

Conceptual and Procedural Grounding of Documentary Systems

Cristina Dotta Ortega

Associate Professor , Minas Gerais Federal University,
Belo Horizonte, BRAZIL, <Ortega@eci.ufmg.br>



Cristina Dotta Ortega has a bachelor's degree in library science, and an MSc and PhD in information science from the University of São Paulo, Brazil. She is Associate Professor at the Graduate School of Information Science, Federal University of Minas Gerais, Belo Horizonte, Brazil. Her research interests are epistemology of information science, information organization, and documentary informatics.

Ortega, Cristina Dotta. **Conceptual and Procedural Grounding of Documentary Systems.** *Knowledge Organization.* 39(3), 224-228. 8 references.

ABSTRACT: Documentary activities are informational operations of selection and representation of objects made from their features and predictable use. In order to make them more dynamic, these activities are carried out systemically, according to institutionally limited (in the sense of social institution) information projects. This organic approach leads to the constitution of information systems, or, more specifically, systems of documentary information, inasmuch as they refer to actions about documents as objects from which information is produced. Thus, systems of documentary information are called documentary systems. This article aims to list and systematize elements with the potential to a generalizing and categorical approach of documentary systems. We approach the systems according to: elements of reference (the documents and their information, the users, and the institutional context); constitutive elements (collection and references); structural elements (constituent units and the relation among them); modes of production (pre or post representation of the document); management aspects (flow of documents and of their information); and, finally, typology (management systems and information retrieval systems). Thus, documentary systems can be considered products due to operations involving objects institutionally limited for the production of collections (virtual or not) and their references, whose objective is the appropriation of information by the user.

Received 12 January 2012; Accepted 12 January 2012

1.0 Introduction

Documentary activities are informational operations of selection and representation of objects made from their features and predictable use. In order to make them more dynamic, these activities are carried out systemically, according to institutionally limited (in the sense of social institution) information projects. This organic approach leads to the constitution of information systems, or, more specifically, systems of documentary information, inasmuch as they refer to actions about documents as objects from which information are produced. Thus, systems of documentary information are called documentary systems.

Bearing in mind the diversity of concrete systems set up in contexts of production and of use of infor-

mation, which are increasingly complex, we are supposed to explore generalizing elements which make it possible recognize its conceptual and procedural grounding. We also need to elaborate effective parameters to guide the reflexion related to what makes a documentary system become a documentary system. Thus, we aim to list and systematize elements with the potential to a generalizing and categorical approach of documentary systems.

The article is justifiable for at least two reasons. The first refers to the appearance of a large number of new research problems according to the proposition of solutions which ignored the progress already made. The second refers to the idea of universality and neutrality of processes, instruments, and documentary products, governed by the following concep-

tion: the act of making documentary representation which is independent of context. The two reasons are related to each other inasmuch as the specificity of documentary processes is disregarded when we take into consideration its objects and objectives. A question which comes up at the same time is one related to the search tools available on the Internet, whose possibilities of information retrieval are presented from a situation which is different from that of the documentary systems. Therefore, this triggers important differences which need to be better understood.

As methodology, the systems were approached according to: elements of reference, constitutive elements, structural elements, modes of production, management aspects, and typology.

2.0 Elements of reference

Rendón Rojas (2005, 162-163) studies the documentary informative system and its aim, which is to satisfy information needs of users by means of their ingress in the world of information thanks to the activities of the documentary informative institution. Documentary activities occur in the form of projects of information, which is elaborate according to its importance in a given institutional context (in the sense of social institution). For Smit (2000, 34), information is organized according to a utility which was assigned in the context of institutional objectives. Thus, the information user becomes one when an individual is approached within a certain institutional context in a situation of information use (real or potential) and in light of professional actions (so, systematic and objective actions).

Documents, in the documentary sense, are the product of activities of information selection and organization within a system according to their objectives. This organization presupposes the attribution of meanings in order to guide users in their processes of information search and use. Documentary systems are therefore meaning systems.

The elements of reference adopted in the formulation of documentary systems are: the documents and their information, the users, and the institutional context.

3.0 Constitutive elements

The identification and selection of documents are what we call collection, that is, a set of documents which is shaped as something coherent and with its own personality. Because of this, it can become mean-

ingful for certain users. From the collection, we set up registers which inform about documents. They are called references. Aspects related to the collection and to its references show the diversity of documentary systems, as follows:

- A documentary system can be an ordered collection and do without a database which is its reference.
- Likewise, it can be a database and do without the document collect and of the services of access to these documents (unless the documents are displayed electronically in the system).

The ideal condition for the access to information and its use would be the one of existence of database and of services of access to documents; the database allows us to communicate the information of documents, whereas the services enable the access to these documents.

A documentary system can still be a database whose documents, which are references, could never be collected and ordered in the form of a local collection, but their registers make possible the identification and location of documents. That is what Buckland (1991, 354) called the virtual collection of documents, for it refers to people, buildings, and other objects, which, in any situation, could not be collected and stored. We still have the documentary system, which is a database that makes no reference to documents, but to sparse data (the so called factual database). Here the stages of information retrieval and of access to the document do not occur, inasmuch as the registers of the database answer directly to the users' questions.

In the cases mentioned above, in which there is not a collection in the traditional sense (as in conventional libraries, electronic or hybrid), it is possible to identify a virtually constituted collection, according to Buckland's concept; it is based on this collection that the references are elaborate. Collection and references characterize the documentary systems in their essence and allow us to observe and distinguish their various manifestations.

4.0 Structural elements

Documentary systems are composed of potentially informative units which are selected and organized in such a way that the selection carried out and the relation settled between these units trigger the hypothesis of organization adopted for the system. In the sys-

temic approach, signification occurs in a given context and according to the relation settled between one unit and the other one. The notion of system or structure is explained from the relations among its elements and implies articulation both internally and within the system (Ortega and Lara 2010). In the strict sense of the database, we ought to determine the fields and their filling, making up units from the common elements that characterize each document typology, and from questions (predicted) of users. The registration of information is a structure composed of shape (fields) and content (about fields)—these are shapes which determine and are determined by the contents.

Within the area of library science, descriptive representation, and thematic representation are the groundings for the elaboration of models of information registers in the context of production and management of documentary systems, whose processes are carried out from appropriate instruments, for example: rules of cataloging, the formats for bibliographic data, the bibliographic classification systems, and the thesauri. The structural elements of documentary systems are their constitutive units and the relations among them, which are elaborated from documentary instruments.

5.0 Modes of production

The documentary representations which are part of the systems have been diversifying over time, leading to some products such as: notation of bibliographic classification systems, catalogs and bibliographies in the form of books, catalogs in the form of paper cards, electronic catalogs, and databases in general, including electronic documents attached to the registers and databases of electronic documents.

Firstly, the documentary representations were attached to the document. Later, they were also elaborated and displayed separately from the documents which they represented, making possible the assignment of a larger amount of information, and more and better retrieval resources. Finally, documentary representations were conceived within the text itself of the document.

The production of electronic documents inaugurated the documentary representation carried out directly within the text by means of markup languages. This new mode of documentary production led to concepts of “pre-representation” and “pos-representation” (studied by Biojone 2001, 69), according to the moment of the construction of the document, that is, the transformation of the text into a docu-

mentary product aimed at the manipulation, dissemination, access, and use of its contents. In the pos-representation, the document already exists, that is, it is completed. That is when we resort to the traditional methods of representation, like the cataloging and the index. In the pre-representation, the phases of representation are carried out in the moment of the construction of the document. This way, part of the elements that will constitute the representation of the document must be in the form which is appropriate for representation and access.

The modes of production of documentary systems—both at the moment of document production and of its representation—can be named pre-representation and pos-representation of the document.

6.0 Management aspects

That is about the management of the flow of input and output of documents and information (from documents) within the system. The phases which constitute these flows must be articulated among them, making possible their working in an economical way.

The management aspects involve, when appropriate, the phases of document identification, acquisition, shelf arrangement, production of registers of the database and maintenance of their consistency, storage and preservation of documents and their registers, besides the production and updating of instruments, search interfaces, etc, under the orientation of policies especially carried out for such purpose, and according to the various types of resources that make it possible to effectuate these activities.

For this, the phases need to be explicit. In the case of the production of the registers of the database, we have to:

- Determine the structure of fields and their characteristics, according to specific document typologies and users’ questions (predicted);
- Establish criteria for the filling of the fields and for the choice and shape of the access points that will constitute the search index;
- Elaborate the shape of reference presentation and of the reference document, when it is the case;
- Describe form and content, that is, fill in the fields and elaborate the access points; and,
- Review periodically search and register indices which keep the consistency of the system, that is, the coherence among the descriptions.

The management aspects refer to the phases of management of documents and their information, taking into consideration decision making for the execution of each phase and rationalization of resources, according to the objectives of the system.

7.0 Typology

Documentary systems can be divided, according to their vocations, into systems of management or of control of transactions (usually called systems of information); and systems of information retrieval. Codina (1994, 441) explains these distinctions, respectively, by means of ideas of systems “which are interesting because they do things” (systems of human activities), and systems “which are interesting deposits of information” (systems or "deposits" of knowledge).

For him, in a system of human activities, what is in question is the administrative information, necessary to the institution management. In relation to the systems of knowledge, according to Abadal and Codina (2005, 26), they would be those that operate in the context of knowledge acquisition and satisfaction of more or less complex information needs, aiming at study activities, project research, teaching and learning processes, support to research and development, etc.

Table 1 below shows a proposal of types of documentary systems.

The table allows us to identify the control of management processes as aspects of archival science of current records, and the representation of information assigned to documents for purposes of retrieval as aspects of library science, museology, and archival science (historical archives).

The activities in these areas refer to the operations of production of meanings about objects in order to promote certain informational apprehension for various purposes. The operations about the objects, however, are different regarding the type of look performed, which is defined according to interests which will be manifested in correspondent institutional contexts.

The typologies of documentary systems are based on the purposes of the system, that is, control of transactions or representation of information for retrieval. The information science studies usually refer to the second type.

8.0 Final considerations

We have pointed out that the theoretical and methodological comprehension of documentary processes based on normative approach does not help users with abstraction exercises, which are essential to the teaching and learning processes, the production of knowledge and the elaboration of solutions to the various social demands of information. We believe that the technical and technological aspects must be replaced, however, bearing in mind the (recurrent) problem of performing or reinforcing displacements and fragmentations.

About the relation between documentary systems and search tools available on the Internet, each one of the identified elements points to different ways of dealing and searching information which have their own features in the possible accesses to this information. Among the questions approached in this paper that distinguish documentary systems, we can mention a bigger segmentation of users that occurred based on a given institutional context, which is basic

types of systems characteristics	MANAGEMENT SYSTEMS	INFORMATION RETRIEVAL SYSTEMS
designations	management systems	bibliographic, cataloguing, textual, referential and factual systems
mode of data collect	resulting from the processes of transaction control	collected with informative intention
documentary unit	set of data related to a transaction	set of data related to a document (as a whole, in parts or a set of documents) or to sparse data
type of provided answer	provides directly the requested answer	provides the references of documents which can satisfy information needs, or provides directly the requested answer
objective	control of transactions and, afterwards, support to the management of these operations	representation of information for retrieval
comprehended areas	Archival Science (current records)	Library Science, Museology, and Archival Science (historical archives)

Table 1. Types of documentary systems (Source: Ortega 2009)

for the constitution of the collection and their references, which are, therefore, developed in a structural or systemic perspective, and must be managed appropriately so that they reach their goals. The search tools are guided—more weakly—to specific users, for they aim to be able to—at least theoretically—deal to all and any available content on the Internet.

In this way, we propose that documentary systems are products resulting from operations involving objects—institutionally circumscribed—for the production of collections (virtual or not) and their references, and whose purpose is to promote information appropriation by users.

References

- Abadal, Ernest, and Codina, Lluís. 2005. *Bases de datos documentales: características, funciones y método*. Madrid: Síntesis.
- Biojone, Mariana Rocha. 2001. “Forma e função dos periódicos científicos na comunicação da ciência.” Diss. do Mestrado, Universidade de São Paulo.
- Buckland, Michael. 1991. Information as thing. *Journal of the American society for information science* 42: 351-60.
- Codina, Lluís. 1994. Modelo conceptual de un sistema de información documental. *Revista Española de documentación científica* 17: 440-49.
- Ortega, Cristina Dotta. 2009. *Os registros de informação dos sistemas documentários: uma discussão no âmbito da representação descritiva*. Tese Doutorado, Universidade de São Paulo.
- Ortega, Cristina Dotta, and Lara, Marilda Lopes Ginez de. 2010. A noção de estrutura e os registros de informação dos sistemas documentários. *Transinformação* 22: 7-17.
- Rendón Rojas Miguel Ángel. 2005. *Bases teóricas y filosóficas de la bibliotecología*. 2nd ed. México, D.F.: UNAM.
- Smit, Johanna W. 1999. Arquivologia, biblioteconomia e museologia – o que agrega estas atividades profissionais e o que as separa? *Revista Brasileira de biblioteconomia e documentação* Nova série 1n2: 27-36.

Publisher

ERGON-Verlag GmbH, Keesburgstr. 11, D-97074 Würzburg
Phone: +49 (0)931 280084; FAX +49 (0)931 282872
E-mail: service@ergon-verlag.de; <http://www.ergon-verlag.de>

Editor-in-chief (Editorial office)

Dr. Richard P. SMIRAGLIA (Editor-in-Chief), School of Information Studies, University of Wisconsin, Milwaukee, Northwest Quad Building B, 2025 E Newport St., Milwaukee, WI 53211 USA.
E-mail: smiragli@uwm.edu

Instructions for Authors

Manuscripts should be submitted electronically (in Word or RTF format) in English only via email to the editor-in chief and should be accompanied by an indicative abstract of 100 to 200 words.

A separate title page should include the article title and the author's name, postal address, and E-mail address, if available. Only the title of the article should appear on the first page of the text.

To protect anonymity, the author's name *should not* appear on the manuscript, and all references in the body of the text and in footnotes that might identify the author to the reviewer should be removed and cited on a separate page. Articles that do not conform to these specifications will be returned to authors.

Criteria for acceptance will be appropriateness to the field of the journal (see Scope and Aims), taking into account the merit of the contents and presentation. The manuscript should be concise and should conform as much as possible to professional standards of English usage and grammar. Manuscripts are received with the understanding that they have not been previously published, are not being submitted for publication elsewhere, and that if the work received official sponsorship, it has been duly released for publication. Submissions are refereed, and authors will usually be notified within 6 to 10 weeks.

The text should be structured by numbered subheadings. It should contain an introduction, giving an overview and stating the purpose, a main body, describing in sufficient detail the materials or methods used and the results or systems developed, and a conclusion or summary.

Footnotes are not permitted; all narration should be included in the text of the article.

Italics should not be used for emphasis. Em-dashes should be used as substitutes for commas. Paragraphs should include a topic sentence and some developed narrative. A typical paragraph has several sentences.

Reference citations within the text should have the following form: (author year). For example, (Jones 1990). Specific page numbers are required for quoted material, e.g. (Jones 1990, 100). A citation with two authors would read (Jones and Smith, 1990); three or more authors would be: (Jones et al., 1990). When the author is mentioned in the text, only the date and optional page number should appear in parenthesis – e.g. According to Jones (1990), ...

References should be listed alphabetically by author at the end of the article. Author names should be given as found in the sources (not abbreviated). Journal titles should not be abbreviated.

Multiple citations to works by the same author should be listed chronologically and should each include the author's name. Articles appearing in the same year should have the following format: "Jones 2005a, Jones 2005b, etc." Issue numbers are given only when a journal volume is not through-paginated.

Examples:

Dahlberg, Ingetraut. 1978. A referent-oriented, analytical concept theory for INTERCONCEPT. *International classification* 5: 142-51.

Howarth, Lynne C. 2003. Designing a common namespace for searching metadata-enabled knowledge repositories: an international perspective. *Cataloging & classification quarterly* 37n1/2: 173-85.

Pogorelec, Andrej and Šauperl, Alenka. 2006. The alternative model of classification of belles-lettres in libraries. *Knowledge organization* 33: 204-14.

Schallier, Wouter. 2004. On the razor's edge: between local and overall needs in knowledge organization. In McIlwaine, Ia C. ed., *Knowledge organization and the global information society: Proceedings of the Eighth International ISKO Conference 13-16 July 2004 London, UK*. Advances in knowledge organization 9. Würzburg: Ergon Verlag, pp. 269-74.

Smiraglia, Richard P. 2001. *The nature of 'a work': implications for the organization of knowledge*. Lanham, Md.: Scarecrow.

Smiraglia, Richard P. 2005. Instantiation: Toward a theory. In Vaughan, Liwen, ed. *Data, information, and knowledge in a networked world; Annual conference of the Canadian Association for Information Science ... London, Ontario, June 2-4 2005*. Available <http://www.caais-acsi.ca/2005proceedings.htm>.

Illustrations should be kept to a necessary minimum and should be embedded within the document. Photographs (including color and half-tone) should be scanned with a minimum resolution of 600 dpi and saved as .jpg files. Tables and figures should be embedded within the document. Tables should contain a number and title at the bottom, and all columns and rows should have headings. All illustrations should be cited in the text as Figure 1, Figure 2, etc. or Table 1, Table 2, etc.

Upon acceptance of a manuscript for publication, authors must provide a wallet-size photo and a one-paragraph biographical sketch (fewer than 100 words). The photograph should be scanned with a minimum resolution of 600 dpi and saved as a .jpg file.

Advertising

Responsible for advertising: ERGON-Verlag GmbH, Keesburgstr. 11, 97074 Würzburg (Germany).

© 2012 by ERGON-Verlag GmbH.

All Rights reserved.

KO is published bi-monthly by ERGON-Verlag GmbH.

- The price for the print version is € 198,00/ann. including air-mail delivery.
- The price for the print version plus access to the online version (PDF) is € 229,00/ann. including airmail delivery.

Scope

The more scientific data is generated in the impetuous present times, the more ordering energy needs to be expended to control these data in a retrievable fashion. With the abundance of knowledge now available the questions of new solutions to the ordering problem and thus of improved classification systems, methods and procedures have acquired unforeseen significance. For many years now they have been the focus of interest of information scientists the world over.

Until recently, the special literature relevant to classification was published in piecemeal fashion, scattered over the numerous technical journals serving the experts of the various fields such as:

philosophy and science of science
 science policy and science organization
 mathematics, statistics and computer science
 library and information science
 archivistics and museology
 journalism and communication science
 industrial products and commodity science
 terminology, lexicography and linguistics

Beginning in 1974, KNOWLEDGE ORGANIZATION (formerly INTERNATIONAL CLASSIFICATION) has been serving as a common platform for the discussion of both theoretical background questions and practical application problems in many areas of concern. In each issue experts from many countries comment on questions of an adequate structuring and construction of ordering systems and on the problems of their use in opening the information contents of new literature, of data collections and survey, of tabular works and of other objects of scientific interest. Their contributions have been concerned with

- (1) clarifying the theoretical foundations (general ordering theory/science, theoretical bases of classification, data analysis and reduction)
- (2) describing practical operations connected with indexing/classification, as well as applications of classification systems and thesauri, manual and machine indexing
- (3) tracing the history of classification knowledge and methodology
- (4) discussing questions of education and training in classification
- (5) concerning themselves with the problems of terminology in general and with respect to special fields.

Aims

Thus, KNOWLEDGE ORGANIZATION is a forum for all those interested in the organization of knowledge on a universal or a domain-specific scale, using concept-analytical or concept-synthetical approaches, as well as quantitative and qualitative methodologies. KNOWLEDGE ORGANIZATION also addresses the intellectual and automatic compilation and use of classification systems and thesauri in all fields of knowledge, with special attention being given to the problems of terminology.

KNOWLEDGE ORGANIZATION publishes original articles, reports on conferences and similar communications, as well as book reviews, letters to the editor, and an extensive annotated bibliography of recent classification and indexing literature.

KNOWLEDGE ORGANIZATION should therefore be available at every university and research library of every country, at every information center, at colleges and schools of library and information science, in the hands of everybody interested in the fields mentioned above and thus also at every office for updating information on any topic related to the problems of order in our information-flooded times.

KNOWLEDGE ORGANIZATION was founded in 1973 by an international group of scholars with a consulting board of editors representing the world's regions, the special classification fields, and the subject areas involved. From 1974-1980 it was published by K.G. Saur Verlag, München. Back issues of 1978-1992 are available from ERGON-Verlag, too.

As of 1989, KNOWLEDGE ORGANIZATION has become the official organ of the INTERNATIONAL SOCIETY FOR KNOWLEDGE ORGANIZATION (ISKO) and is included for every ISKO-member, personal or institutional in the membership fee (US \$ 55/US \$ 110).

Rates: From 2011 on for 6 issues/ann. (including indexes) € 198,00 (forwarding costs included) for the print version resp. € 229,00 for the print version plus access to the online version (PDF). Membership rates see above.

ERGON-Verlag GmbH, Keesburgstr. 11, D-97074 Würzburg; Phone: +49 (0)931 280084; FAX +49 (0)931 282872; E-mail: service@ergon-verlag.de; http://www.ergon-verlag.de

The contents of this journal are indexed and abstracted in *Referativnyi Zhurnal Informatika* and in the following online databases: *Information Science Abstracts*, *INSPEC*, *Library and Information Science Abstracts (LISA)*, *Library Literature*, *PASCAL*, *Sociological Abstracts*, and *Web Science & Social Sciences Citation Index*.