Knowledge Organization and Cultural Diversity

Organizers: José Augusto Chaves Guimarães e Vera Dodebei

ISKO-BRASIL

Organizers

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Knowledge Organization and Cultural Diversity

Marília, São Paulo, Brasil

Sociedade Brasileira de Organização do Conhecimento
(ISKO-Brasil)

2017

K73k Knowledge Organization and Cultural Diversity [recurso eletrônico] / José Augusto Chaves Guimarães, Vera Dodebei, organizadores. -- Pernambuco: ISKO-Brasil ; UFPE, 2017.
760 f. ; 30 cm.

ISBN: 978-85-415-0924-4

Livro digital

1. Organização do conhecimento. I. Título.

CDD 025.4

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Information organization, representation, retrieval and access: (re)configuration of MARC21 Format and BIBFRAME for cultural diversity in digital information environments?

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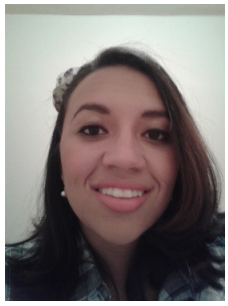

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1 Introduction

Studies in Information Organization and Representation have been redefined over the years in search of a guarantee of information retrieval and access especially due to the diversity present in cultural heritage institutions. Such diversity can be characterized by search behavior, retrieval mode and access to information, (re)configuration of informational production and adopted technologies. In this way, concepts, models, standards and formats of information organization and representation have also been discussed. This research is part of this universe and seeks to discuss the purposes of MARC21 Format and BIBFRAME as standards of information representation in digital information environments. The discussions involve, as a background, the expansion of the universe of information search and retrieval by communities as well as metadata use and reuse by technological parks; both relate to the availability of information by cultural heritage units on the web through the description of resources. In order to meet the proposed objective, the research presents a qualitative approach, of an applied nature, with a descriptive and exploratory profile. At the same time, it uses bibliographical and documentary research. Because this is a recent theme, this paper intends to serve as a social and theoretical contribution for future research on this topic.

2 Background on representation of resources

Information organization and representation (IOR) actions are based on processes of metadata analysis, synthesis, condensation, representation, retrieval, use and reuse of information resources in order to coexist with the user and obtain documents that seek to meet their needs given the possibilities of establishing communication. We highlight the studies focused on the concepts, models, standards and formats of information organization and representation, whether they are aimed at reading, analyzing, condensing, representing and constructing documentary languages, whether they are of functional requirements, conceptual modeling, interoperability and structures of information sharing and access by humans and machines.

The result of documentary representation efforts, present in IOR studies, focuses on the bibliographic record that establishes, therefore, semantic relations, between the elements present in the represented document and their value, subsemantics, marked by the relation between the several units that compose a bibliographic record and supersemantic, among the various records that refer to the various manifestations of a work, in addition to the syntactic relations, a requirement for the registration of value in semantic structures. (ZAFALON, 2014).

Representation standards, both the content and structure ones, ensure record consistency by defining syntax and semantic rules for the description of informational support and the content of informational resources, and attest to the success in resource retrieval once it minimizes possible differences in information representation and sharing.

3 (Re)configuration of purposes by cultural diversity?

MARC21 format, as a metadata structure standard, taken as a requirement for the process of sharing bibliographic records, provides mechanisms for reading and interpreting bibliographic data by machines. Allied to the records exchange format (ISO 2709), content standards (CDD, CDU, AACR, LCSH, among others) and communication protocols and bibliographic retrieval (Z39.50), ensures the transfer of qualified data across machines. Avram (1970, 1975) points out that the development of the format was based on the philosophy of information sharing and reuse, in which

a set of data can be accessed and used by several users at the same time. Initially configured for use by the Library of Congress (LC), MARC assumes features that allow each library to have autonomy both in providing records and in sharing with other units. MARC's flexibility, according to Zafalon (2008), occurs through its marks, given the adopted conventions which make the management and retrieval of bibliographic data more efficient, resulting from the specificity they promote. MARC was, therefore, developed with the aim of standardizing the representation of informational records and, thus, allow, through cooperative actions, the efficient exchange of bibliographic data in order to avoid duplication of efforts. Disadvantages of the MARC format, discussed by Tennant (2002, 2013), one of the supporters of the MARC format substitution initiative, indicate the complexity of its adoption, reliance on markup for semantic effects, record-keeping by qualified professionals, which generates desertion and resistance from the community itself, and the difficulty of reading the records given the complex syntax, natural of the numerical scheme of the labels. The author also highlights, the inability of the format to perform document relationships that are entirely digital, such as the URLs.

In this context, the Bibliographic Framework (BIBFRAME) model, from LC initiative, has been proposed as a substitute for MARC since 2012, whose purpose is to serve as a model for which several content models can be mapped. It is being designed to, intentionally, become a formal entry point for the librarian community into a network that involves both metadata and linked documents. This tends to be made possible by the fact that BIBFRAME is based on the proposal of creating semantic relations (LinkedData) and for presenting a modeling based on Resource Description Framework (RDF), model for data interchange on the Web. In the face of information reuse paradigm at its highest level, BIBFRAME recognizes entity, attributes and relationships, through its main classes (work, instance, author and annotation). (LIBRARY OF CONGRESS, 2012).

By aligning MARC's objective with the need to make bibliographic resources available to users, to the possibility of access to bibliographic resources, and, finally, to the objective of guaranteeing access to bibliographic resources, it is understood that MARC meets its initial purpose, since it guarantees retrieval and access to the bibliographic resources described in it. However, in a broader context involving open data and Web data studies, for example, MARC appears obsolete given the difficulty in creating relationships between resources, which compromises the navigation goal

beyond the catalog. BIBFRAME, however, in terms of bibliographic data structuring, in order to allow data exchange, as well as to enable the retrieval of increasingly specific information, indicates, for the moment, a gap in the new model, which has generated debates and disagreements.

4 Conclusions

MARC format has been harshly criticized for the number of tags, fields and subfields not always used which carry unnecessary costs to the software, as well as the difficulty for catalogers to use it. BIBFRAME, because of its low specificity in record description, jeopardizes the search result and the search refining, which requires fine granularity. BIBFRAME provides the description in instances and relationships with other major classes (work, author and annotation), but not the specific description. This is due to the data modeling used, RDF, which does not involve the creation of as many predicates as necessary to achieve the specificity of MARC. Another point refers to the temporality of URLs and the standardization in the creation of URIs, in order to guarantee univocity in retrieval, as foreseen in MARC. Obtaining control of authorities and access is imperative to achieve the purpose of the model.

Even with so many issues and uncertainties, LC and Zepheria (a company specialized in library applications) are developing a demo version of the model for bibliographic resource description to structure data and allow it to be entered. It is not clear, however, how data will be stored and exchanged with other formats. The difficulty is that RDF has the function of describing generic relationships across data, allowing computers to use and exchange these data and still preserve its original meaning, but not structure the information.

In order to draw a comparison between MARC21 and BIBFRAME, it is observed that the first one is dedicated to allowing the communication of bibliographic data through exchange in order to meet any informational need, anywhere worldwide, by any library or user; and that the second one seeks to integrate various knowledge communities, through linked data. As for the structure, both are differentiated since MARC uses fields and subfields, while BIBFRAME adopts RDF triples. MARC's advantages can be observed when saving time, inserting multiple records, consistency of records, guarantee of data integrity, possibility of cooperative cataloging and guarantee of more efficient retrieval. BIBFRAME, on the other hand, presents

integration of several knowledge communities, possibility to provide better navigability, self-sufficiency in records description, library entry in the Web data. The counterpoint in using BIBFRAME focuses on the lack of familiarity by users with RDF and the fact that it is not structured for information exchange, making use of little specificity in the descriptions.

When resuming the general objective of the research, it is understood that BIBFRAME arises with the intention of integrating libraries to all knowledge communities, through the Web, since, due to its structure, MARC21 format cannot carry out such characteristic. In this way, it can be verified that the substitution proposal is based on the need to integrate libraries with the Web environment in order to allow greater navigability to the user, integrating concepts and models such as FRBR, ontologies, RDF, XML and LinkedData.

In this sense, both MARC and BIBFRAME are intended for integrating communities that are or were isolated. MARC, with a somewhat timid purpose compared to BIBFRAME (disregarding the cultural and technological configuration of the time), connected the libraries so they could exchange bibliographic records, which resulted in benefits such as data consistency, information reuse and decrease in rework. BIBFRAME, through navigability concept, tends to integrate the library into a wide range of knowledge communities on a macro level. However, the similarity of purposes is restricted only to this point, since there are still many gaps and uncertainties in the development of BIBFRAME that do not contemplate the objectives served by MARC and, therefore, do not designate the same role played by the format.

Thus, it is not envisaged, at least for now, that BIBFRAME may be a substitute for MARC. However, similarly to what occurred to MARC, many of its applications and advantages as a model of data exchange could not be felt until its stability and conception as a consolidated format. The same can happen with BIBFRAME, which, as a model, does not provide a solution to all doubts that still linger.

In short, although BIBFRAME initiative has arisen for updating MARC21, it is understood that there is no impediment of coexistence between the two, since each serves specific and complementary purposes.

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