have the information. There are still myths revolving around copyright laws.

Wu et al. (2010) report four areas of misunderstanding of copyright laws: (1) digital resources should be shared; (2) it is legitimate to download all digital resources; (3) education use equals fair use; and (4) current students are entitled to download all digital resources. It is evident that knowledge of copyright is essential for librarians. Based on the job advertisements, Kawooya et al. (2015) conclude that having a copyright librarian or someone with competence in copyright is one of the key requirements for the current and future needs of academic libraries.

It is a challenge to use copyrighted works in digitization projects, in particular to obtain permission to use a copyrighted work. George (2005) conducted a study to find the barriers to seeking copyright

permission for digitizing published works. The results are quite surprising. The response rates from copyright holders to permission requests are low. Only about one-fourth of the total requests received permission to digitize. The response rate varied among different copyright holders. Associations have the best rate, followed by university presses, museums, and galleries. The commercial publishers representing the greatest copyright holders were the most reluctant to grant the permission, fearing loss of their profits. The average response time is about 3 months after sending the initial request before receiving a yes or no answer. In addition, it is quite a complicated task to prepare the request, such as searching for copyright holder contact information, creating a database, sending the requests, etc. One solution is to negotiate contracts with different vendors through an organization. For example, in order to digitize copyrighted books, the National Library of Norway negotiated a contract with an organization that represents 30 different organizations for copyrights (Vigdis, 2010).

The current legal system does not keep pace with the changes of technology nor does it define the concept of libraries (Anderson, 2001). Nolan (2011) argues that "the language of Section 108 is insufficient because it does not adequately reflect the current digital landscape" (p. 481). It is vital to consider both technology and the socio-economical cost of access to materials, specifically the digitization processes addressed by the current language of §108. In order for libraries to keep their privileges under §108, she proposed using the term "file" to replace "copy" to refer to a digital copy. Moreover, it is critical to define what does "in the library" mean precisely for libraries' digitization projects. Most importantly, fair use is still a very vague concept. It is a challenge to reach an agreement on what constitutes fair use and to come up with some solutions to demystify fair use.

The current situation of copyright laws and their application to digital library development is not satisfying. Wu (2011) well defines the problems of copyright regarding digital collection development: "In recent years, the balance of copyright appears to have tipped more toward the rights of copyright owners over the benefits to society, with legislators unable or unwilling to change that balance through new legislation. Because existing statutory language is ill-equipped to handle new technologies, wealthy and powerful copyright holders have been quick to use technology to expand protection of their works or to intimidate users" (pp. 537–538).

OTHER IMPORTANT CHALLENGES

The challenges of collection development further call for expanding collaborative digital projects. Wu (2011) identifies several challenges, including (1) the rising cost of materials, (2) the overwhelming quantity of information, (3) the interdisciplinary and international nature of scholarship, (4) insufficient library collection budgets, and (5) the need for broad and reliable access. Building a collaborative collection is an efficient approach for document delivery. Wu (2011) also introduces the proposed Taking Academic Law Libraries Online consortium. The suggested collection development policy focuses on scholarly materials not in high demand but useful for research and excludes popular items, such as textbooks. Acquired materials will be digitized, and the priority of digitization will be determined by user need.

Large-scale digitization and digital libraries challenge current practices of collection development, digitization processes, and metadata creation. Miller (2013) discusses the approach of using optical character recognition (OCR) software to mass digitize materials to avoid archival processing and creating finding aids. Sutton (2012) suggests that user-generated metadata can help minimize the metadata process and indicates that accuracy and authority issues need to be considered in the adoption of mass

digitizing projects. The rapid capture approach challenges the traditional practice of collection development. It is critical to review and assess the current practice of collection development in large-scale digital libraries.

Ball (2012) summarizes the challenges and problems in relation to collection development: (1) the supply of electronic resources in terms of the package and prices is in the publishers' favor; (2) mass digitization and large-scale digitization projects will decrease the importance of traditional collection development; and (3) the open access movement exemplifies a trend to access to information not controlled by librarians and libraries. The open access movement is another trend that decreases the role of collection development. One typical product of the open access movement is institutional repositories, which consist of national, institutional, departmental, subject, and type-based institutional repositories (Brown, 2010). Nevertheless, Brown (2012) argues that collection development remains the essential component of an institutional repository.

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