

The Way to Open Access – French Strategies to Move Forward

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[Abstract]

In France, the movement in favour of open access to scientific research output is getting increasingly coordinated and supported at the political level. The CNRS, leading research organization in Europe and signatory of the Berlin Declaration, has an evident strategic role to play in this development. Various initiatives that have emerged in the French academic world in recent years have led, for example, in early 2005 to the joint announcement, by four major research institutions, of a common policy to promote open access to published material and other types of digital resources, and to set up institutional archives.

The article highlights some key issues of this policy, gives an overview of the current and past CNRS involvement in Open Access and describes the principal functions, as well as the related challenges, of the future institutional repositories.

[Keywords] *open access, scientific information, institutional archive, research organization, France*

1. Introduction

Research institutions and scientific communities have been pioneers and main driving forces in the Open Access (OA) movement. There are various reasons for their interest in the new publishing models, primarily to gain independence, increase communication speed and efficiency, and increase visibility and impact of research results.

In the French-speaking world, the CNRS, National Center for Scientific Research, as leading research organization in Europe and signatory of the Berlin declaration, has an evident strategic position on the road to Open Access. CNRS has been joined by other French partners in the ongoing Berlin process.

A special role in this process has been played by the Institute for Scientific and Technical Information (INIST), a CNRS unit that has always been on the forefront of actions in favour of OA, and remains committed to its mission of informing and communicating on the subject.

The article gives an overview of the CNRS initiatives, including the related international involvement. They led to an important event in early 2005: the announcement, together with the three other French research institutions INSERM (National Institute of Health and Medical Research), INRIA (National Institute for Research in Computer Science and Control) and INRA (National Institute for Agricultural Research), of a common policy for promoting open access and for building institutional archives.

These repositories will not only ensure better visibility for the scientists through free access to their work, but will have an important function in the research management and evaluation process. Emphasis will be put on accessibility, quality and service, as well as community-specific needs and practices inherent to a multidisciplinary body.

Even if the article focuses on CNRS and partner research organizations, it must be pointed out here that there are also a growing number of OA initiatives, and projects for institutional repositories in particular, in the French university landscape. This concurrence is not to be seen as competition, but rather, due to organizational overlap and the mixed character of most laboratories, as a basis for convergence to an academic policy at national level. As an important step in this process, an agreement on common open archiving practices is to be signed in early 2006 between research institutions and the French Conference of University Presidents.

2. CNRS

The French National Center for Scientific Research (CNRS) is a publicly-funded research organization that defines its mission as producing knowledge and (this should be kept in mind) making it available to society. Leading center for basic research in Europe, CNRS has 26 000 employees (11 600 researchers and 14 400 engineers and technical and administrative staff). Its budget amounted to more than 2.3 billion euros for the year 2005. The 1 260 CNRS service and research units are spread throughout the country and cover all major scientific fields. ^[1]

From an organizational point of view CNRS is divided into 8 scientific departments and 2 national institutes, each representing a (large) scientific discipline. Due to this multidisciplinary character any policy on Open Access, and on scientific information in general, is necessarily complex and difficult to implement. On the other hand, it can be seen as an opportunity, enabling certain disciplines to catch up with others having a more developed self-archiving ‘culture’, by adapting to a common general policy and by using a common infrastructure.

Not only the habits of scientific publishing differ within such a multidisciplinary body, but, even more strikingly, the types of digital resources produced in the research process which are (mostly, but not always) underlying the publications.

It is part of the CNRS policy to make considerable efforts for the management, structuring and archiving of these data and for making them available in an open access environment. The policy recommends that digital resource production and dissemination be included in the academic evaluation criteria. It foresees that librarians and information professionals will be concerned more and more with new forms of resources to manage, new types of data and metadata, and *digital curation* will be increasingly part of their mission.

As far as publications are concerned, the CNRS scientific production can be estimated, based on the SCI Web-of-Science tools combined with internal ones, at about 25 000 publications (in peer-reviewed journals) per year. At least another 10 000 come from the three above-mentioned partner organizations. If one wanted to get an overall picture, how many of these would be visible and accessible? Surprisingly, it is only recently that this issue has become relevant, with the advent of the new OA models and the perspective that research institutions

might be able to monitor their entire research output and that this output might become freely accessible to anyone anywhere.

It should be stressed that these some 25 000 research papers from CNRS laboratories account for more than 50 % of all French scientific publications. The latter account for 5.8 %, in 2004, of the world's scientific publications, which places France in 6th position in the world of published research output (China holding the 5th position since 2004). ^[2]

About 45% of the CNRS papers are signed with at least one colleague from abroad, and there is an upwards trend for these international co-publications. The CNRS has 85 scientific agreements with institutions in 55 countries, is involved in almost 200 international cooperation programs and has 10 foreign offices around the world (one of them in Beijing).

While the global CNRS expenditure for scientific information resources (paper and electronic) is not easy to calculate, because a large majority of CNRS units are operated in conjunction or association with universities or other research organizations, the overall acquisition budget can be estimated at about 15 million euros.

3. INIST

INIST is a service unit of the CNRS, founded in 1989 and located near Nancy, in the Eastern France.

Its mission is to collect, analyse and disseminate the results and findings of worldwide research in science, technology, medicine, humanities, economics and social sciences.

INIST produces multilingual, multidisciplinary bibliographic databases (PASCAL, FRANCIS and, more recently, International Science Database (ISD)) and offers a free online article catalogue: article@inist (10 million records).

It is the leading scientific and technical document supplier in France with 600 000 copies delivered per year from INIST's own extensive collections or through its network of partner libraries.

INIST has an important negotiating role since it negotiates on behalf of the CNRS the acquisition of electronic resources (journals, databases) for the French scientific communities. This role of negotiator with the main commercial publishers has not hindered INIST from doing an important work on communication and promotion in favour of the Open Access movement.

Its website dedicated to OA (www.inist.fr/openaccess) is probably (as far as usage statistics and user feedback indicate) the most popular source of Open Access information in the French-speaking world.

It offers almost daily news, reference articles, French translations of the important statements and declarations, interviews, etc.

It had grown out of INIST's involvement, as main organizer, in one of the first international conferences on Open Access that took place in Paris in early 2003. ^[3]

Nowadays, this event can be considered as belonging to the early history of Open Access which, by bringing together the main advocates and opponents of the movement, served to clarify the respective objectives and positions of the protagonists.

INIST's information activity has become more widespread and Open Access has been a main theme of contributions by INIST staff members in conferences, meetings, and workshops. Within the project of building institutional archives, this information activity will go hand in hand with an important training activity. (INIST offers training programs for information professionals, librarians, scientists, students, etc.)

The above-mentioned two main traditional INIST activities – database production and document supply – are somewhat slowing down and making room for a new challenge: the creation of (subject-oriented) portals for the French scientific communities. ^[4] These portals aggregate licensed electronic resources (generally obtained through tough negotiations with commercial publishers), as well as an increasing amount of open access material. Further development of such portals will continue to be an important mission assigned to INIST. The most recent accomplishment was the launch, in November 2005, of TermSciences, a multilingual terminology portal, enabling users to search for and view international scientific vocabulary (www.termosciences.fr).

It should finally be added that INIST offers various other customized services to the scientific community such as science and technology watch, current awareness, assistance for electronic publishing, newsletters and other multimedia communication, and that it participates (although being a 'service unit', not a 'research unit') in European research programs, in fields like information analysis, language processing, data mining, and bibliometrics.

In recent times, INIST has also been involved in cooperation projects for developing information services in Third World countries, trying in particular to recommend implementing OA solutions wherever this seems judicious.

4. CNRS involvement in Open Access – some examples

The CNRS, and INIST in particular, have been active in several ways at the OA front. Various non-coordinated (and sometimes individual) initiatives have ended up in the announcement of an 'official' policy enabled by the appointment, in January 2005, of a CNRS Scientific and Technical Information officer, followed, in July 2005, by the creation of a Directorate for Scientific Information (DIS). These recent organizational measures give evidence of the increasing strategic CNRS interest in topics dealing with access to data and information and models of dissemination and publication, and consequently, of the strategic role of CNRS on the French road to Open Access.

Some previous steps forward on this road should be mentioned:

- Present at the October 2003 Berlin OA meeting, the CNRS was one of the first signatories of the Berlin Declaration released at the end of the meeting (after having contributed to drawing up the declaration text). ^[5] Since then, it has been followed by several other French institutions and has continued to play an active role in the ongoing Berlin process.

- The CNRS signed a double partnership agreement with the publisher BioMed Central (BMC), first by becoming an institutional BMC member, allowing a centralized payment of page charges for CNRS scientists who publish in BMC journals (the same type of agreement exists between INSERM and BMC), and second, by having INIST host and give access to the BMC journals.
(For the latter, a similar cooperation is to be set up between INIST and the US National Library of Medicine hosted PubMed Central.)
- Back in 2000, the Center for Direct Scientific Communication (CCSD) had been created, with a mission similar to that of the ArXiv server in the US (and in close collaboration with the ArXiv founders). CCSD has ever since encouraged self-archiving of CNRS research papers, by offering a global service to all research institutions who want to set up ‘direct scientific communication’ through open archives, by developing and maintaining the software (essentially the HAL system – see chapter 6) and ensuring long-term preservation.
The infrastructure developed by CCSD will have a key role in the projects of building institutional repositories in France.

Another more recent (and, at first sight, less directly OA related) creation occurred in 2004. The Centre for Scientific Digital Publishing (CENS) is designed to help French Humanities and Social Sciences (HSS) journals to increase their impact by going digital. Only about 2% of them are visible on the Internet today, although they account for 20% of all HSS journals in the world.

CNRS supports more than 200 of these publications, and the future economic model of many of these electronic versions will probably be an OA model.
(Currently, the existing French open access journals are almost exclusively in the classical ‘science’ domain.)

- As mentioned above, INIST was co-organizer in 2003 of an important international conference: “Open Access to scientific and technical information: State of the art and future trends”.^[3] This meeting had a significant political impact, owing to the presence of prominent representatives of CNRS, INSERM and of the French Ministry of Research. Their OA-friendly conclusions had set the ground for the signing, later that year, of the Berlin Declaration by the two research institutions.

A national seminar was then organised by INIST one year later, aiming in particular to present the previously defined Berlin Roadmap (established at the Geneva Berlin 2 meeting) to the French scientific community.

- Although rather based on individual engagement than on an institutional approach, the efforts of CNRS members in the preparation of the World Summit on the Information Society (WSIS) must be mentioned here. Their involvement in the Scientific Information Working Group, on behalf of the civil society participation in the summit, enabled the inclusion of the term ‘open access’ in the official WSIS documents (Declaration of Principles and Plan of Action).^[6]
This turned out to be a difficult task, however, in spite of the striking importance (and the obvious benefits) of the OA movement for the Third World.

- In a press release issued in March 2005 the CNRS, together with the three other research institutions INSERM, INRIA and INRA, announced a common OA policy, focussing on the creation of institutional repositories. ^[7] In the statement emphasis was put on higher visibility of research results, on enhanced access to scientific and technical information for society as a whole and on gaining independence from big commercial players in scholarly publishing.
- The already mentioned Open Access website run by INIST continues to be an essential tool of communication and promotion, within CNRS and far beyond.

5. Political issues – from declarations to projects

The Berlin Declaration was signed by (public) institutions, rather than by individuals, and this was the essential step forward compared with preceding initiatives and declarations. And, in the list of the initial signatories, the CNRS was given some kind of prominence because of its uniqueness as ‘national research mega-institution’ (S. Harnad).

The way towards the support of such an initiative by the authorities had been paved in a relatively short time (while it took somewhat longer to pave way to concrete measures and political actions). The authorities had endorsed the need for a coherent national scientific information policy and the inclusion of funding for such a policy in the overall research budget.

As first major event of the OA movement, in early 2002, the Budapest Open Access Initiative (BOAI) had a remarkably powerful impact in France, mostly thanks to heavy French press coverage. Also, there was a high proportion of French speaking signatories of the initiative, and OA had suddenly become a main discussion topic among librarians and information professionals, as well as, more slowly but increasingly, scientists and research funders.

BOAI was presented essentially as a response to the serials crisis, but other benefits of Open Access, and author self-archiving in particular, from the research institutions’ point of view came into the debate:

- The monitoring and control of scientific output, including long-term preservation,
- The new awareness of the financial, technological and legal issues related to the scientific publishing process,
- The gain of independence from commercial publishers, market counterbalancing,
- The cost-effectiveness of publication and access models,
- The alternate ways of research evaluation and assessment,
- The alternate ways of results protection, the new copyright practices,
- The better integration of Third World’s researchers into the global scientific community,
- And, last but not least, the increased visibility and higher impact of scientific research results due to unrestricted access. (This issue was the subject of several studies, as for example by Harnad and Brody ^[8]).

A general commitment of scientists (and scientific societies) to immediate, broad and effective dissemination of research results, and to freely sharing them with the scientific communities and the society as a whole, was formulated in a specific statement of the 2003 Bethesda Declaration.^[9]

Bethesda inspired Berlin, only a few months later, and the Berlin Declaration was an extension of the Bethesda one inasmuch it gave a special mention to Humanities and Social Sciences and also widened the scope of OA material from scientific publications to other kinds of digital resources.^[5] Both aspects were (and have become more and more) relevant for CNRS specificities and priorities.

In parallel to the Berlin process (declaration → definition of roadmap → implementation) CNRS and its partner organizations moved forward on the way to putting the principles agreed upon into practice. This progress resulted in the March 2005 joint announcement and the various current follow-up actions for preparing the implementation of institutional archives.

These repositories will be designed to include services and functions related to internal research management (evaluation and assessment procedures in particular) and to offer various kinds of additional benefits for the laboratories and for the researchers in their everyday work.

Community mechanisms (like the *stamps* in the current HAL system) will help taking into account different research and publication practices that vary from one discipline to another and will allow the devolution of policies to specific groups.

The management of technological changes (a key characteristic of an institutional repository) will ensure long-term preservation of the material. This is in fact considered as a main function of the archives to be built.

The preservation aspect is given even more importance for scientific data and other digital objects.

Open access to this kind of material also remains, of course, an important issue. One must remember that the Berlin Declaration defines open access contributions as including: ‘original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material’.

More generally, as ‘scholarship has become data intensive’ (C. Lynch), the management of data and digital resources of all types has become an essential part of academic institutions’ policies and was also announced a priority for the coming years by the new DIS.

CNRS and partners are indeed convinced that new skills are necessary in this field, that the challenge of digital curation requires new organizational structures and training programs, and, consequently, specific funding.

It is expected that these and other budgetary decisions will be taken in the coming months, that they will be accompanied by (common) political decisions on the mandatory character of deposit and self-archiving.

It should finally be pointed out that the CNRS Open Access policy is also a primary issue of collaboration with the German Max Planck Society and the development of

institutional archives is becoming increasingly a new topic on the European Community level (e.g. in the future 7th Framework Programme).

As far as cooperation on a national level is concerned (among the four research institutions and beyond, including universities and the Ministry of Higher Education and Research), some recent and useful initiatives have been launched as follow-up to the common policy statements. One example is the recent creation of a national working group on copyright and related issues, aiming in particular at the elaboration of a ‘guide book’ for researchers, a first version of which was released in November 2005.^[10] Other cooperation issues: information and continued education policies, negotiations with publishers, common metadata, classification and indexing (for example the arduous affiliation problems), data sharing plans, technical interoperability.

6. Setting up institutional repositories

As mentioned earlier, the building of institutional repositories, expected to leverage open access by means of incentivized self-archiving, is the key issue of the actual CNRS OA policy. On the other hand, self-archiving is certainly necessary, but maybe not sufficient for the success of these repositories (i.e. for maximising impact). In the words of J.C. Guéron, we have to be aware of ‘accessibility related habits’ and admit the following: ‘If Open Access repositories do not appear very visible and/or credible within a given arsenal of research strategies, why should a scientist spend time to “self-archive” his work in what can only look like a dump...?’^[11]

Indeed, the need for ‘providing some branding ability’ (J.C. Guéron) and for added value is recognized, and emphasis was put on *quality* and *services* in recent CNRS announcements, on the fact that institutional archives should offer a win-win situation for researchers (as authors and readers) and their institutions.

So, as far as the characteristics of the future archives are concerned, some principles have been agreed upon:

- A *unique* archive for capturing and preserving the institution’s research output, using one single infrastructure – but allowing for several views;
- Need for high standardization efforts on data description and representation, for much richer metadata than the minimum OAI set;
- Two policy levels: require deposit of bibliographic records (at least the metadata), encourage open access contribution (self-archiving of full text);
- Increasing importance for the evaluation and assessment processes;
- Offering of additional services for the researchers’ everyday work: lists of publications, reporting aid, prospective tools, multiple output formats (from a single input);
- Quality of information through institutional recognition, broad coverage, rich metadata, editorial assistance by librarians, value-creation tools (like overlay journals), and by an growing proportion of journal peer-reviewed articles;
- Implementation of a standard workflow in which researchers (authors), librarians and research managers have the basic roles: The researcher provides the actual content, together with basic metadata, and expresses a wish with regard to open access; the

librarian checks and improves the metadata and validates (after a closer look at legal constraints) the researcher's wishes; the research manager approves the inclusion of the publication in the institutional archive (and, hopefully, encourages open access deposit).

The infrastructure chosen for the CNRS archives is the HAL (Hyper Article en Ligne) system, developed by the CCSD a few years ago.^[12] HAL is modelled on (and connected with) the physics' ArXiv server and both have similar functionalities, but HAL has additional features enabling customized environments - discipline-specific, subject-specific or institutional - and allowing the creation of 'views' (stamping) and 'collections', in addition to the generic interface. However, the underlying general HAL concept is that of a single database, with a core of homogenous metadata.

The HAL platform is open to everyone, any scientist can register and self-archive his/her work. In its current state there is no scientific moderation yet (just a technical one), but this will of course change, in the future papers to be deposited will need validation (by a research manager). The system allows versioning but does not allow removal of an archived publication.

HAL is already widely used in specific communities, most frequently in physics and mathematics (where HAL is coupled to ArXiv, i.e. documents are transferred automatically), but is also becoming popular in other fields, like social sciences or information sciences.

An open archive of PhD theses developed by CCSD, named TEL (Thèses En Ligne), which was initially independent, has just been integrated into HAL. It has been supported from the outset by University of Grenoble and the MathDoc network and contains today about 4000 documents covering all CNRS scientific disciplines.

The CNRS decision of extending HAL to a universal platform and the wish for strong cooperation with the partner organizations has led to the adoption of the system by others: INRIA has officially chosen HAL for its own open archive (and future developments will be done in common, between CNRS and INRIA), and INSERM is building a HAL prototype, in addition to its Open Repository set up earlier by BioMed Central and based on a DSpace platform.

Many local document archives and databases are on the point of being transferred to the HAL platform. Some universities are also involved in current experiments of implementing HAL, others will follow, as there is a general agreement about cooperation.

^[13]

7. Open access perspectives

Since the March 2005 announcement by the CNRS (and partners) there have been some very enthusiastic points of view on the French situation:

'So, in summary, the special case of CNRS+, HAL and France is a great asset to world OA, accelerating French OA provision substantially, in a way not possible in any other country, at a national and central level, and setting a splendid example (of systematic self-archiving policy) that will encourage the rest of the world's research institutions to self-archive too.' (S. Harnad)^[14]

Although it's true that a common and unified self-archiving policy adopted by these four institutions would be close to (and the beginning of) a national one, the initial problem to be solved is not so different from that encountered elsewhere: how to ensure that the archives get filled, that authors get used to the act of depositing an article in a repository?

The 'official' CNRS policy statement issued in the context of the Southampton Berlin 3 meeting (together with 4 other French statements) stresses the principle of incentivization, rather than mandatory acts, and of *leverage*:
'It is expected that the adoption of a highly incentivized institutional self-archiving policy for our researchers will ensure that the majority of CNRS publications deposited in the archive will also be made externally visible in Open Access.'^[15]

Will this happen within the CNRS, and then in France? French OA advocates tend to be optimistic, for different reasons:

- All the efforts described above to make the archives attractive and useful for the researcher will pay on the long run.
- In addition, authors are encouraged to publish in open access journals, and the principle "Publication costs are research costs" is becoming widely accepted.
- Authors will get more and more aware of their rights vis-à-vis the publishers. By means of actions like the publication of the above-mentioned legal guide and other continued education and communication efforts, they will get to know that, for example, 92% of journals do already authorize self-archiving, that alternate author- and reader-friendly copyright policies and practices have been developed.^[16]
The specific French legal copyright (and 'moral rights') situation is more favourable to authors than the anglo-saxon copyright.
- Recent studies (in particular the one by Swan and Brown^[17]) on self-archiving experiences and attitudes among researchers have given encouraging results: Use of institutional repositories has strongly increased; in general lack of self-archiving is not due to reluctance, but rather to unawareness of the option, and a vast majority of authors would even willingly comply with a mandate to deposit their articles. In addition, the extra burden of the submission task by authors is obviously minimal, a study has shown that the average time spent for entering the metadata is extremely short.^[18]
- The multidisciplinary character of CNRS could turn out to be an advantage. The global approach and unique infrastructure opted for could have an effect of inducing new behaviour. Scientists from fields with only little self-archiving practice (essentially those with no pre-publication tradition) might follow the example of their colleagues in mathematics, physics, etc. However, to make this happen, 'a discipline's existing peer-to-peer communication patterns and research practices need to be considered when developing institutional repository content policies' (R.Crow).^[19]
Within CNRS such outreach is already visible for the HSS, since researchers have started taking advantage of the existing HAL platform.

To conclude, Open Access turned out to be a very federating topic in the French academic world and there are encouraging examples of cooperation and common objectives between research institutions and universities. Such understanding will go a long way to legitimize their respective projects internally when it comes to researchers and decision makers, and externally when it comes to the players of the scientific publishing field.

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