Preface

FROM AUTOMATION TO THE COMMUNITY: LIBRARY 2.0 AND THE WAY FORWARD

Ever since libraries have taken on their modern guise as centres for organizing and depositing knowledge, with a mission to make such knowledge accessible to all their users, they have adopted whatever technology has been available at the time to enable them to fulfill this mission. With the advent and widespread use of information technology, the potential for applying such technology to the work of libraries has increased exponentially. When technological advances are first applied, they are usually expensive and complex, and the application of information technology to libraries was not without these problems. However, even when information technology was first introduced into libraries, librarians and library users were developing ideas about new and better objectives, services, and products. The explosion in the automation of libraries that took place in the 1980s and 1990s established and standardized the organizational and technical structures and models necessary for libraries to carry out their work, and established more or less common ways of thinking in relation to what a system of this type should do. Inevitably, the perspective for studying, analyzing, and applying information technology tools was mainly that of librarians. The systems offered a suitable solution to the challenges posed by technical and management processes. This led to significant attention being given to technical questions regarding headings, formats, or the exchange of records, but there was almost a complete lack of consideration of the needs of the end user. The service offered to the end user consisted of the replacement of normal catalogues and files with a computerized version, namely OPAC (Online Public Access Catalogue). Although this was an improvement in relation to searching the catalogue and the speed of response, it did not really provide any added value. This very unsatisfactory situation began to improve at the beginning of the 1990s, with a growing concern for the design of the end user interface and increased attention to how end users carry out searches.

When Tim O'Reilly outlined Web 2.0, he defined the features of these information services on the Web, and the social and economic factors, which would make it successful. In particular, these are based on seven principles:

- The Web as a Platform.
- Harnessing Collective Intelligence.
- Data is the Next Intel Inside.
- End of the Software Release Cycle.
- Lightweight Programming Models Software.

- Above the Level of a Single Device.
- Rich User Experiences.

The tag "2.0" has dominated headlines concerning news about the Internet in recent years. The expression coined by O'Reilly has been applied to any new technological or social proposal, which has arisen in relation to the Internet, and automatically confers a glamorous image of newness and innovation, an image of a change that would be an instant success. Web 2.0, policy 2.0, business 2.0, education 2.0, science 2.0, university 2.0, etc. together with, inevitably, library 2.0. Michael Casey's proposal in his old blog *LibraryCrunch*, where he identified different aspects of library 2.0, was structured around the idea that libraries can, and should, take advantage of the new 2.0 tools to facilitate the participation of users, as part of a process of innovation and continuous change. Library services must remain constantly alert to the needs and behaviour of their users, taking advantage of the technological tools available to meet these needs and responding to these behaviours. The majority of library 2.0 formulations are digital but library 2.0 must be social (see Figure 1).

Library 2.0 was not an exclusively technological movement. The technological change occurred alongside sociological and organizational changes. Although it is marked by a strong technological component, Web 2.0, or the social Web, as it has gradually come to be known, is not just based on the implementation of new tools with varying chances of success. In Web 2.0, or the social Web, it is not only users' attitudes that play a fundamental role, but attitudes "towards" users as well. Focusing on the context of libraries and archives, the invitation to actively participate in them, accepting them as benchmarks in the design, creation, and assessment of services, must have establishing a conversation, based on trust parameters, as a logical consequence, and it must seek to go beyond the one-directional communications that are so common of the services and products of the first generations of the Web, or Web

Figure 1. The Web 2.0 tag cloud, by M. Angermeier (http://kosmar.de/archives/2005/11/11/the-huge-cloud-lens-bubble-map-web20/)

1.0, which is how the Webs of the 1990s have sometimes been termed. The user, the reader, was transformed into an active part of the library community, and was considered capable of providing content for the library, and capable of using libraries creatively and of enriching them. The patron acquired a power that was able to influence the way in which libraries planned, developed, and implemented their services. Clearly, this stimulated a productive exchange of opinions and ideas in the library world. Without evaluating the different arguments, what is certainly true is that the debate has served to explore new perspectives and to innovate in the services provided by libraries. These new ideas have exploited existing tools to create and implement information services that have strengthened the dissemination of information and participation by users. Without aiming to be exhaustive, as a reference regarding the extent to which 2.0 has been adopted in libraries, we can use the list of 2.0 services compiled by Meredith G. Farkas in his book *Social Software in Libraries*:

- Wikis.
- Blogs.
- Instant messaging.
- RSS.
- Bookmarks and social tags.
- Sharing media (photography, video, music).
- Social networks platforms.
- Social software for libraries.
- Access from cell phones.
- Library games.

This necessary user participation must be echoed by services being aimed at meeting user requirements. They must offer solutions to real problems, to identified needs, and save time and resources. Implementing solutions or tools motivated by the phenomenon of "technological wizardry" lead, in the short term, to users becoming tired of them and rejecting them, as they do not consider they have any practical use. To successfully change information services to better reflect what users seem to expect, it is essential to discover their requirements. They need to be observed to learn about their reading patterns, how they study, and how they find out information. Studying these facets will make it possible to understand the keys to the means of communication in use today, without ruling out other more formal and traditional analysis techniques, which are more widely used in studies of users, such as surveys or meetings with groups of users.

Library 2.0 is inseparable from 2.0 Web tools. The technology has made it possible for users to participate, and for services to be implemented. Continuing the trend from the previous decade, the library interface used on the Web was OPAC. Now, OPAC has been transformed into OPAC 2.0 and had to adopt the functionalities required to be able to facilitate active participation by library users. For years, the literature has contained studies indicating problems with user interaction and user dissatisfaction. Web 2.0 seemed to promise a potential solution to these deficiencies. Consequently, OPACs began to add layers of 2.0 functionalities, in an attempt to convert them into useful tools able to carry out searches and organize information. Jessamyn West very accurately formulated everything demanded of an OPAC in her blog *librarian.net*, the well known *What We Want: An OPAC Manifesto*. Although OPAC 2.0 is a technological tool, in reality it is the reflection of a change in the library model, in that it integrates and accepts the user as an active participant capable of managing information.

Applying Web 2.0/social Web principles to library computerization systems has taken place in OPACs. Casey confirms that user comments, labeling, and assessments of an element in the collection or of a series of them make it possible to create a product whose information users find more relevant and useful. With more open and complete data, the OPAC can occupy a higher position in user preferences as a data recovery tool. The use of social information and collective intelligence can help to reinforce the OPAC's function as a tool for discovering information, going beyond the traditional view of locating already known documents.

This development perspective contrasts with some recent studies showing a decrease in the use of OPACs by users and their replacement by generic tools. The reasons why this situation occurs need to be asked. The main question should not be how to improve OPACs. That is the wrong question. OPACs can only be improved by adding participation and recommendation. However, participation cannot hide the fact that the basic product it offers does not satisfy users. The OPAC core is referential, incomplete, and local information. It does not solve any problem beyond knowing whether there is a nearby physical copy and when it can be obtained. The key issue is that the user wants the document with all its content, not a reference, and now he wants it in a digital format. This explains the increasing use of the academic version of Google, of open repositories, and of collaborative reference services. Users want a list of more elaborated resources which help them in their daily tasks.

An OPAC is the interface with a library's automation system. The nucleus of this automation system lies within the OPAC itself. The majority of library automation systems, however, continue to be from the "pre-2.0" era. A latent tension can be seen between classical conceptual models and the open and participative models proposed at the moment. This tension is also reflected in another basic text, *Library Software Manifesto*, by Roy Tennant in his *blogtechessence.info*. A commercial component can also be seen in this conceptual tension, related to various aspects of the system vendors' interests and the current state of the evolution and development of their products. In this situation, the combination of open source software and Web 2.0 has offered a way out which has been adopted by many libraries. V*uFind, Scriblio, The Social OPAC, eXtensible Catalog, Blacklight,* etc., to a greater or lesser extent, were used to cover demands. The technical solution adopted was the creation of layers of superimposed functionality, which offered the OPAC user the opportunity to share content with other users, to contribute opinions, to recommend reading or other material, to create virtual bookshelves, etc.

However, this library 2.0 is neither oblivious to its general social, educational, and economic context, nor does it stop having precedents or basic factors which have made it possible to appear. These technical and social factors, which are also intimately related, can include:

- Free and open source software movement.
- The popularization of free classification schemes.
- The democratization of digital content production.
- Guidelines for information access and consumption by users.
- The development of online learning systems.

The development and cost difficulties posed by proprietary software systems for the computerization of libraries encouraged the appearance of open source software solutions. The business model that sustains them is based on charging for the value added services that are implemented on the platform, at the client's request. Although this solution is looked at with caution by a large number of professionals, it is true that its technical features are similar to those provided by more established systems on the market. As an example of reliability, one need only consider that institutional data repositories based on

OAI servers would not exist without open source software, or that the majority of the virtual classroom and learning systems are also supported by libre software. The focus on FLOSS does not only come down to tools that follow the classic library computerization model. The *Open Library Environment* (OLE), project aims to create a generic model and framework for a new generation of library computer systems, defining objectives, features, and architecture for such systems, both open and proprietary.

We must go beyond the classic model of library computerization. Advantage must be taken of all the knowledge and experience acquired over thirty years, and the key guidelines must be established. In reality, many ideas are being introduced in successive generations of the new versions of tools such as *Koha* and *Evergreen*. It is worth considering the way in which library automation systems can evolve in the short and medium term. Marshall Breeding, in his column *Systems Librarian*, has published interesting comments regarding trends in the sector. Some of these trends could be:

- The definition of new theoretical models for library automation, for example as Kuali OLE is currently doing.
- The formation of library consortia for the development of systems, and the development of the market for the value added service companies.
- The consolidation of libre and open source software solutions and their slow but progressive expansion.
- The presence of the library on the Internet not exclusively supported by OPAC. Content management systems will be established that will provide integrated services to users, where OPAC will be integrated as a functionality.
- Library data silos becoming semantic repositories. The recent recommendation by the W3C on the Semantic Web and libraries has set the pattern for integrating library databases into the Semantic Web.
- The incorporation of multimedia information as a basic component of the library portal.
- The importance of participation by libraries in consortia that provide common services or make it possible to tackle cooperative developments will be strengthened.

The most traditional library information systems appear to be insufficient and neither satisfy information needs nor respond to trends in accessing and consuming information to which the end users have become accustomed. It is necessary to change their focus and architecture from a model based on supporting the technical process to one with a focus based on collaborative enrichment of information and the personalization of services and content. Other information services and products have already been doing this for some time on the Internet, so there is no technical, social, or economic excuse for libraries not to do the same. Regarding the highly technical aspects of the systems, there is an urgent need to adjust the technical architecture of the systems in such a way that they become capable of integrating different specialized modules, both *front-end* and *back-end*. The integration of different modules within the user interface that provide the user with advanced information management functions that supplement information held within the library with related external information is especially important. In addition, the information and the underlying functionality must be organized in such a way that they can be used in other systems and applications, such as virtual classrooms, so that use is not restricted to libraries alone. There are enormous possibilities for exploiting and re-using library information in other digital products. A new model of architecture is required for library computerization systems, designed in such a way that the restrictions imposed by monolithic structures are overcome, so that it is possible to exploit all the potential for enriching information that is offered by information contained in an OPAC.

In view of this situation, we need to address the role, functions, and activities librarians should perform in the social digital library environment. Desirable skills in what some have termed librarian 2.0, from a perspective focused on the training of librarians, have also been covered by González. It is obvious that although the traditional librarian know-how is necessary for the foundation of the profession, it does not suffice, and on occasion it is even inadequate. Users display new changing behaviors in their relationship with digital information, and this dynamism must also be transferred to approaches to the design, planning, and performance of library services and products. The basic skills librarians should maximize would be focused on (see Figure 2):

- Understanding the organization, structure, systems, and operation of the social networking websites.
- Developing communication and interaction skills in social environments.
- Skills for creating, assessing, seeking, exploring, and surfing the information contained in social networks.
- Starting up and maintaining information services and products adapted to the channel and to potential users.
- Ethical and legal aspects of information in digital environments.
- Training users to understand, use, and take advantage of social networks.

This book brings together ten chapters on the different aspects of the automation of libraries and OPACs 2.0. There are case studies and chapters on: tool applications, prototypes, interface analyses, proposals for analytic indicators, training environments, and XML, amongst others. All these lay within the framework of the complex ecosystem of library automation systems.

Bento and da Silva propose a new model for searching bibliographic information, which has as its central axis the user's needs and the context in which the user carries out the searches. The key concept in this case is "discovery."

Prabawa and Kan redesigned an OPAC, creating a prototype that increases the level of the user's interaction. The four principles that they applied were: using overview and details panes, a tabular data display, using tabs as a history mechanism, and embedding a suggestion bar.

Han and Cho highlight the importance that the management of metadata tags in XML is acquiring due to the increasing number of information resources, with various metadata schemas that must be integrated into cataloguing workflow.

Katz and Nagy describe the experience of integrating the Solr search engine into *VuFind*. They highlight the importance of having a tool of this type, which can be easily integrated into other OPAC 2.0 platforms with open source software licenses.

Ho centres her work on the study and analysis of *VuFind* in an academic library. She examines the use that users make of *VuFind* and concludes that the features offered by the tool match the users' demands.

Barber et al. carried out a study into the evolution of OPACS in Latin American countries towards 2.0 models. For this, they used a quantitative methodology to study the problems posed by current interfaces.

Tramullas and Garrido analyse the possibilities of the Semantic Web, with the aim of creating a prototype personal assistant that helps users to develop their search processes in an OPAC, incorporating reference information and relationships with other concepts into the process.

Sellés, Serrano-Cobos, and Lloret describe the difficulty of assessing the activity of users in Web 2.0, and suggest analytic indicators that would make it possible to measure the activity and interaction of users in a library 2.0 environment.

Figure 2. A librarian 2.0's manifesto, by Laura Cohen, 2006 (http://www.youtube.com/watch?v=ZblrRs3fkSU)

Corradini and Pérez-Montoro relate personal information management and Web 2.0, considering the tools that libraries can provide users to improve their informational behavior. The potential role of libraries is closely related to information literacy programs.

Skelly, Eidelman, and Underwood approach the field of education in the 2.0 environment and give a detailed description of a formative experience of library users, based on the creation of materials combining *Libguides* with different Web 2.0 tools.

The contributions included in this book must be considered within this context. The different approaches and studies included confirm that in the field of library automation there is once again an atmosphere of dynamism, innovation, and opportunities not experienced for some time. The availability of easy-to-use development and integration tools has given libraries the opportunity to create solutions adapted to their own particular needs, with a potential never known before. Full advantage must be taken of this situation. We have gone beyond tags and names, but the models, results, and experiences remain, and in turn serve as a foundation on which to base our efforts to reach a new level of development. Discussing the future of libraries, especially academic and university ones, has been a red-hot issue in recent months, especially in view of the consequences of the economic crisis. Economic tensions, together with changes in educational models, and the increasing importance of digital information in teaching and learning processes have resulted in various opinions and views of the short-term development of libraries and changes needed for survival. The development of library systems and their interfaces are presented as an unavoidable requirement.

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REFERENCES

Bridges, K. (2012). *Beyond the browser: Web 2.0 and librarianship*. Santa Barbara, CA: Libraries Unlimited.

Casey, M. E., & Savastinuk, L. C. (2007). *A guide to participatory library service*. Medford, NJ: Information Today.

Courtney, N. (2007). *Library 2.0 and beyond: Innovative technologies and tomorrow's user*. Westport, CT: Libraries Unlimited.

Farkas, M. G. (2007). *Social software in libraries*. Medford, NJ: Information Today.

Parkes, D., & Hart, L. (Eds.). (2010). *Web 2.0 and libraries: Impacts, technologies and trends*. Oxford, UK: Chandos Pub.

Stephens, M., & Collins, M. (2007). Web 2.0, library 2.0, and the hyperlinked library. *Serials Review*, *33*(4), 253–256.

Tramullas, J., & Garrido, P. (2009). Informatización y digitalización de bibliotecas: Factores de desarrollo. *Boletín de la ANABAD*, *4*, 187–198.

Xie, I. (2008). *Interactive information retrieval in digital environments*. Hersey, PA: IGI Global.