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HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

L'accès libre à la documentation électronique à l'Université Lyon 1 : une approche comparative et disciplinaire

Open access at the University of Lyon: a comparative and disciplinary approach

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1. Introduction

The world of scientific communication, teachers and researchers, and documentation professionals, is going through a massive change with the movement for Open Access¹ to scientific information, that was born at the beginning of the 90's and that has experienced a strong growth for some time.

This disruption has several origins which complement each other:

- Emergence of new technologies among which the internet: on-line distribution, globalization, instant access, drop of costs, user-friendly nature;
- Excessive increase of the rates of subscription to scientific journals;
- Development in certain circles (IT scientists, researchers) of a global philosophic reflection on the logics of sharing resources (open source software packages) and knowledge (scientific progress);
- Evolution of the legal reflection on the rights of intellectual property: reaction to the renunciation of copyrights to commercial publishers. The intellectual property of the deposited documents fully remains the author(s)'s property.

The community of scientists and librarians formalized these principles in the Declaration of Budapest² on February 14, 2002, followed by the Bethesda³ Statement and the Berlin⁴ Declaration. The Budapest Open Access Initiative (BOAI) encourages researchers and university institutions to use the two additional ways that are archiving servers and open access journals.

However the social appropriation of these principles is not immediate and varies from one country to the other, from one institution to the other, from one discipline to the other. France distinguishes itself by some kind of nervousness, especially in universities, and an absence of directive from the concerned ministries. However in March, 2006 a draft agreement for an approach coordinated at the national level of the open archiving of the scientific production was signed between the public research agencies, the "Conférence des Présidents d'Université" (CPU), the "Conférence des Grandes Ecoles" and the Institut Pasteur. In April, 2006 Lyon 2 was the first university to sign the Berlin Declaration.

After official stands, the first realizations are coming out by using the HAL structure of the CCSD⁵:

- HAL-INSERM⁶ for Biomedical Research
- HAL-INRIA⁷ for Computer Science
- HAL-SHS⁸ for Human and Social Sciences

As it can be noted, the database is unique and allows views by institution. The delay may enable to avoid the scattering of archives. The consultation by establishment shows that practically all the institutions are involved in archiving but with variable contributions; however no French institution imposes compulsory deposit to their researchers yet. Indeed the problem is very often badly understood by the leading authorities of research notably by confusing archiving and publication.

It will also be noted that the only French commercial scientific publisher⁹ now proposes the possibility to authors who wish so to put the on-line version of their article in open access for all the visitors of the site as the main Anglo-Saxon publishers finally agreed to do it.

2. The ‘Service Commun de Documentation’ (SCD¹) of the University Claude Bernard

The Claude Bernard Lyon 1¹⁰ University is a scientific and medical multidisciplinary university that includes 102 units of research, employs about 3,500 persons including 2,000 teachers and researchers and 1,300 doctoral students (among whom 25 % are foreigners). In 2005 it welcomed over 29,000 students.

The university library has proposed access to databases for over 25 years and access to the electronic journals collections began in 2000.

In 2005 the SCD¹¹ had subscriptions to 7,516 charged titles of electronic serials (1,513 paper titles), to about fifteen bibliographical databases, and to encyclopaedia and reference books. It represented a budget of about 1 million euros.

There were nearly 860,000 downloading from the collections of journals (progress of 25 % with regard to 2004) and about 110,000 requests in databases according to incomplete statistics supplied by publishers and producers. Therefore, it can be noted that there is an intense use of electronic resources. The swing from paper documents to electronic documents began with the coming of ScienceDirect which covers at present more than 50 % of uses.

The appropriation of commercial electronic resources is therefore a reality. But what about Open Access to information?

The Website of the university library lists available resources. However, it can be noted that it is never made explicitly reference to Open Access to information. The annual report 2005 of the SCD does not mention these resources and uses and the Claude Bernard University has not defined a policy in this respect yet.

Therefore, we launched a survey by mail to teachers and researchers and doctoral students.

3. The survey

Characteristics of the interviewed population

The survey based on a questionnaire was conducted in February and March, 2006. The interviewed people, a population of 2,000 teachers and researchers and 490 doctoral students received a mail containing the link pointing at a questionnaire under electronic form including

¹ Documentation Common Service

fifty-four questions. We received 390 answers, that is to say a sample of 15.6 %. 52 % of the interviewed people were in Sciences and 46.5 % in Health. 26 % of them were teachers and researchers, 27 % of them hospital-academics and 35 % of them doctoral students. 57 % were male and 37 % were female. Their ages ranged between 23 years old and 67 years old, and the average age was of 38 and a half years old.

The behaviour of our sample concerned all the stages of research. 26 % were at the beginning of their research, 47 % in the middle of their research, and 16 % at the end of their research.

Place of the library in the uses of electronic resources

The interviewed researchers declared they frequent the two libraries of the SCD Lyon 1 in an equivalent way. 60 % of scientists frequent the DOUA library and 75% of hospital-academics frequent the ROCKFELLER library. 6 % of the total representative sample frequents both libraries.

The attendance of premises is characterized by little regularity, only 8 % go there once a week and over 50 % frequent them sometimes in the year, essentially to consult paper documents (50 %), to borrow paper documents (30.5 %) or to use inter-library loan (18 %). More than a quarter of interviewed people never frequent them.

In reality, current technologies allow a relative scattering of work and consultation places. Most of the time, 70 % to 80 % of information retrieval are carried out in university campus, except for hospital-academics who are 77 % to carry out this activity outside university campus, but at work, that is to say the hospital.

30 % of the Websites consulted by our representative sample to look for references or digital documents for their research activities are those of the SCD Lyon 1, and 15 % of them are the other Websites of the Lyon 1 University. The other sites, which are used and which constitute a basis of personal bookmarks, are the most numerous as more than 50 % of them are used. This is not surprising as most researchers declare themselves as confirmed followers of information retrieval on the Web. 49 % of our representative sample knows how to find information or electronic documents without passing by the library and 91 % of them say they find this information by themselves all the time or most of the time. Just as the visit to libraries, the budget time dedicated to this information retrieval on the Web is rather short: four to thirty minutes by session for 66 % of the interviewed people.

We conclude from these uses that work on screen is an emergent but important practice for 20.5 % of our total sample as some devote working sessions of one hour and more to this activity. For the rest, practice is characterized by the capture and the recording of documents or references for a further use.

For this documentary research work, 69.5 % of the interviewed people use specialized databases, 66.5 % of them lists of serials, and an emergent but significant practice, 17 % of them use open archives. But the two libraries of SCD Lyon 1, Doua and Rockfeller, would not offer all the necessary resources to our researchers. Globally only 55 % of them are satisfied with the service of SCD Lyon 1. Only 55 % of them declare that the databases they consult most of the time are available through the site of SCD Lyon 1. 64 % of them declare the same for the lists of serials and 27 % for open archival databases. This last score is not surprising as far as this resource is not even mentioned specifically and in a legible way on the Website of SCD Lyon 1.

The "A-to-Z" service of EBSCO which indicates subscriptions to the periodicals of the library (the cost of which amounts to a million euros) recorded results certainly in progress of 25 % in 2005 compared to 2004, but in our survey in March, 2006, its fame remains insufficient. Only 53 % of our sample know it and are therefore liable to use it.

We remain careful as for this conclusion, because it is likely that many researchers use these services, notably that of electronic reviews without necessarily using the site of SCD Lyon 1 and without knowing its trademark. If this is the case, it is evident that the visibility and the fame of the SCD should be promoted by an active communication toward the teachers and researchers and the doctoral students of the Lyon 1 University.

At this stage of our study, we may wonder about the changes which have to be operated by the SCD to adapt its services and fit into the real practices of the researchers: more and more autonomous and diversified practices and in more and more scattered places, the office, the house, but also while commuting and other working places.

Changing uses strongly influenced by the membership community and the research discipline

English is the most used language of questioning. It represents by itself 53 %. French and English, the two languages used at the same time, represent 46.5 %. French alone represents only 16 %. At first sight, there is nothing surprising about this, considering the English-speaking sources and origins of scientific documentation. All the same, the other European languages represent a tiny percentage of 2.6 %. Teachers and researchers in Sciences seem to resort a little more to French, about 21 % against 13.5 % for hospital-academics. Doctoral students have a score appreciably equal to the latter. Is it due to a generalization of the mastery of the English language by doctoral students in Sciences as in Health and/or to the henceforth established tradition which is to write directly in English to participate in acknowledged international scientific demonstrations?

We formulate this observation with caution in the absence, in our knowledge, of similar and reliable statistics which characterize the previous periods.

The crossing of the language of questioning with the discipline is not very relevant, because Biology and Medicine which resort massively to English are those that use most the French language. The only notable remark is that Mathematicians question search engines twice as much in French as in English. It is probably due to the acknowledgement and to the quality of French research in Mathematics.

The resort to several search engines others than those of the general public characterizes much more the stratum of the teachers and researchers in Sciences than that in Medicine. Google Scholar is used at 54.5 % by the teachers and researchers of Lyon 1 as well as 36.5 % among them use about twenty other engines such as Informatik, Brain, USGS, etc. This range is narrower for hospital-academics, because only 35.5 % of them use Google Scholar and when they quote the other search engines, they indicate only three other engines which are tunnel VPN, Aegis, and pubcrawler. We notice by the way that tunnel VPN is not a search engine but a protocol of secure access to Internet resources between the HCL and the Lyon 1 university. It is therefore quite legitimate to wonder about the reality and the correctness of knowledge in our population. Just as well, hospital-academics mix PubMed, a bibliographic database, and PubMed Central, a base of open archive. We are planning to carry on this study by thorough interviews for further precision. In reality, hospital-academics resort massively and in an almost unique way to PubMed as a source of documentation, we can even speak about a stability of uses in that case, because there is a sort of automatism of the documentary behaviour which concerns a whole community. The proof is that Embase.com available at Lyon 1 is underestimated and underused.

The practices of doctoral students as for them are closer to those of the teachers and researchers in Sciences because about 51 % of them use this same search engine, that is to say Google Scholar.

As for the searched digital documents, they are mainly articles of journals in 96 %, courses in 40.5 %, thesis and reports in 34 %, oral presentations in 21 % and images and video sequences in 22 %. We can see there a collection of multi-support documents resulting from multiple sources, the editorial world, research laboratories, private individuals and various scientific events, etc.

It is obvious that we are witnessing more than in the past a reproduction of sources, supports and informational contents. The resort to these types of documents is strongly influenced by the discipline and the membership community.

Earth sciences, for example, are those that most request documents under the form of images and video sequences 43 % against 22 % on average, of course 71.5 % against 51 % on average and the paragraphs of books 28.5 % against 17.5 %. On the other hand the request for articles of journals through this discipline shows an inexplicable decline with regard to the average, because it is situated in 85.5 % against 96.5 %. Medicine is characterized for its part, by a lower request of courses, 32.5 % with regard to 40.5 % on average, and dissertations and theses that is 19 % towards 40 % on average. It is true that these variations can be explained by differences due to disciplinary traditions and habits in research. It is nevertheless established that changes in uses mean that multimedia supports such as images and video sequences as well as oral presentations are more and more requested, that is to say 22 % and 21 % on average and concern all the disciplines at Lyon 1 university. It can be considered that this evolution is linked to the possibility of looking specifically for this type of documents since the main search engines integrated a "File format" filter.

Uses of open archives

Free documents exercise a real attractiveness on researchers. 93.5 % of them declare to consult firstly and preferably free digital documents against 4 % which consult first of all the documents they have to pay for.

Practically every discipline has their server of favourite open archives. The test of dependence of the KHI2 is very significant by crossing discipline and knowledge of servers of open archives. Researchers in medicine, as mentioned above, know and use massively PubMed Central, physicists ArXiv and to a lesser extent On-line Theses, mathematicians Mathematical Prepublications etc.

Researchers give evidence of attendance in the consultation of these open archives. 52 % of the interviewed people declare to consult them at least once a week.

An active minority of 32 % use alert systems by mail or RSS wire in sleep mode.

This sustained activity to which the library does not seem to answer in a satisfactory way ends in more expert or more complex uses. 45 % of our total sample protects the documents gleaned in open archival servers on a stocking support with more or less professionalism and efficiency. 54 % of them import these documents and references in a word processing or especially, like 28 % of them, on specialized software of the EndNote type. The important use of this software is partially due to the training action of a documentalist in biology. It shows that training actions are indispensable and have tangible results in daily practice. Therefore 46 % of the users belong to biology, but this does not explain altogether this wide use.

Only 23 % of our researchers can also view the digital documents they find on screen or print the whole article (for 41 % of them) or part of it (for 17 % of them).

The practice of open archives at Lyon 1 University is henceforth a more than emerging use even though it is still not well established. But this practice declines in two different but additional types of behaviour : the use of available resources stored by the others and a contribution to the enrichment of these databases by depositing its own scientific production. An active minority adds up these two types of behaviour. Among this active minority, 15.5 %

know titles of journals in open access and 11 % have already published some of their works on a server of open archives with an equal practice between pre-publication and post-publication. More than half of this minority (32 %) belongs to medicine and 20.5 % to biology.

It should be said that the urge to publish is obvious in our researchers'. 22 % have already paid to publish some of their articles and 29 % are ready to pay to be published.

The only brakes which make our researchers hesitate a little are the fear of plagiarism and the lack of validation by the peers of the spontaneous production of these documents. This leaves a beautiful space to university libraries in France for the selection, the promotion and the development of this movement of open archives.

Recommendations to improve the service to the researchers at Lyon 1 university libraries

The SCD is an important institution in the research mechanism at Lyon 1 University. It has an acknowledged role in the French national mechanism of documentation, as it is CADIST² in chemistry and in medicine. This dedicates this library and grants it an excellent role in the supervision and the conservation of a documentation of an exhaustive and national nature concerning these disciplines. In spite of this, concerning the digital service and its description on the Web of the library, many things remain to be done. This remark is true for all the university libraries in France. On the national scale, these become aware of the importance of the movement of open Archives and the necessity for the development of services in open archives and already take scattered initiatives for lack of a clear national policy as can be observed in other countries (ex. Great Britain). It is true that the integration of grey literature and thesis has always been a preoccupation for libraries in France.

This awareness is strengthened at present by the role that the National Centre for Scientific Research (CNRS) intends to play in this respect. Indeed, its role is preponderant in this awareness with its HAL (On-line Hyper Articles) site which intends to federate initiatives on the national scale and give them an institutional and long-lasting framework. It is more exactly about a collective initiative of the CNRS, the INRIA, the INSERM, the INRIA and the "Conference des Présidents d'Université" (CPU). These bodies signed an agreement on September 6, 2005 to start a preparatory phase with the aim to create a gate of open archives named HAL which is developed and managed by the CCSD³ located at the IN2P3 in Lyon.

We can see that the movement is in progress. The SCD of the University is not outdone.

At the conclusion of our work, we may suggest some initiatives for the improvement of digital services on the Website of the SCD, knowing that in the end, the creation of a real service of open archives connected or not to HAL is a necessity.

1. The first of these initiatives would be to communicate around these digital services to increase their fame and to promote their use by researchers. The example of "A-to-Z" is edifying in this respect. It is really a pity that 44 % of the researchers ignore this service to the point that they use it without knowing it, while declaring that the library does not cover all their needs in digital reviews. It should be noted that this service can be used without visiting the site of the SCD of Lyon 1 University.
2. The multimedia supports have become an indispensable element in the elaboration of research and the construction of courses for students. They deserve a particular

² Centre d'Acquisition et de Diffusion de l'Information Scientifique - Acquisition and Diffusion of Scientific Information Center

³ Centre for the Direct Scientific Communication

attention by indicating them so as to increase their legibility and to facilitate their use by the users.

3. It is possible to integrate some information which is now indispensable to every researcher, such as conferences, congress, forums etc. the idea is not to report about them any column of temporary current events and in a short-lived way, but to set them up in a more long-lasting way in a column apart. It is necessary to consider these events as separate sources of information and documentation; they are well integrated into the new uses of our interviewed population.
4. We did notice the passion of the researchers for this type of digital documents and sometimes the militant meaning they intend to give to this practice. For all that, the resources resulting from open archives are not indicated as such on the Website of the SCD of Lyon 1 University. In our point of view, the SCD of Lyon 1 University has to think about the construction of a real open archives service which takes into account the new uses of researchers. Much more, it has to promote these practices for what they generate in terms of dynamic and capitalization of knowledge beyond the brakes and constraints of the institutional publishers. It may even strengthen them by allowing the selection of documents by competent and credible professionals of the documentation in the eyes of researchers, meeting in this a constant concern of these researchers.

Whether this service fits into a national movement, by connecting it for example with HAL or whether it remains internal to the SCD, it must be conceived in a long-lasting way and work as close as possible to the needs and the expectations of the users.

5. We can go as far as suggesting a disciplinary division of this open archive column on the Web of the SCD Lyon 1 to cover significantly divergent uses between disciplines such as Physics, Mathematics, Earth Sciences, Biology or Medicine. Indeed, the relevant nature of resources in the eyes of the interviewed users supports sufficiently differentiated habits and cultures to justify such a treatment. This segmentation of the service will have the effect to increase the visibility and the use of these digital resources.
6. Finally the supervision of this movement around open archives and the promotion of these uses may go through the creation of an internal forum which would be well indicated on the Website of the SCD. It must be moderated by the library and will be used to inform researchers, to inform them about sources and uses of open archives at the same time as it will be used as a tool of communication on the efforts of the library in the promotion of the practice of open archives.

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