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Evaluating Discovery tools in Portuguese and Spanish Academic Libraries

Abstract

The aim of the research undertaken was to get to know the degree of implementation of discovery tools in university libraries in the Iberian Peninsula. It also allowed an initial evaluation of the facilities offered by the tools implemented. With regard to the presence of discovery tools we find a different situation in the two countries, with a higher degree of implementation in Spain. As for the behaviour of the discovery layers, the eight tools evaluated performed appropriately.

Discovery tools represent a considerable advance. The combining of the library's catalogue and indexes to articles with other sources of information in a single unified interface is an unquestionable improvement. However, catalogues and databases still fulfil some purposes better than discovery tools. Libraries need to consider their clients when putting up on their websites the various tools for gaining access to contents.

1. Discovery Tools: A Stride Forward in Configuring University Library Catalogues for the Twenty-First Century

There have been numerous studies highlighting the limitations of Online Public Access Catalogues (OPACs) as instruments involved in the retrieval of information. One good example is the work carried out by Matthewsen (1997), pointing out that OPACs were at a crucial point in their development. The view put forward was that problems of various sorts had prevented OPACs from evolving into the third-generation catalogue described by Hildreth (1993), an "E3" OPAC, which would be *Enhanced* (in functions and usability), *Expanded* (to cover the entire collection) and *Extended* (giving access via links, networks and portals to resources other than the library's own collection).

It is true that progress towards attaining the next generation catalogue (NGC) has only recently begun. Various approaches have been adopted for this purpose: integration of descriptions of journals and electronic resources; incorporation of "Web 2.0" applications (those facilitating sharing) into a catalogue, converting it into a social, participatory OPAC; and implementation of tools for federated searching of materials in the library that are developing into discovery tools (DTs). This last aspect of the evolution of catalogues will be addressed in this paper.

As pointed out by Yang & Wagner (2010), until recent years libraries have not had many options for up-dating their OPACs. Proprietary integrated library systems (ILS) offered only limited customization. At present, libraries using certain systems of this type, whether proprietary or open source, can achieve some improvements by adding patches, acquiring new modules of the proprietary system or plug-ins, but these

solutions do not permit an old OPAC to be transformed into a next generation catalogue. As the authors cited commented, these are improvements which, most of the time, are no more than cosmetic.

In addition, libraries can adopt a web wrapping approach that allows them to hide their catalogues behind a fresh user interface, a DT. This situation seems to be predominant at the present time. Abandonment of OPACs in favour of a new generation of tools, termed discovery tools, is a tendency that is feasible, but at the present day it does not appear to have consolidated its position.

Caplan (2011) indicates that the expression "discovery tool" became established in 2009. In January of that year it was announced that Summon was coming onto the market as a "Unified Discovery Service" and April saw the appearance of the EBSCO Discovery Service (EDS). The term immediately came to mean a single access point for all materials. Shortly after, a second feature was added, the requirement for a single centralized index. By 2011 this sense, with its two main requisites, had become fixed.

From the viewpoint of architecture and appearance, DTs are recognizable mainly through their use in faceted searching for a catalogued item, which permits users to add or eliminate access points, and to expand or limit their searches. As noted by Johns-Smith (2012), some DTs allow libraries to define the facets involved, assigning them different weightings and customizing the terminology employed in labelling. The chief facets include the type of material or the material form in which content is presented, format, subject, date or range of dates, physical location and language. The end-user has the facility of adjusting content, format, age and purpose of the documents requested.

Nonetheless, the usefulness of discovery layers lies more in their ability to combine multiple sources of metadata in a single simple search box than merely in facets. The combining of Machine-Readable Cataloguing (MARC) records, Open Archives Initiative (OAI) repositories, databases, images, multimedia materials and other resources online leads to the obtaining of exhaustive results. These had hitherto never been achievable in such a simple way.

Access to volumes of information previously hidden away in catalogues or private databases, without any possibility of simultaneous retrieval from a single access point, is a revolution both for professional researchers and for inexpert users. Hence, Breeding (2011) points out that DTs are designed to find items, not just to search for them, an idea shared by Vaughan (2011) who stresses that web-scale discovery is a development long desired by libraries to enable better discovery of information.

DTs differ from metasearch engines, in that the latter search in multiple databases and at a later stage aggregate their results. When software for federated searching is employed, the results offered depend both on the search algorithms and on the relevance ranking of the metasearch, and also on those corresponding to each tool used.

In contrast, DTs import metadata into a single index and apply a single set of search algorithms and a single formula for ordering results.

Anglada (2012) gives a brief history of these discovery layers which were born out of an aspiration to offer a more enriched search experience than did catalogues. In parallel with the installation of the first tool of this sort, AquaBrowser, federated search engines appeared, permitting simultaneous consultation of various databases and providing a single set of results. The first of these to be made available commercially was MetaLib. Filtered and federated searches have evolved to become unified searches thanks to DTs as known today. Catalogues have expanded to include searches for journal articles (WorldCat Local) and major journal article indexes incorporate the catalogues of libraries and institutional repositories (Summon, Primo Central, and others). Either of these two routes leads to the desired result of offering unified access to all the resources that the library subscribes to or holds.

2. Discovery Tools Implemented in Portuguese and Spanish University Libraries

To answer the question of which DTs have been implemented in Spanish university libraries, exploratory research was carried out in 2013 (Rodríguez & Travieso). This work investigated the stage of development of the catalogues of Spanish university libraries. The aim was to discover which libraries have implemented DTs, which tools have been chosen and what functions they offer. The starting point was a detailed exploration of the web sites of university libraries, undertaken in May 2013. A total of 72 university libraries participate in the Spanish Network of University Libraries (Rebiun)[1], including those belonging to the network of the Spanish Higher Council for Scientific Research (CSIC).

A review of the catalogues of university libraries permitted identification of implementation of various DTs in a considerable number of Spanish university libraries. Of the total of libraries investigated, 43 had installed DTs, this figure equating to 59.7%.

From the investigations carried out it became clear that the choice of discovery tool was largely governed by decisions by consortia. Thus, Andalusian Library Consortium (CBUA) plumped for the Encore tool, while the Catalan Library Consortium (CBUC) preferred Primo Central. The Madrid Library Consortium (Madroño) chose Summon and the Castile and Leon Library Consortium (BUCLE) went for WorldCat Local. As a consequence of the number of universities involved in the groupings indicated, it was possible to see a predominance of three discovery layers: Encore (11 installations), Primo Central (11 installations) and Summon (12 installations). WorldCat Local was limited to 5 installations and VuFind was present in libraries of the Amicus network[2].

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[1] http://www.rebiun.org/libraries.html

[2] Encore http://www.iii.com/intl/spanish.php

Some areas have not joined in the process of installing this sort of tool, as, for instance, Galicia with its library consortium Bugalicia. It is noteworthy that the implementation of DT has not been limited to state universities, but has also extended to some private institutions, such as the CEU, the Business Institute, the European University of Madrid, the Open University of Catalonia and the International University of Andalusia.

With regard to Portugal, the investigation was carried out in January 2014. In view of the large number of private higher education institutions, a total of 92 if polytechnics are included, these were not considered. Thus, the work concentrated on state institutions, totalling 34 universities and polytechnics[3]. To these were added the two nationwide academic portals that give access to scientific information. These were the Online Library of Knowledge (B-On) and the Portuguese Open-Access Scientific Repository (RCAAP). The investigation proved complex, as an outcome of the Portuguese library policy, in which libraries with a decentralized structure predominate.

A review of university library catalogues permitted identification of the implementation of four discovery tools in four universities, besides B-On and RCAAP. In percentage terms this implies 16.66% of the catalogues and portals considered. The choices made coincided only in part with the selections made in Spain. Specifically, Primo Central was found installed in the Online Library of Knowledge. Apart from this presence of Primo, EDS was noted at the University of Porto (virtual library). In addition, there was another case with Drupal installed, and three with Retrievo. In respect of Drupal[4], found at the Arts Faculty of the University of Coimbra, this is an open source tool of the Content Management System type. It was subjected to assessment to determine to what degree it implemented the functions of a DT.

With regard to Retrievo, this is a proprietary tool of Portuguese origin, developed by KeepSolutions[5]. It may be seen as a content aggregation and federated search portal, with a single point of access to resources, functionalities that make it *de facto* a discovery tool. This tool was installed in three places in Portugal, which implies 50% of all sites with DTs. They were the Lisbon University Institute, the Portuguese Open-Access Scientific Repository and the University of Inner Beira.

The fact that no regional consortia exist in Portugal and power of the B-On academic content aggregation portal, to which the 34 state universities are affiliated,

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Primo Central http://www.exlibrisgroup.com/?catid=%7BC50F49A-109E-47CA-BE97-FD560E9BC940%7D
Summon http://www.serialssolutions.com/en/services/summon/
VuFind http://vufind.org/
WorldCat Local http://www.oclc.org/worldcat-local.en.html

[3] http://www.dges.mctes.pt/DGES/pt/Reconhecimento/NARICENIC/Ensino+Superior/Institui%C3%A7%C3%B5es+de+Ensino+Superior+Portuguesas/Lista_ESPublico_PT.htm

[4] https://drupal.org/

[5] (http://www.keep.pt/produtos/retrievo/

explains the limited efforts of Portuguese institutions to join in international initiatives to enhance traditional OPACs.

3. An Initial Assessment of Installations of Discovery Tools

In preparing this paper, an initial evaluation was undertaken of the eight discovery layers that were found to be implemented in Portuguese and Spanish university libraries.

In the case of Spain this involved the features of the DTs present in the following universities: University of Seville (Encore), University of Murcia (Primo), University of Las Palmas in the Canary Islands (Summon), University of Salamanca (WorldCat) and University San Pablo CEU (VuFind)[6]. The first step was to check various interfaces and select those which were observed to develop to a higher degree the functionalities established as assessment criteria. As for the Portuguese organizations, in view of the limited number of installations, the evaluation undertaken covered the catalogues or portals of all six institutions in which discovery layers were located. These included the institution which has Primo implemented[7], although this is a tool that was also evaluated through the catalogue of the University of Murcia.

The method used had as its starting point a check on the presence or absence of functionalities mentioned in Yang & Wagner (2010) and Yang & Hofmann (2011). These authors took as a basis previous research to the defining features of NGCs in studies of the OPACs of 260 academic libraries in the USA and Canada.

The principal functionalities evaluated were broken down into indicators. These were: single point of entry for all library resources, adequate interface usability, enriched content, faceted browsing, simple keyword search box with a link to advanced search on every page, relevancy, mechanisms for self-correction and for suggestions, recommendation of related materials, user contributions, RSS feeds, integration with social networking sites, and finally the availability of permanent links to documents.

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[6] Catalogue of the University of Murcia https://alejandria.um.es/cgi-bin/abnetcl/O7056/IDf8b1406f?ACC=101
Catalogue of the University of Las Palmas http://opac.ulpgc.es/cgi-bin/abnetopac/O7008/ID4ecbeeb0?ACC=101
Catalogue of the University of Salamanca http://brumario.usal.es/
Catalogue of the University of Seville http://fama.us.es/
Catalogue de la University San Pablo CEUhttp://sorbil.ceu.es/LVbin/LibriVision/lv_search_form.html?lv_action=LV_Search_Form&SESSION_ID=1387530605_846930886&HTML_SEARCH_TYPE=EXPERT&DB_ID[0]=1&

[7] Online Library of Knowledge http://www.b-on.pt/
Lisbon University Institute http://pesquisa.library.iscte.pt/search?q=&pesquisar=Pesquisar
Open-Access Scientific Repository of Portugal http://www.rcaap.pt/
University of Inner Beira http://pesquisa.ubi.pt/
University of Coimbra / Arts Faculty https://alpha.sib.uc.pt/
University of Oporto / Virtual Library
http://sigarra.up.pt/up/pt/WEB_BASE.GERA_PAGINA?P_pagina=1007165

The parameters proposed are those relating to functionalities that facilitate quick and easy searching with relevant and enriched results. They give immediate access to these results, provide context in navigating material and allow possibilities for collaboration.

The results arising from the evaluation undertaken showed that all the catalogues and portals that had installed discovery tools performed appropriately. This means that they complied with the main parameters set down: a single search point, acceptable usability, enriched content, faceted navigation, simple and advanced search options on all pages, ordering of results by relevance and mechanisms for self-correction and suggestions, as also the availability of lasting links too documents.

The products that apparently permit implementation of all the functionalities established as essential requisites were Encore and Retrievo. Encore also presented certain features differing from those of the other tools, especially in the area of usability. For instance, it explicitly guaranteed that links for records are permanent ("permanent URL for this record"). In the Portuguese context, Retrievo complied with all the requirements included in the evaluation. However, it was noted that in the three installations assessed only the advanced search option was offered on all pages. In the installation at the University Institute of Lisbon no possibility of ordering by relevance was noted, while at the RCAAP user contributions were not observed to be accepted.

Primo Central, WorldCat and VuFind provided eleven out of the twelve functionalities evaluated, as present in the catalogues of Spanish libraries. Primo and VuFind did not allow integration with social networks, whilst WorldCat had no facility for the syndication of contents. Nonetheless, it should be pointed out that the analysis of Primo through B-On showed worse results than those at the University of Murcia. Thus, the Portuguese version of Primo met only nine of the criteria established. It did not offer any mechanisms for self-correction or suggestions, it did not accept contributions from users, and it did not allow for integration with social networks.

It was noted that Drupal offered ten of the twelve functionalities. No possibility of syndication of contents was found, nor was there provision for integration with social networks. In its searches, Drupal does not include databases to which the University of Coimbra subscribes, but it does access the integrated catalogue of all the libraries and repositories of the university.

EDS and Summon did not provide three of the functionalities evaluated. EDS does not allow contributions from users or syndication of contents, and does not permit integration with social networks. As for Summon, it does not make provision for user recommendations or allow contributions from them. With regard to providing enriched content it is limited to the inclusion of covers. Similarly, it has no facilities for integration with social networks.

It must be kept in mind that the application of the various functionalities established was taken into account even if not every single one of the requirements included in each of the assessment criteria was met. Thus, under the heading of enriched content, tag clouds are not common. As for the criterion of user contributions, the most usual state of affairs was the possibility of adding descriptive labels, although some systems permitted the addition of comments, criticisms or reviews. This was true of the

catalogues of the University of Murcia (Primo Central), of the University San Pablo CEU (VuFind) and the University of Salamanca (WorldCat).

The scores obtained in this assessment are significantly better than those attained in the evaluation of DTs in American and Canadian universities (Yang & Wagner, 2010). In the study by Yang & Wagner, none of the discovery tools analysed implemented more than ten of the functionalities established. The best results corresponded to open source tools, principally LibraryFind, Scriblio and VuFind, with these authors highlighting their good performance. From these results the authors concluded that none of the discovery layers considered could be seen as a NGC. Federated searching and ordering by relevance were absent from all the libraries that had implemented the tools they investigated.

4. Final Considerations

The research undertaken made it feasible to get to know the degree of implementation of discovery tools in university libraries in the Iberian Peninsula. It also allowed an initial evaluation of the facilities offered by the tools implemented. With regard to the presence of DTs, it is possible to indicate that there is a different situation in the two countries, with a higher degree of implementation in Spain.

It was noted that the behaviour of the eight tools evaluated was acceptable. On this point, it should be stressed that the open source tools, both Drupal and VuFind, worked correctly.

The main strengths of the systems compared may be stated to be several. There is an obvious effort to adapt to visual environments with which users are familiar, together with the possibility of consulting various library resources, thanks to their integration. Further, there is a very general option to include some contribution from users themselves, encouraging them to see the catalogue as something closer to them and more participatory, along with an option to suggest related searches or similar documents.

On the other hand, there were gaps to be filled. There seemed to be some vagueness when directing users towards new tools or the traditional catalogue. It was also observed that there was limited use of the functionalities relating to social OPACs. This requires an effort on the part of libraries to encourage participation by users. Finally, there is a need to expand the enriched content offered with each record. At present, this is mostly restricted to showing front covers, although there is some presence of summaries, reviews, critiques, and the like which allow a better founded, and hence more effective, process of selection.

It must be stressed that the number of sites investigated for each discovery tool was small and that differences were observed not just between DTs but also between libraries using one and the same tool. Development and adaptation of discovery layers is not identical in different institutions. Hence, it would appear necessary to continue working along these lines, in order to achieve more exhaustive exploration and evaluation.

Similarly, thought must be given to whether it is yet possible to speak of new generation catalogues, and to what cases and what stages of development of these are to be found in Spanish and Portuguese libraries. It is necessary to point out that many of the libraries that have not subscribed to a DT do possess faceted catalogues. Likewise, most of the libraries have metasearch engines that allow federated searches to be performed.

Discovery tools represent a considerable advance. The combining of the library's catalogue and indexes to articles with other sources of information in a single unified interface is an unquestionable improvement. There should be further studies of usability to yield data concerning the repercussions of these new tools on the access and use of information by expert and inexpert users, as also their level of satisfaction. Those hitherto carried out point to a favourable response by users to DTs (Hofmann & Yang, 2012). Analyses of statistics on the circulation of documents, log files and opinions collected through surveys systematically undertaken will provide answers to these queries.

Despite the favourable views recorded, if the needs of experienced users are considered, the picture may not be entirely rosy. Fagan, Mandernach, Nelson, Paulo & Saunders (2012) pointed to lacks such as the difficulty of putting into play discipline-specific search strategies and the absence of authority control, which have a negative impact on the precision of information retrieval. A similar view was expressed by the Online Computer Library Center (OCLC) in its 2009 report, which proposed that classifications, subject vocabularies and structured data from catalogues should be used to improve the relevance rankings of on-line catalogues.

Fagan, Mandernach, Nelson, Paulo & Saunders (2012) advised libraries to re-think the function of their catalogues and other contents management systems so as to satisfy user expectations. Catalogues and specialist databases still fulfil some purposes better than discovery tools. Libraries need to consider their clients when putting up on their websites the various tools for gaining access to contents. They must ask themselves the following questions: When should users be directed towards the catalogue? When should they be directed towards a DT? What items must the library continue to include in its catalogue? Or, has the moment arrived to abandon catalogues? Most fundamentally, are users capable of finding the best resources to meet their needs?

The aim should be to aid users to discover the contents accessible from the library, whatever their format. This should not be to the detriment of the traditional, but highly relevant, task of representing and organizing information carried out by librarians.

Hofmann & Yang (2012) noted that 96% of the American and Canadian libraries that had implemented a discovery tool simultaneously kept in use the catalogue interface. Hence, it would appear that the OPACs of ILS have not yet been replaced by DTs. The authors consider that this replacement in time will come to pass, because the tools in question integrate in a generalized fashion both advanced searching and the functions of browsing through alphabetic indexes of authors, titles and subjects.

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