OVERVIEW OF BIBLIOGRAPHIC DESCRIPTION OF ELECTRONIC RESOURCES IN LIBRARIES: ISSUES AND THE CHALLENGES

[1]Aliyu Olugbenga Yusuf, [2]Gafar Abiodun Akinosho and [1]Khalid Ayuba Abdullahi
[1]University of Malaya, Malaysia,
[2]Federal College of Agriculture, Ibadan, Nigeria

Abstract
Catalogue has been surrogate representation of library resources to enhance and improve retrieval, access and usage of library collections. There have been continuous demands and need for modification of this representation to accommodate new and growing information resources types and formats. The trend in online cataloguing was accessed and issues regarding the improved Dublin core elements were addressed. This study further identifies several issues and challenges in the present cataloging systems and suggests some solutions for considerations.
Keywords: Digital collections, bibliographic description, electronic resources, born digital, metadata.

1. Introduction

Within the library cataloging system - Online Public Access Catalogue (OPAC) there have been growing series of dissatisfaction relating to its practices, thereby leading to reassessments of cataloging theory and subsequently moves to propose changes in cataloging practice. Several appeals which include Andrew Osborn's, famous title "Crisis in Cataloging" in 1941 Osbom (1985) or "Cataloging Must Change!" Gregor and Mandel (1991) also expressed dissatisfaction with the state of library cataloging practice then. The authors have suggested need for change cataloging practice to accommodate some changed conditions, some new form of material, or some problem in the administration of library catalogs which may not necessarily require a total change in theory. But sometimes it seems that the theory behind current practice is flawed, inadequate, or just confused as stated in the work of Heifer (1997).

Cataloguers have find practices in cataloging for multiple versions of library materials to be adequate so as to fulfill and ease the needs of the library patrons (Shepherd, 2010). Actually, the method and framework of catalogue continued to change over time to accommodate changes in the resources description. Multiple versions has been adopted to commonly describe materials that have been issued in several editions, printings, or formats; for example, a film, the print novelization of the script, the large-print paper edition of the novelization, the video recording of the film, a sound recording, text etc.

The library is an avenue, which provides access to information items or objects in two ways. Firstly, it provides direct access to the objects themselves, usually in some organized physical arrangement. Secondly, it provides indirect access through finding tools which allow the user to identify information objects which would be of use for some particular purpose. The said primary tool which libraries use to provide indirect access

to these information-bearing objects is usually refer to as library catalog (Somers & Nieuwenhuysen, 2004).

Cataloguing is the process of creating bibliographic records for items in the library's collection. Cataloguing enhance bibliographic description by describing the bibliographic items uniquely, assigning main and added entry to the records, inclusion of subject headings and classification of item using call number as the case may be. This is done using the "how to books" such as the Anglo America Cataloguing Rules (AACR2). The AACR2 are designed and use in the construction of catalogues and other lists of resources. The rules cover the description and provision of access points for the resources, it also make provision of information describing the item being catalogued, and determination and establishment of headings (access points) under which the descriptive information is to be presented to catalogue users, and with the making of references to those headings(Somers & Nieuwenhuysen, 2004).

Bibliographic description of electronic resources is the uniquely describing of bibliographic items for improved retrieval and access. Electronic bibliographic description support and enhance multiple and simultaneous access and use of the bibliographic items. This is unlike the physical material whereby access is restricted to only a user at a time.

Library catalog is thereby described as organized collection of bibliographic records, with brief surrogates which stand in place of the information-objects. Through these bibliographic records, catalog assist the library patrons to identify and access information-bearing objects within the library's collection which will fulfill the library patron use for specific purpose. Bibliographic records stand in place of the information bearing objects, the patron's ability to identify, access and use desired information-bearing objects is dependent upon the patron retrieval skills.

However, the content structure of the information bearing objects must represent those attributes of the original information-bearing objects which are considered important for determining which item would be of interest for a particular purpose. Library cataloging practice is governed by rules which define what attributes of information-bearing objects are important and how such attributes are to be recorded and displayed (Williams, 2012).

Rapid advancement in information technology has resulted not only to the proliferation of the amount of information available to users but also in the packaging of information in a variety of format. It is important to note that information is a basic necessity for human as air and food is, but has no value if not identified, access and put to adequate usage. Much progress has been made in the past decades, and increasingly since the popularizing of the Internet and also the advent of the Web, in exploiting new technologies to support identification, access and use of information as observed by Hicks & Graber, (2010).

Information is increasingly produced in format such as digital form, for example text in pdf, doc or odt, music in mp3,wav video in mpeg formats, and vast amounts of digital content are made available to users. Digital information is growing and exploding at a rapid rate; it is also available in heterogeneous forms, adding to its complexity.

Bouyukliev & Georgieva-Trifonova, (2013) emphasis that digitalization in the name of technology has not only significantly affect the creation but also accessing, retrieval, dissemination and usage of the scientific literature, it affect all materials including periodical issues, as well as conference proceedings and even monographs and reference books. The distribution and publishing of materials on the internet expedites the development of a large number of bibliographic systems integrated with search engines.

Digitalization enhance easy manipulation and assessment of these materials (papers, dissertations, reports, etc.) and data about them that are used repeatedly and are necessary at every turn in scientific activity, such as scientific research, writing papers and dissertations, preparing reports and web pages or application documentation.

E-books emerged in 1971 with Michael Hart's Project Gutenberg and became widespread in 1998 with the introduction of two e-book reading devices, the Rocket eBook and Softbook. In the intervening decade, Google has propelled e-books into the mainstream, a new generation of mobile devices has improved e-book readability and convenience, and content providers have offered libraries an increasingly diverse array of electronic products and service models. With e-book purchasing on the rise, many libraries have elected to make e-books available via their online catalogs. A 2007 literature survey by Belanger indicated a widespread consensus in favor of integrating e-book records into the library catalog.

2. Electronic Publication

Electronic collections are described as resources or book-length publication in digital format. The publication may consist of text, images, or both, readable on computers or other electronic devices or dedicated devices (Hsieh-yee, 2000). Electronic books are variously described by different writers differently as either e-books, eBooks, e-Books, eBooks, digital books, or even e-edition etc. as the case maybe. Although electronic books are sometimes defined as an electronic version of printed books. It is also important to note that some e-books may exist without any printed equivalent. Some commercially produced and sold e-books are usually intended to be read on dedicated e-book readers, however, almost any sophisticated electronic device that features a controllable viewing screen, including computers, many mobile phones, and all smartphones can also be used to read e-books (Hsieh-yee, 2000).

As a newer development, sometimes only the electronic version of a book is produced by the publisher. It is even possible to release an e-book chapter by chapter as each chapter is sometimes written independently of other chapters. This is useful in fields such as information technology where topics can change quickly in the months that it takes to write a typical book. It is also possible to convert an electronic book to a printed book by print on demand. However these are exceptions as tradition dictates that a book be launched in the print format and later if the author wishes an electronic version is produced.

Electronic publications are resources in electronic or digital media and are usually referred to as electronic sources of information. In the work of (Satapathy & Das, 2013), they observed that in the early 70s, most of the electronic sources were available on magnetic tapes and some online. These were mostly secondary sources (bibliographic databases). Recently, electronic resources are rather available on CD-ROMs or online. The sources consist of reference documents, data, research publications etc.

The introduction of the electronic publication and newer technologies coupled with information explosion confronted librarians and information scientist with problems of how to deal with the materials which made them redefine their roles in order to assist patron access the materials. Users who are overwhelmed by the huge amount of information of all kinds and various usefulness now see the need for uniquely describing the materials for easy identification and access. The bibliographic description of electronic books and mediation provided by librarians ease the stress of the library patrons. Most libraries usually rely on external data providers to supply bibliographic records for their electronic books, but cataloging guidance has focused primarily on rules and standards for individual records rather than data management at the collection level.

Electronic publication collections in libraries repository have grown significantly over the last decade. A great diversity of providers, service models, and content types exist today, presenting a variety of challenges for cataloging and catalog maintenance. Many libraries rely on external data providers to supply bibliographic records for electronic books Annie & Mitchell, (2009).

2.1 Sources of E-Publication / E-Books

Some e-books are produced simultaneously with the production of a printed version, as described in electronic publishing, though in many instances they may not be put on sale until later. Often, e-books are produced from pre-existing hard-copy books, generally by document scanning, sometimes with the use of robotic book scanners, having the technology to quickly scan books without damaging the original print edition. Scanning a book produces a set of image files, which may additionally be converted into text format by an OCR program. Occasionally, as in some e-text projects, a book may be produced by re-entering the text from a keyboard.

According to Ghosh, (2009), the author states that digital publication collection can be built through either or both of the following processes (in addition to creation of content by the library itself):

- Digital documents can may be created through digital conversion of existing printed or other analogue materials; or
- Existing digital documents may be gathered from the web or from physical digital sources.

This also agreed with the work of (Pereira, 2012) which also states that digital collection may include two types of information resources. The first type comprises of the "digital original" resources which can also be referred to as "born digitally". The other

can be referred to as "digital surrogate", which are created from traditional information through format conversion(Ghosh, 2009).

Digital conversion is selection of materials, which consist of non-contemporary heritage materials, or other materials which exist only in a non-digital form. The digital conversion processes include imaging or OCR scanning; or both. Collections of digital documents is applicable even where contemporary materials are involved, some digital library projects have created collections through combination of imaging and OCR from journal articles. Gathering materials from the web is another method of acquiring documents which are already in digital format; it is the process of gathering and harvesting them from the web. There is usually no need to carry out compilation because the resources can actually be linked in the HTML, unless we aim to preserve such resource.

2.2 Accessing E-Publication

It is important to reiterate that libraries have always organized, provided access to, and preserved information with the aim of meeting the their users information needs and putting into consideration their seeking behavior. However, the format in which information is presented has expanded from physical to virtual, but the focus of librarians continues to be on organizing information for access. Metadata is structured information that describes, explains, locates, or otherwise makes it easier to retrieve, use, or manage an information resource. Metadata is applicable to every e-publication, we can have metadata in HTML documents, digital images, books, museum objects, metadata themselves. There are different metadata types which are applied for different purpose in the digital environment.

- **Descriptive**: Facilitates discovery and describes intellectual content
- **Administrative**: Facilitates management of digital and analog resources
- **Technical**: Describes the technical aspects of the digital object
- **Structural**: Describes the relationships within a digital object
- **Preservation**: Supports long-term retention of the digital object and may overlap with technical, administrative, and structural metadata

Recent findings have indicate the significant increase and proliferation of non-print collections in libraries. Weihs & Howarth, (2000), found that 93.7 percent of libraries have collected one or more types of non-print media. Video recordings were the most frequently collected medium, followed by microforms, sound recordings, cartographic material, computer software, and film, all owned by more than 50 percent of the libraries surveyed.

A survey of the largest 100 American academic and public libraries also found video recordings to be the most popular medium (collected by 99.3 percent of responding libraries) and sound recordings are close behind (98.6 percent). Computer files are popular as well (96.6 percent) and Internet resources are making an inroad (77.2 percent).

Borgman, (1996), earlier argued that online catalogs continue to be difficult to use because their design does not incorporate sufficient understanding of searching behavior. Actually, several research especially in information seeking indicates that users formulate questions in stages, gradually coming to the point where they can begin to articulate a query. Even then the search process may be iterative and searching may serve to refine the question rather than to build a set of documents that matches an explicit query. A "search" may be conducted over a number of sessions with different information technologies and sources, both online and offline, picking and choosing from multiple options to answer a question or explore an issue. Yet the design of most operational online catalogs assumes that users formulate a query that represents a fixed goal for the search and that each search session is independent. Many articles have been publish on bibliographic information and online bookstore.

Regarding method of organization, a Canadian study reported 75.1 percent of libraries with non-book collections used AACR2R to catalog all or part of their collections. The U.S. study found a higher percentage of full cataloging activities among the large libraries owning media—97.9 percent of the responding libraries fully cataloged their sound recording collections, 95.1 percent fully cataloged videos, 88.6 percent fully cataloged computer files, and 61.6 percent fully cataloged Internet resources(Hsieh-yee, 2000).

Actually, some e-book users are not aware about the possible implications of the digital rights management tied to the products. Generally, it is widely claimed that digital rights management is meant (DRM) to prevent copying of the e-book. However in many cases it is also possible that digital rights management will result in the complete denial of access by the purchaser to the e-book. With some formats of DRM, the e-book is tied to a specific computer or device. In these case the DRM will usually let the purchaser move the book a limited number of times after which they cannot use it on any additional devices. If the purchaser upgrades or replaces their devices eventually they may lose access to their purchase. Some forms of digital rights management depend on the existence of online services to authenticate the purchasers.

According to Somers & Nieuwenhuysen, (2010), over 2 million free e-books were available between July 4 and August 4 in 2009. Mobile availability of e-books may be provided for users with a mobile data connection, so that these e-books need not be stored on the device. An e-book can be offered indefinitely, without ever going "out of print". In the space that a comparably sized print book takes up, an e-reader can potentially contain thousands of e-books, limited only by its memory capacity. If space is at a premium, such as in a backpack or at home, it can be an advantage that an e-book collection takes up little room and weight.

3. Trends in Online Cataloging
The first generation of online catalogs followed two query-oriented design models: Online "card" catalog models, emulating the familiar card catalog, or Boolean searching models, emulating information retrieval systems such as DIALOG or Medline. Second-

generation online catalogs merged these two design models and improved access points, search capabilities, and display options (Hildreth, 1987, 1993).

The record structure, content, and primary searchable fields are drawn from card catalog design models, while the searching functions and many of the interface design characteristics are drawn from retrieval system models. While user input is simpler and screen displays are much clearer and more attractive, the basic functionality of on- line catalogs has changed little since the late 1980s. Although comparing card and online catalogs may seem like revisiting old. The library community as earlier mentioned considered radical changes in cataloging codes to address the needs of networked, distributed computing environments and the description of materials in a vast array of new media (Borgman, 1996).

Today online catalogs hold many millions of records, however, changes in cataloging rules and relevant standards must support the migration of assessment, dissemination and use of the formats, for libraries and other information users. Online catalogs are an established technology in major libraries in the world.

In the work of Witt, (2003), he describe the continuous efforts of library and information scientist in regularly keeping abreast with trends by attending workshop and conferences series to ensure easy access and retrieval of electronic publication and gradually moving from one metadata type to another. The library and information scientist are of the opinion that rather than viewing web content indexing as the solution to networked resource discovery, it should be view as a compliment to indexing based on surrogates of the actual resources; commonly referred to as descriptive or cataloging metadata. The association of standardized descriptive metadata with networked objects has the potential for substantially improving resource discovery capabilities by enabling field-based (e.g., author, title) searches, permitting indexing of non-textual objects, and allowing access to the surrogate content that is distinct from access to the content of the resource itself.

Descriptive cataloging is actually well-established in traditional libraries, where the MARC (Machine Readable Cataloging) record has been standardized but not too effective for electronic publications. The lead to series of workshop that bring together librarians, digital library researchers, content experts, and text-markup experts to promote better description standards for electronic resources which resulted to Dublin core.

In the series of workshops organized to structure how the discovery of online materials will be effective and efficient and define core components to be included and restructure, the Dublin core was the meeting point. The Dublin Core is a 15-element set of descriptors that has emerged from this effort in interdisciplinary and international consensus building. The Dublin Core effort produced three significant results to enhance retrieval of digital resources especially. The results include:

- Specification of the names and semantics of fifteen core descriptive metadata elements
- Specification of a broader container framework for the Dublin Core and metadata in

- Continuing discussions and meetings

The Dublin core strive to ensure that users can be able to create and use metadata, by the definition of four requirements for a core resource description record; Simplicity of creation and maintenance, commonly understood semantics, International scope, and extensibility. The below is the abbreviated Dublin core element description formulated as an alternative description standard for networked objects. It provides adequate data for Web resource discovery which is aim to make it simple for authors and content managers to create and maintain.

Table 1: Abbreviated Dublin Core element description

TITLE	The name given to the resource by the CREATOR or PUBLISHER
OTHER CONTRIBUTORS	Person(s) or organization(s) in addition to those specified in the CREATOR element who have made significant intellectual contributions to the resource but whose contribution is secondary to the individuals or entities specified in the CREATOR element
DATE	The date the resource was made available in its present form
RESOURCE TYPE	The category of the resource, such as home page, novel, poem, working paper, technical report, essay, dictionary. It is expected that RESOURCE TYPE will be chosen from an enumerated list of types
FORMAT	The data representation of the resource, such as text/html, ASCII, Postscript file, executable application, or JPEG image. FORMAT will be assigned from enumerated lists such as registered Internet Media Types (MIME types)
RESOURCE IDENTIFIER	String or number used to uniquely identify the resource. Examples for networked resources include URLs and URNs (when implemented)
SOURCE	The work, either print or electronic, from which this resource is derived, if applicable
LANGUAGE	Language(s) of the intellectual content of the resource
RELATION	Relationship to other resources. Formal specification of RELATION is currently under development
COVERAGE	The spatial locations and temporal duration's characteristic of the resource. Formal specification of COVERAGE is currently under development
RIGHTS MANAGEMENT	The content of this element is intended to be a link (a URL or other suitable URI as appropriate) to a copyright notice, a rights-management statement, or perhaps a server that would provide such information in a dynamic way

4. Issues and Challenges

In traditional libraries, the ability to find works of interest is directly related to how well they were cataloged. While cataloging electronic works digitized from a library's existing holding may be as simple as copying or moving a record from the print to the electronic form, complex and born-digital works require substantially more effort. To handle the growing volume of electronic publications, new tools and technologies have to be designed to allow effective automated semantic classification and searching. While full text search can be used for some items, there are many common catalog searches which cannot be performed using full text.

The information explosion pose huge challenges to information seekers and heightens the need for information organization. The implications cataloging and the changing information environment created for electronic resources catalogers include:

Firstly, the increasing volume of Web resources highlighting the importance of the selection and evaluation of information. Assessing the accuracy, authority, objectivity, and currency of electronic resources, especially those on the Web, will continue to be challenging and time-consuming. But, filtering effort by information organizers will save users from fruitless searching on the Web and elsewhere, especially when the filtering is performed with a solid understanding of the needs of a user community. Evaluation criteria for print resources have been expanded to cover electronic resources, and new techniques such as collaborative filtering can alert users of resources used by other users with similar interest.

Secondly, the amount of information available and the multiple formats in publications will challenge catalogers to describe file formats adequately and efficiently. Catalogers will need some knowledge of file formats to determine if additional equipment or software is required to run a work that consists of several media. In addition, new ways to organize electronic resources need to be explored.

While it is accepted that electronic resources can survive for centuries with some physical preservation techniques, digital media requires continuous processes to keep it compliant with current technology in order to be able to access and effectively retrieve from the repository. Hardware and software on which digital information is created are continuously changing. This presents a significant challenge in accessing, use and even preservation of digital resources and making them safe, available and accessible for future use.

However, newer repositories should also include the ability to search and translate books into many different languages, thereby making the works available to speakers of languages not covered by printed translations. Although, many newer readers have the ability to display motion, enlarge or change fonts, use Text-to-speech software to read the text aloud for visually impaired, partially sighted, search for key terms, find definitions, or allow highlighting bookmarking and annotation. However, e-books metadata search should allow readers look up words or find more information about the topic immediately and enhance organization of materials to suit how the author prefers and is not limited to a linear path through the book as hyper-text can allow a number of paths.

Also, confidently citing a digital object, is not always an assurance that the object will be accessible via the citation for many years in future irrespective of the metadata type if adequate preservation is not put in place.

Depending upon the software support and used formats, non-textual multimedia should also be embedded into e-book pages as widgets, including images (and image galleries), videos, audio files and interactive (still or animated) models; this will be similar to HTML elements which allow for presentation of multimedia content through embedding of the content inside web pages.

Another implications for catalogers is that, it force cataloger learn more efficient way to produce resource descriptions that can assist users in searching, identifying, selecting, and accessing resources. In addition to traditional cataloging elements, field 856, the field for electronic location and access, has supported access by linking bibliographic records to Web resources. Efficient resource description, however, remains a challenge. MARCit, a commercial software, offers a cataloging template for quick description of Web resources but still requires much human effort. The OCLC CORC Project tests the extent to which a cooperative catalog for Web resources can be created through machine harvesting and analysis of resource

5. Conclusion

However, library and other information institution has responded to some changes in a number of ways. Individually many libraries have subject guides on electronic resources, most of them have organized and with annotations, to present resources they have selected for their users and interactive user interface on the library website thereby assisting users in their search. This process adds value to the resources by reducing users' searching time. To compensate for the fixed order, linear structure of most subject guides, librarians have combined database design and Web technology. Cornell University's gateway (http://campusgw.library.cornell.edu/gateway.html), for instance, allows users to search keywords against resource types to generate a list of information tools for further exploration. Similar services are provided by Virginia Military Institute's Source Finder (http://www.vmi.edu/sourcefinder/) and at (http://library.dickinson.edu/db_index.html).

Online catalogs should be judged by their success in answering questions, rather than by success in matching queries. In later future, online cataloging systems should be based more on behavioral models of how people ask questions to enhance novice retrieval of relevant information of their needs. Such a design model should be able to assist in question-negotiating process, allowing the searcher to pursue multiple avenues of inquiry by entering fragments of the question, exploring vocabulary structures, capturing partial results, reformulating the search with the assistance of various specialized intelligent agents, retaining elements of a search for future sessions, and even transferring elements to other systems.

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