New directions in information access

Ariel Alejandro Rodríguez-García *

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Abstract

With the development of Web 2.0 and information technologies, new models of production, distribution and consumption of information have emerged. This study examines the changes undergone in information access for both general users and information professionals. The study's approach is informed by Kuhn's contention regarding the priority of paradigms, in which neophyte professionals will adopt emerging practices without questioning their causes or origins. This hypothesis is tested by way of Rifkin's postulates on the network economy and those proffered by Vargas Llosa regarding the metamorphosis of written culture for the network. The results presented are derived

* Instituto de Investigaciones Bibliotecológicas y de la Información de la UNAM, México. ariel@iibi.unam.mx

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Resumen

Las nuevas pautas para el acceso a la información
Ariel Alejandro Rodríguez García

El título del estudio sugiere que con el desarrollo de la Web 2.0 y las tecnologías de la información han surgido nuevos modelos de producción, distribución y consumo de información. De ahí que el propósito del trabajo sea examinar los cambios que se han suscitado en el acceso a la información tanto para usuarios como para profesionales de la información. La tesis del estudio centra su atención en los señalamientos de Kuhn respecto a la prioridad de los paradigmas, la cual refiere que los nuevos profesionales adoptarán las prácticas emergentes sin cuestionar las causas que le dieron origen. La comprobación se hace por medio de los postulados de Rifkin sobre la economía-red y los vertidos por Vargas Llosa con relación a la metamorfosis de la cultura escrita para la red. Los resultados que se presentan en el estudio se derivan del proyecto PAPIIT IT 400 312 Biblioteca Digital en Bibliotecología y Estudios de la Información.

Palabras claves: Acceso a la información; Prosumidores; Web 2.0.

Introduction

The question of information access has been examined from diverse disciplines, among which are library science and information studies. A review of the literature reveals studies of copyright, open source, privacy and data security, as well as the domain of digital information within emerging practices of information production, distribution and consumption.

Our interest in the development of information access aims to provide an interpretation of how the digital library, with its organized collection and

associated services, must assume that library models are not really the best for describing what is occurring in a digital environment characterized by the emergence of other models that are entirely dissimilar to those in place.

The recent focus on the nature of the digital library examines the use of information technology and emerging applications, while neglecting the basics, a situation that is leading to empiricism. This confirms Shera's hypothesis, which argues that the new procedures for high reduction miniaturization seem to have no limit; and also confirms Rifkin who points out that as the printing press altered human consciousness over the past centuries, information technology will probably exert a similar effect on human consciousness in the years to come.

This approach to new guidelines for information access arises from the digital library model supported by the archetype of Web 2.0, which takes full advantage of current technological applications used to produce and consume digital information in open information systems. In this sense, as these users enjoy diverse tools to teach and guide them in their efforts to achieve cultural convergence in digital environments, the assumption that access to digital information in an open context allows both traditional and so-called "pro-sumers" to produce, consume and share information through networks becomes very relevant.

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Three approaches to information access

The economy underpinned by access, the rapid growth of information and communication technologies that modify information consumption habits and the redefinition of the nature of the entities in the information organization are evidence of events that in recent years have led to drastic change in information access.

The network economy, as Rifkin[1] has called it, has as its essential feature connectivity. Unlike the economy established in the industrial age, which was tied to a specific geographic location, where negotiations and transactions occurred, the new economy unfolds through the exchange of data in cyberspace. It establishes new organizational models in economic life and is governed by networks rather than markets, where sellers and buyers are

1 Jeremy Rifkin, *La era del acceso: la revolución de la nueva economía.*

replaced by suppliers and users, and virtually all products acquire the trait associated with access.

In the realm of information technology, just as in the economy at large, these changes are present in individual information users, who are no longer passive consumers, but rather active participants in the production of digital content.

These new users of digital information have been dubbed "information prosumers." According to Burns,[2] a prosumer is actively involved in producing content using community-generated content within social networks. Traditional or hybrid users may still be present. In common terms, these parties remain passive consumers, because they have not yet begun to produce and consume information at the same time.

Regarding the latter, Vargas Llosa has posited the following questions about book production: Will printed books survive or will e-books finish them off once and for all? Will future readers use digital tablets exclusively? In a somewhat distraught tone, Vargas Llosa[3] states that the arrival of the electronic book is imminent. It seems the vast majority of readers will prefer the screen, while small minorities continue to read printed books. Bookstores, libraries, publishers, literary agents, editors and book distributors also may be consigned to the halls of nostalgia. He concludes by saying that when writers write virtual literature, they will not do so seeking the concrete, tactile and durable object embodied in the printed book.

With regard to the redefinition of the nature of the entities from the perspective of the organization of information, the rationale offered by Svenonius[4] on document language invites one to observe that descriptive attributes are the most suitable for retrieving information, since there are others that will respond to the language of the work, thereby allowing access to content. A good document language, asserts Svenonius,[5] helps with identification and retrieval, while supporting selection and acquisition and allowing navigation within the document.

No doubt these three perspectives on information access are conducive to raising the central contention of this paper. With the development of digital information and distinctive features of digital information resources, it is possible to establish new guidelines for information access. If so, what is the role played by re-signification of the document language? To be active in any information system, how do new users assimilate the idea that digital

2 Axel Burns, *Blogs, Wikipedia's, second life, and beyond: form production to produsage,* 24.
3 Mario Vargas Llosa, *La civilización del espectáculo,* 204-205.
4 Eleaine Svenonius, *The intelectual foundation of information organization,* 122-123.
5 *Ibid.,* 108.

information requires their active participation in the labeling of information resources?

Information access attributes

It is of interest to this paper to expand upon the attributes of access from two vantage points. The first vantage takes into account what Svenonius has observed about changes in the language of the document arising from the new attributes of information resources and modernizing of the cataloging model. The second refers to the issue of information retrieval seen from the standpoint of what Burns observes about the information prosumer and how new guidelines are created for both production and consumption of digital information.

The language of documents: attributes for access

The language of the document has changed since the advent of electronic documents and then even more so with the digital document. So marked is this change, the model of cataloging conceptualized as per AACR , Second Edition (AACR2) had to be modified, because it was difficult to adapt the Cardinal Principle[6] to the attributes of these new documents. Hence in cataloging, since the nineties of the last century, these rules consider information technology as the mediator between the way of describing the electronic and digital document and way in which information and content are accessed.

In different ways it has been noted that the Cardinal Principle is one of the great traditions of cataloging: its rigidity, however, prevents new documents from being described in depth. For this reason, it was necessary to update the various bibliographic description rules and create the model of Functional Requirements as the main artifice of change.[7]

It should be emphasized that while the conceptual model was being developed, there were those who predicted that, with the arrival of the new millennium, the organization of information would be in serious trouble if

6 El Principio Cardinal fue concebido para gobernar el proceso de transcripción, de despliegue y las opciones de acceso a los objetos bibliográficos que como característica común tienen un formato físico.

7 IFLA Study Group on the Functional Requirements for Bibliographic Records. El grupo de trabajo FRBR tuvo como objetivos proponer un marco estructurado y claramente definido para relacionar los datos consignados en los registros bibliográficos con las necesidades de los usuarios y recomendar un nivel básico de funcionalidad de los registros creados por las agencias bibliográficas nacionales.

systems failed to take into account digital documents. Many believed that this matter was so serious that the future of information retrieval systems could be jeopardy.[8]

The model introduced by the IFLA recognizes that the whole body of information found in the bibliographic universe can be described and represented regardless of its nature. This position is taken before a new set of assumptions. One of the main assumptions is that every attribute of any entity, such as digital document, will allow access and retrieval of data of any kind, whether intrinsic or extrinsic.

It is clear that digital information has brought new forms and formats for storing information to the bibliographic universe; and this has led to discussions on how to understand and relate to the information residing in an intangible object. The basic forms for organizing information have been established, allowing information professionals to carry out their work on the basis of a basic unit of the subset of entities or digital information resources sets, and, for the purpose of access, identification and retrieval in an information system, by means of their specific attributes identified as logical elements.[9]

With regard to the model of Functional Requirements, it seems important to mention that after three decades since its appearance, it has begun to be used as a theoretical framework in the structure and content of the Guidelines for the Resource Description and Access (RDA), substituting the RCAA2.

In the words of Oliver,[10] the new guidelines are a standard designed to focus on users and the tasks they perform when they use the resources discoverers. As such, this model is a new alternative for reflecting on bibliographic data and data authority.

With regard to these guidelines, Oliver[11] reports that they were created so data management can use both current technologies and emergent databases structured for future technologies. In this regard, the guidelines for description and access propose making use of the specificities to cover both traditional and non-traditional resources, while also covering analogue and digital resources and those existing within and outside of the library environment.

We would like to go into more detail about the guidelines and their relationship to the attributes for information access. These guidelines have been proposed for diverse communities to use as description standards, in

8 Ariel Alejandro Rodríguez García, *Las nuevas entidades de información analizadas desde la perspectiva de la organización de la información,* 11.
9 Linda Schamber, "What is a document? Rethinking the concept in uneasy time", 669.
10 Chris Oliver, *Introducing RDA a guide to the basic,* 2.
11 *Ibid., 2-3.*

the understanding that their flexibility and extension allow different metadata structures to contain the necessary elements to enable the attributes of entities for storing, transmitting and exchanging data using diverse coding schemes, thereby bringing benefits to end users.

From the perspective of documentation, metadata cannot be overlooked as we strive to grasp the attributes of access. In information organization, metadata play an important role, because, since the advent of the Internet, various digital information labeling schemes have been developed on the basis of emerging resources. Those who organize information acknowledge that metadata ensure data can be managed, retrieved, used, reused and that access to them can be controlled. The role they play in the basic structure of the internet, however, makes it possible to carry out activities such as electronic commerce and the construction of the Semantic Web. Metadata serve to facilitate retrieval and interoperability between various systems, and ensure the administration of the rights of both the source and intellectual content. In short, the uses of metadata are diverse. [12] For example, metadata serve to identify a resource, to ensure the length of content, to establish the structure and context of content, and to assist the user in the discovery, retrieval and delivery of resources, among others purposes.

In information management, the importance of metadata resides in how it facilitates the registration of descriptive properties of the resource and solves the problems of retrieval, while providing the elements allowing correct data entry to gain access to topics. Moreover, metadata maintain data blocks, which in the information architecture are used to develop the means needed to perform retrieval. For all of these reasons, metadata have the potential to transfer data and thereby ensure interoperability and information exchange between systems.

We may also say that metadata are valuable in information architecture, because without them the organizational problems would be common, since if they are used improperly or erroneously information would be impossible to find and retrieve. Chowdhury and Chowdhury[13] have stated that if the metadata are not made intuitive and easy to grasp, users will be unlikely to use software systems and digital information resources.

On the subject of access, it has been said that the information architecture must act decisively in all organizations because it serves to guide the access, use and appropriate sharing of information and increase the volume of digital information. Without coordination and planning to create and

12 G. G. Chowdhury y Sudatta Chowdhury, *Organizing information: from the shelf to the web*, 142.

13 *Ibid.,* 188-189.

manage the information, short-sighted efforts to develop metadata will cause chaos and difficulties in finding and using information. If standards are employed with local characteristics, not those agreed upon nationally and internationally, one runs the risk of getting lost in the internet because the development of vocabulary to describe and represent the resources will not be properly standardized.

It is evident that with the emergence and development of information architecture, a new field of study and work opened up in organizing information involving computers, the internet and diverse disciplines. This specialized area exploits both library traditions and practices associated with computers. Anyone interested in exploring the topic of metadata must then pay particular attention to the progress of information architecture.

In short, the approach to information access from the new standpoint of the attributes of the document language, the adaptation of the Cardinal Principle in cataloging, the appearance of the guidelines for description and access, the metadata standard to describe and represent digital information resources combined with and administration and information architecture provides us a battery of skills and appropriate abilities that must be mastered by those wishing to practice the art and science of organizing digital information.

The user as information tagger

For over 150 years, storage and retrieval of information have been considered the basic functions for proper use of document data. These were principles that the organization of information established as the paths to follow to accommodate the needs of the user employing the library catalog. In these core functions, we find the ideas expressed by Cutter with respect to the objectives of the catalog and those emphasized by Svenonius[14] regarding the preparation of substitute records for users to get to know the contents of the library collection. Similarly, we can assert that with the appearance of the Functional Requirements model, automated cataloging and the emergence of information resources other than books, the objectives of the new catalog must modify the four basic library tasks of finding, identifying, selecting and obtaining performed by the user in order to gain access not only to the bibliographic record, but also to the information contained in each information resource.

14 Svenonius, *op. cit.,* 15-30.

As a result of the latest update of the principles governing the catalogue, diverse questions are raised[15] that have not yet been answered conclusively. Further inquiry on how records for several format types and information resources should be pursued in order to posit guidelines for the descriptive entries in the catalog, the access points or keywords to be employed, and to determine whether all the descriptive elements are potentially retrieved and in what order.

For the moment, we will not answer each of the questions above, since the focus of this paper is to examine the way the user, rather than the librarian, is participating in the labeling of digital information resources; since we find veiled approaches in the model of Functional Requirements that say the user will be able, locally or through links, to employ all those manifestations and representations of a work, and may use different, specific[16] instances of a work for its identification.

Nor will we linger on the issue of bibliographic formats, such as MARC21, since this format allows us to create standardized entry records, while operating under rules that allow the creation and exchange of bibliographic records. This is common knowledge in the international library community. We agree with Chowdhury and Chowdhur[17] that bibliographic formats play a fundamental role in the creation, management and sharing of records. The focus of this paper is to contextualize the use of free or communal labeling of data, which is known in online social network circles as *social labeling*.

The variety of digital information resources available in digital libraries, digital repositories and the internet has led to the emergence of alternatives allowing these resources to be described and represented almost as soon as they are made operational. The idiosyncrasies of these resources require specialized rules and labeling systems.

We have mentioned that metadata allows us to understand how to use data resources from a different angle and how the hypertextuality of resources will facilitate interconnectivity and how most metadata systems transcribe inherent data in an entity. Most of the time the end user ignores everything that defines a metadata system. When the structure of the elements is set correctly in accord with the information it provides, the efficient use of entities will be achieved. This requires the system to be grouped at three levels in order to perform the basic tasks of identification, and obtaining and accessing

15 Chowdhury y Chowdhury, *op. cit.,* 31.

16 En el tecnicismo del modelo conceptual de los Requerimientos Funcionales, se ha denominado instancia específica (atributo) a lo que en catalogación se conoce e identifica como elementos descriptivos de las entidades. Escamilla González los denominó en su *Interpretación catalográfica de los libros* como los elementos más importantes para elaborar la ficha catalográfica.

17 Chowdhury y Chowdhury, *op. cit.,* 47-69.

information resource. Professional librarians, whose main task is to organize information, should be interested in and know about these matters.

Social or community tagging[18] recommends that the end user superficially review issues such as information architecture, social software, personal information management issues, the framework of social tagging of books, procedures for sharing collections of digital objects and the conditions set by electronic commerce (e -commerce) for the purchase of a consumer good.

One principle of social online networks indicates that the user must label his information in order to achieve a balance between system performance and the interacting counterparty. In this light, we wonder what motivates the user to label their resources. What are the questions at the center of recent debates on social tagging versus professional labeling? What factors should interest the user when dealing with social tagging?

Smith[19] provides the following five reason for having the social tagger coexist with the labeling system. Without stopping to examine motivations, he states that the most solid is that labels be easy to use with the least time investment:

- *Simple tag.* On the basis of this idea, the social tagger can create multiple access routes for retrieving his resources and add more than one tag.
- *Flexible tag.* A tag that can be adapted to any situation, purpose or class of information.
- *Extensible tag.* That under no circumstance is the creation of new tags denied or forbidden. Anyone who wishes to describe something new can do so without impediments.
- *Aggregate tags.* The diverse folder types provide local information, but with tags that allow information from other sites to be added. These can be used to bring together information from multiple websites.
- *Recommendation.* Not everyone who enters the system knows the meaning of each tag. As such, brief explanations on use are provided.

Regarding matters that should interest the tagger when beginning to use social metadata, we agree with Smith[20] when he asserts that the cornerstones of good practice are information architecture, social software and personal information management.

Tagging must be fixed in the information architecture, because this is

18 Gene Smith, *Tagging: people-powered metadata for the social web*, 12-13.
19 *Ibid.,* 23-24.
20 *Ibid.,* 12-13.

where the structural design for sharing information resides, and it allows the system to focus on the controlled vocabulary, search and discovery systems, and the consistency of the navigation schemes.

Regarding social software, the tagger is asked to identify the existing variants in each software. Some of these are simpler than others, but the intention is to allow users to move about the system in an easy and interactive way.

Finally, the tagger should view the management of personal information as a way by which he can acquire, maintain, retrieve and use information from the specific instances of each document.

The stresses existing between this conception of social tagging and standard cataloging practices, can be found in our view along four main moments: between the personal and the social; between idiosyncratic and standard, between the free and I controlled; and between amateur and professional. Smith concludes that from the perspective of the beholder, there will always be stress points, because the systems are created for different purposes, economic values and from distinct tagging perspectives. As such, tagging on the social or collaborative model will prevail in systems, repositories or websites that operate with simple and easy to understand structures.

The information prosumer: Who is he and what does he do for information access?

The first logical approach to creating a metadata system[21] is to analyze the content, determine the user and decide on the functional requirements. This was also observed in social tagging, which requires three main elements to form an online social network: users, resources and tagging.[22]

Both fundamentals report that early identification of needs and information resources of both the main and secondary user groups is worthwhile. When each of these is recognized, it will be possible to determine the attributes of digital resources used to find and identify documents.

For the development of digital collections,[23] the work with users is performed through a metadata designer, who works jointly with an expert or curator on the subject area. They will establish the users of a particular collection, the needs associated with browsing and searching for each location and time. They will also establish navigation as per a selected set of relevant thematic categories within a given collection, while placing range limits obey-

21 Steven J. Miller, *Metadata for digital collections*, 253.
22 Smith, *op. cit.,* 39-51.
23 Miller, *op. cit.,* 254.

ing date and type of primary resources.

In online social networks[24] three types of connections between users can be considered, namely:

- *Followers.* These users simply make contact with each other.
- *Contacts.* These carry out reciprocal communication with network users.
- *Groups.* These actors share resources on a given topic. Subgroups may also form as the request of any member of the group.

The contexts cited above serve as a prelude to refer to the main features that the user will assume on the way to becoming prosumer, in which there is consonance between the tagging system and the individual who tags any given information resource.

Theoretical models of the eighties and early nineties could not yet be deemed the most suitable for situating the prosumer, because the internet had not yet become popular as a form of mass communication. It was not until the beginning of the year two thousand that conditions began to favor the consolidation of the prosumer. The internet had introduced significant changes to the traditional model of production and distribution of information, so much so that the traditional physical distribution of goods and services had been undermined by the production of goods without physical existence.

Unlike the traditional model, the emerging model allowed access to information resources[25] but with unequal feedback. That is to say:

- The relationship between producers and consumers was disproportionate because of the supremacy in the distribution channels of the producers;
- Access to means of production and distribution of information was available, although limited to a small group of operators, a situation that did not favor business practices;
- The same technology pushing person-to-person communications underwent change due to the incorporation of peer-to-peer models, which began to enrich the collaborative communication, production and distribution on a global scale, and
- Contents in digital format can be shared more easily and modified faster. As such, the concept of "consumption" in the traditional sense

24 Smith, *op. cit.,* 44-45.
25 Axel Burns, *Blogs, Wikipedia, Second Life, and Beyond: from Production to Produsage,* 13.

was no longer applicable, hence the digital information was without rival.

If the information production and distribution model has changed due to the rapid development of digital information, a method is needed in which the user is the agent responsible for its creation and upkeep. In this light, the question to be answered is: What are the features of this new user understood as a prosumer?

Burns[26] explains that before becoming a prosumer, one necessarily passes through a hybrid state in order to interact with digital information. In traditional terms, they are user-producers, but these hybrids do not become producers and users at the same time.

According to Burns [27] the four identifying principles of a prosumer are:

- *Open participation*. Community assessment. Many of the participants are able to examine, evaluate and add contributions to preceding comments, which yields better outcomes and higher quality discussions.
- *Fluid Heterarchy, meritocracia Ad Hoc*. A prosumer necessarily derives from the equipotential principle, which asserts that he has the skills and abilities as a prosumer, because not all participants are equal, but they have equal ability to make worthy contributions to the project.
- *Unfinished actions, ongoing processes*. Because participants adopt a probabilistic model they involve themselves in equipotential work. These projects unfold gradually, and modular tasks invite prosumers to contribute casually to producing collaborative contents that are broadcast and shared in open access information context. Hence, the prosumer process tends to be ongoing and without a fixed end.
- *Common property, individual rewards*. As noted previously, in a community of prosumers information must necessarily be shared and valued by those who create the content while aiming to keep the creation process open and available to all future participants, who, in turn, will be prepared to incorporate their contributions. Of course, if anyone wants to participate as a hybrid prosumer, they must abide by the moral and legal provisions included in the GNU (General Public License and Free Documentation License), the Open Source License and the Creative Commons *License*. These documents stipulate, for example, that the community content shall be freely available; and that changes to such contents will be performed under identical conditions and that

26 *Ibid.,* 23.
27 *Ibid.,* 24.

the contributions of individual prosumers should be acknowledged and appropriately rewarded, as warranted.

Over the last twenty years, prosumer information has begun to appear in institutions, organizations and companies. An unlikely process of convergence is underway, and to such a degree that the idea of Cultural Convergence,[28] in which the current culture loses its position, while favoring the end of the production chain in order to reduce the levels of participation of all those who are in the network.

It should be noted that the model of cultural convergence is thriving in startups, which encourage "win-win" environments for consumers. Moreover, the companies themselves perceive this approach as a key to attaining popularity. For example, sophisticated services that require the support of networked information systems specialists are often promoted in this way.

Using other words, Jackson[29] cites that the presence of Web 2.0 in companies serve to facilitate the exploitation of applications developed through this technology:

- With responsible use with regard to the expanding universe of information and proliferation of e-mails, since this can generate significant returns of knowledge that can be of a valuable product to the company.
- Addressing the concerns and inclinations of the next generations of workers.
- Assume the loss of knowledge as the baby boom generation retires.
- Grasp the opportunities connectivity and dynamic networks offer.
- Possess the ability and knowledge to create sophisticated products that allow some small contributions.
- Reason about the fragmentation of the value chain work and the creation of multi-tasking.
- Understand the proliferation of outsourcing work for certain contracts and the mobility of team members.

From the foregoing, it should be understood that much depends on the system of information in place, because the performance of Web 2.0 applications shall depend on a good decision to purchase and implement technology solutions.

In view of the characteristics of the information prosumer and cultural convergence, we may well assume that the digital discourse has turned a cor-

28 *Idem.*

29 Paul Jackson, *Web 2.0 knowledge technologies and enterprise: smarter, lighter and cheaper*, 92-93.

ner with its structure taking on special relevance. In broad terms, what has come to be stressed is the increased use of acronyms and emoticons as means of expression. It has also been found that digital discourses occur within the limits of the oral tradition. Similarly, the use of pre-figurative gesticulations is being used as a transitional style and as part of the rules of participation. Existing near to these features of digital discourse are the folksonomy, or wiki, which aim to contribute ideas about the order within the chaos generated from the structure of digital discourse.

Surely, we should not lose be sight of the information prosumer in the generation of digital content. The prosumer should be seen as a user who demands more information than that required by the passive or hybrid user. We must assume that their knowledge and expertise in the use of information technologies is more advanced, and we can safely believe that the prosumers cultural values, practices, traditions and beliefs are undergirded by the culture of digital information.

The composition of information access guidelines

Many of the discussions addressed in this paper revolve around three ideas: 1) access to information; 2) tagging systems and the re-signification of the document language; and 3) information prosumer as creator of culture and digital discourse.

Access to information has changed. There are new models of production, distribution and consumption, because digital information exhibits various traditional features. But this model did not appear until experts validated and acknowledged it as a new approach to produce and distribute information. Moreover, this has required appropriate knowledge on access-based economic activities, cultural convergence and composition of digital information to be appropriated by diverse communities in order to establish a new category for digital literacy and skills around which news user will develop their skills with regard to the practices followed by a prosumer.

Currently, access to information through new production models, such as blogs, wikis or podcasts, has evolved the existing information formats. These are found in social networks, such as Facebook, and search engines, such as Google, which are not comparable to anything in the analogue world.

Browing[30], Braman[31] and Block[32] point out that the digital transition has forced librarians, publishers and booksellers to reassess their roles. Some libraries watched how collections began to "come out" of copyright to be distributed digitally. This led to several bookstores and publishers to enter into free-for-copy or pay-for-play schemes. Over time, this change has demonstrated that it is not easy for the library to establish itself within the digital context, while for booksellers and publishers it is somewhat little easier provided matters of intellectual property and associated compensation are duly settled.

In sum, examined from the perspective of the network economy and new production models, information access has spurred discussion on the emergence of cultural convergence and the information prosumer.

In the organization of the information, it has been shown that the new access guidelines are being set from the perspective of tagging systems, metadata and the user as a tagger of digital information. The traditional perception of the organization of information is to maximize the social utility of bibliographic records for the benefit of the user, even if this means resorting to techniques and procedures on the verge of obsolescence because of the exponential growth of information, living conditions and use of information technology.

Despite this situation, today it is common to hear about the World Wide Web, Internet, the digital library and digital repositories, XML, Web 2.0, mobile technology, the semantic web and many other associated things. Technically, these ideas express how information technology has become the leading actor on the library's information access stage.

Without having explained the technical aspects and operation of each of these, we realize that tensions exist between the public and private tagging systems. Discrepancies between the practices of amateur and expert labeling will continue as long as they do not follow the same method. The same will be the case for idiosyncratic and regulated labeling systems that do not follow the same principles.

In the context of web technology and digital libraries, Chowdhury and Chowdhury[33] clarify that ontologies are playing a significant role because their mechanisms allow analysis of the meaning of resources, favoring their performance in the information access process and the in the process of or-

30 John Browing, "What is the role of libraries in the information economy?", 55.
31 Sandra Braman. "Theorizing the impact of it on libraries-state relations", 105.
32 Maryline Block (ed.), *Net effects: how librarians can manage the unintended consequences of the Internet.*
33 Chowdhury y Chowdhury, *op. cit.,* 220.

ganizing and gathering heterogeneous information contained in digital information resources. The purpose of these initiatives is to facilitate the organization and processing of digital information, imbuing it with meaning to allow its use, access and retrieval in the development of the semantic web. Moreover, they assert that the ease of implementing metadata schemas allows users to tag their information, as we have pointed out with regard to prosumers, giving rise to social classification systems or folksonomies. In these systems, the user can tag and classify resources.

Web technologies are based on markup languages known as XML and key to creating Web-based information systems. According to Clarke,[34] XML has applications at various levels, ranging from the analysis of the document as a raw material to sophisticated interfaces that interact on the Web.

The image of the future library serving information prosumers with new access models suggests that current efforts should be devoted to grasping how XML can enhance library services. Thus, according to Miller and Clarke[35], XSLT or CSS should be revised, since each of these constitutes a support capable of reconfiguring the operational digital information medium. As noted regarding the user's agency as tagger, the creation of XML reference manuals will help review and resolve the media lying between the content and presentation of the resources, and between goods and services.

The prosumer emerges from online environments and networking, participating not only passively as a consumer, but also as an active user who tends to engage with a strong personal interest. In some cases the prosumer actively participates with a focus on productivity of social networks and community content, hence the importance of the prosumer in social tagging.

34 Kevin Clarke, "Updating MARC records with XMLMARC", 3-13.
35 Miller y Clarke, *Putting XML to work in the library*, 173-190.

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