

Open Access in the biomedical field: a unique opportunity for researchers (and research itself)

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Aim of this article is to offer an overview of the Open Access strategy and its innovative idea of a free scholarly communication. Following the worldwide debate on the crisis of the scholarly communication and the new opportunities of a networked environment, definitions, purposes and real advantages of the Open Access pathway are presented from a researcher's point of view. To maximize the impact and dissemination, by providing free access to the result of the research, two complementary roads are pointed out and explained – self-archiving in open archives and publishing in Open Access journals. To let authors make their choice the most useful tools to find one's way in this new reality are shown: directories, search engines, citation tracking projects. The starting survey being done, the article deals in its conclusions with the Open Access challenges and most debated themes: impact and dissemination, new assessment measures alternative to the Impact Factor, new mandatory policies of the funding agencies, questions related to the copyright issue.

KEY WORDS: Libraries, Medical - Copyright - Open access.

Open Access (OA) is a movement — or better a global strategy — whose aim is to regain possession of scholarly communication, creating alter-

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native, free channels to share information and make science grow up without barriers.

Creating the scholarly communication that science deserves: first steps to freedom

The starting point is the evident crisis of the current model of scholarly communication: on one side, in the «post Gutenberg galaxy»,¹ the role of the Web and the electronic networks goes far beyond the delivery of full-text papers and searchable archives, and passes through the almost infinite possibility of sharing and discussing one's work with peers all over the world. According to Stevan Harnad, Professor of Cognitive Science at The Southampton University, early advocate of OA — he is the author of a famous “subversive proposal” for electronic publishing² —, this kind of revolution could be called «scholarly skywriting» and sets up a sort of “continuum” in scientific inquiry, with all the benefits of the interactive feedback.³ On the other side, there are several barriers to this free exchange of information and results of research, in whose name the Republic of Letters saw the rising of the earliest scientific journals in the 17th century, aimed at creating a public record of original contributions to knowledge and disseminating research outputs.⁴ The first barrier is the so called “pricing crisis”: subscription prices limit the access to the information. In the

last ten years, subscription fees to scientific journals (mainly in the biomedical field) have exponentially been rising, up to 302%.⁵ The question is not to undermine expensive journals or punish the somehow justifiable commercial logic of publishers, but to provide both an alternative to access and a larger impact to authors, by taking full advantage of the new net technologies. Sometimes, intolerable prices limit access intolerably — Elsevier's «Brain research» lists 21.335 USD in 2006... who can afford it? —, with the paradox that a research institution pays its researches three times: the first time by providing funds to conduct researches, the second time to subscribe to the journals on which its researchers publish their results, and the third time to pay for copies or materials for teaching purposes. Besides this, the budgets of libraries are increasingly being cut off, so they have to cope with cancelling a lot of subscriptions, even to some of the critical journals in some fields, actually creating new limits to the access to information. Peter Suber, former professor at Earlham College and one of the major advocates of the OA movement, reminds us of the other barrier, that he calls the “permission crisis”, as the result of raising legal and technological barriers (licences — no more ownership —, contracts, Digital Rights Managements) that block somehow access or limit the use of resources that libraries have so dearly paid.⁶ Serials pricing crisis and permission crisis together severely impede research, which as everybody knows grows upon the results of other researches: OA strategies can solve them both, avoiding that researchers and libraries pay much more in order to get much less.

Opening the gate to Open Access

Some definitions are due in order to establish what “Open Access” means and how it can give an answer to the crisis of the scholarly communication.

In February, 2002 the *Budapest Open Access Initiative* (BOAI) stated that:

«By “open access” to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only con-

straint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited».⁷

In March, 2003 the *Bethesda Statement on Open Access* was released. It is especially fitting because it comes from a meeting of biomedical researches at the Howard Hughes Medical Institute and was signed by the leading personalities in this field. It defines that

“An Open Access Publication is one that meets the following two conditions:

1. The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship, as well as the right to make small numbers of printed copies for their personal use.

2. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in a suitable standard electronic format is deposited immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving (for the biomedical sciences, PubMed Central is such a repository)”.⁸

In October, 2003, a conference on *Open Access to knowledge in the Science and the Humanities* held in Berlin produced a fundamental document known as the *Berlin Declaration*, which taking on from the previous quotations, goes farther:

“Establishing open access as a worthwhile procedure ideally requires the active commitment of each and every individual producer of scientific knowledge and holder of cultural heritage. Open access contributions include original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material.

Open access contributions must satisfy two conditions:

1. The author(s) and right holder(s) of such contributions grant(s) to all users a free, irrevocable, worldwide, right of access to, and a license to copy, use, dis-

tribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship (community standards, will continue to provide the mechanism for enforcement of proper attribution and responsible use of the published work, as they do now), as well as the right to make small numbers of printed copies for their personal use.

2. A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in an appropriate standard electronic format is deposited (and thus published) in at least one online repository using suitable technical standards (such as the Open Archive definitions) that is supported and maintained by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, inter operability, and long-term archiving".⁹

The *Berlin Declaration* has been signed — up to now, May 2007 — by 232 organisations from all over the world (including all the Italian Universities, the Istituto Superiore di Sanità...) and it is referred to as the common ground of the OA movement. To accomplish the path to the free access to scientific literature, a *Roadmap* has been settled, with 10 milestones that go from "Raising awareness" to "Creating a sustainable infrastructure" to "Organizational policies".¹⁰ Three follow-up conferences took place in the past; the forthcoming "Berlin 5" meeting will be held in Padova, in September 2007: a great opportunity for Italian researchers to get near the OA world.

Unrestricted use: more readers, more impact, more development

The two essential properties of the above definitions — scientific literature has to be free of charge to everyone; the copyright owner consents in advance to unrestricted use of his works — can solve at one stroke the two crisis we were talking about: the first statement solves the pricing crisis, the second one the permission crisis. In one word, OA claims for free availability and unrestricted use, but it is not matter of economics: it is matter of access.¹¹ Published works are the basis of further progress in science, and a wider dissemination of information increases efficiency in research. OA means access to ideas — it provides

everyone with the most current peer-reviewed results — and access to the broadest audience — the more an article is accessible, the more it is read and it has a greater impact.

Some more points to focus on are:

— OA applies only to scientific literature, that is articles for which the author expects no revenue but the larger impact and visibility — we are going to see how and how much OA increases impact;

— OA is a call to retain copyright: it is a choice for authors, they decide how to publish their works, which rights to transfer to their publishers and which to keep. This is one of the most critical arguments in OA, we'll come back to it;

— OA is an alternative (complementary, not exclusive) way to publish the results of a research, or better to disseminate them: we are mostly talking about peer-reviewed material — or submitting for peer-review, just to leave out the suspect of a second-rate channel of publication. Peer-reviewing, although not exempt from shadows, is still the code in the scientific communication, mostly in the biomedical community that perhaps calls for quality certification more than for keeping up with cutting edge-research results: but OA is completely compatible with peer-review;

— OA could go beyond the gap dug between well-funded institutions which can afford wide portfolios of commercial journals and those which cannot — let's think not only of the macro-dimension of the developing countries, but also to all medical practitioners who could benefit from free access for their long-life learning.

It's a long way to Open Access

To achieve access to the scholarly communication, a researcher can choose two complementary paths:

1. self-archiving in open archives;
2. publishing in OA journals.

Jean-Claude Guédon, professor of Comparative Literature at the University of Montreal, discussing these so-called "gold" and "green" ways to OA, argues that they ought to merge to create a mature landscape, being not in competition.¹² Of course, there are differences between the two strategies. Let us see.

Self-archiving¹³ means that an author can archive his pre-print (the final version of a work before submitting for peer-review) or post-print (the version approved by peer-review; it can be already copy-edit-

ed or not) in an open archive. A repository does not perform itself peer-review, only makes the content immediately and freely available, being unrefereed pre-prints or refereed post-prints. What to deposit depends on publishers' policies. To be sure you are not infringing your copyright agreement with the publisher you submitted your manuscript to, the basic tool is RoMEO¹⁴ (Rights METadata for Open archiving), edited by the British SHERPA project: it lists the publishers' copyright conditions as they relate to authors archiving their work on-line. According to their attitude towards self-archiving, publishers are divided into "green" (those allowing archiving of both pre-prints and post-prints), "blue" (only post-print, often not the .pdf version with the editorial logo but the final draft version after refereeing), "yellow" (only pre-prints) and "white" (no archiving allowed): 76% of the listed 192 publishers allows some form of archiving. Even if the publisher is a "white" one, or there are embargo policies, a new tool appears in most of the open archives: the "Request copy" button put directly in touch with the author, who can privately send you a copy of his work, according to the "Fair Use" rule.

You can search the directory by the publisher's name or the journal's title. The choice is then up to you — where to submit your manuscript —, if you believe in OA and you want to foster it, do choose a "green" publisher.

Technically, open archives are repositories built and maintained with open-source software; depositing an article takes to the author himself only a few minutes to submit the paper and put metadata in (that is: author name, title, subject, keywords, date... more or less, the same fields you can afterwards search in a query); each item has its download counter, to show usage statistics and verify the impact of the work.

Open archives are compliant with the OAI-PMH — a protocol for metadata harvesting — and so they are interoperable, unlike one's own homepage where one could be used to storing work in. OAI-PMH is a revolutionary new infrastructure component for supporting distributed networked information services. The logic behind the protocol is to offer a common framework to guarantee access to information: so called *data providers* (e.g. a repository) employ OAI-PMH to expose structured data (metadata) and so called *service providers* (e.g. gateway) harvest metadata, process it, adding value in the form of service.¹⁵

Even if, due to the richness of metadata, OA mate-

rial is easily retrieved by the common search engines — with the highest ranking levels —, to avoid noise there are useful tools to surf in the OA environment. OAIster, a search engine supported by the University of Michigan, gathers up to now more than 11 000 000 records from more than 800 repositories.¹⁶ Each country having set up its own gateway, PLEAIDI - provided by CILEA and CASPUR - is the portal to the Italian open archives, searchable also by MIUR class.¹⁷ Openarchives.eu is the last created engine to search both institution and digital objects OAI-PMH compliant.¹⁸ Scientific Commons, now in Beta phase, is a search engine that provides also a citation tracking project: starting from an item, it links all the items that cite it and all the items that are cited by it. This works up to now for about a half of the 1 500 000 searchable records.¹⁹

Open archives can be disciplinary (e.g. E-ms, archive for social medicine²⁰) or institutional (e.g. Canadian Breast Cancer Research Alliance²¹). There is no definitive list of OA archives. Useful tools are: DOAR, Directory of Open Access Repositories, edited by the University of Nottingham, it lists 881 archives and is searchable by subject area, country, content type, language, or browseable by country; ROAR, Registry of Open Access Repositories, edited by Tim Brody, University of Southampton, lists 897 items and can be searched or browsed by country, document type, software, name; the cited OAIster (830) and Openarchives.eu (1 230) — which seems at this date to be the most complete — allow respectively a browsing by institution and a query by keyword.²²

Institutional archives are a set of services that an institution offers to its community for the management and dissemination of digital material created on its behalf. They can play the role of showcase of the outputs of any institution — consider a University, and the argument about "anagrafe della ricerca" —, and at the same time assure the long-term preservation of works — this is another important feature of the open archives. Raym Crow, a SPARC consultant, stresses that preserving and leveraging its own intellectual assets is a natural extension of institutions' responsibility, and that institutional repositories could serve also as tangible indicators of an agency's quality, by demonstrating the scientific and social relevance of its researches.²³ Clifford Lynch, Director of Coalition of Networked Information, points out how Institutional Repositories are essential infrastructures that can accelerate changes in scholarly communica-

tion: the open software developed to set up a repository allows storage; it also presents some features to accomplish the whole workflow of some steps of the research — e.g. collaborative work — and, once integrated with the informative system — libraries, administration — could provide added value in terms of services.²⁴ If the Institution adopts a mandatory policy towards its researchers, as largely requested, soon a critical mass of research outputs will be accessible, maximizing the impact.²⁵ To read the policies of the institutions that already have one (e.g. Australia's National Health and Medical Research Council; UK's Medical Research Council; CERN) you can use ROARMAP, Registry of Open Access Repository Material Archiving Policies.²⁶

On this path, disciplinary archives are gaining growing importance because of the mandatory policies of the funding agencies. There are two background acts: first, the OECD *Declaration on access to research data from public funding* (2004) - strengthened by the *Recommendation concerning data from public funding*, December 2006 - that, recognizing that OA to, and unrestricted use of data promotes scientific progress and that OA will maximize the value derived from public investments in data collection efforts, declares the commitment to ensure openness; the US Congress emanated on May, 2nd 2006 the *Federal Research Public Access Act*, a bill that provides for Federal Agencies to develop public access policies relating to researches conducted with public funds, stating the public access of the final peer reviewed version of the work as soon as possible, and not later than 6 months from the publication in a journal.²⁷ The National Institute of Health has a *Public access policy*, very controversial and debated, that finally took effect in May, 2005: it provides for OA to public funded researches, identifying in PubMedCentral the repository where to deposit articles arising from taxpayer-funded research within 12 months from the publication.²⁸ In the UK, the Wellcome Trust already set a mandatory policy to ensure that within six months from the publication, each work funded by the Trust has to be made freely available, identifying in UKPubMedCentral, established on January 9th – the repository to deposit in.²⁹ The Research Councils in UK have a similar policy that became effective from October 1st, 2006. You can read all the mandatory policies about public funds in JULIET, a directory edited by SHERPA project, which for each funding agency lists what, where and when to archive.³⁰

BioMedCentral — an OA publisher, see below — also gives a worldwide overview on biomedical funders policies.³¹

The commitment of funding agencies to OA got an important output: most of the traditional scientific publishers³² adopted in the last months a “hybrid” policy. To be compliant with the policy of public funding agencies, they allow the deposit in open archives with an embargo of six months. Furthermore, they also offer a new option – called “open option”, “open choice” or similar, often only for a package of their journals, not all – to the authors that require their articles to be immediately free available to pay for the open publication. Charges vary from publisher to publisher: Elsevier, Springer, Wiley requires a fee of 3000\$, Taylor & Francis 3100\$, Blackwell 2500\$ per article: a useful table of comparison can be read on the site of BioMedCentral, the major OA publisher, that requires 1250-2500\$ per item.³³

The argument of access to scientific production is also on the agenda of the European Commission. On the basis of the Communication COM 2007 (56) *Scientific information in the Digital Age. Access, dissemination and preservation*, which deals with OA themes and strategies, a conference was held in Bruxelles on February 15th and 16th to debate on *Scientific Publishing in the European Research Area: Access, dissemination and preservation in the digital age*. To support free and OA to European research, a *Petition for guaranteed public access to publicly funded research results*, promoted by JISC, SURF, SPARC, DFF, has been signed (as to Feb, 17th 2007) by 21446 people, as individuals or on behalf of their organization.³⁴ We will see the conference spin-off in terms of concrete decisions.

To demonstrate how OA is a topical, current subject, most of the presentations at the *5th Workshop on Innovations in scholarly communication* (CERN, Geneva, April 17-20, 2007) dealt with new tools to disseminate knowledge, new OA models and new metrics of impact assessment.³⁵

Open Access journals: only economically free or could they help to free research itself?

This introduces us to the second choice for a researcher: publishing in an OA journal.

OA journals are peer-reviewed, indeed a high quality peer-review — that weighs upon the article pro-

cessing charges — and often a open peer-review — most of BioMedCentral journals attach to each paper its pre-publication history, with all the signed comments of the reviewers. PLoS launched in 2007 «PLoS ONE», a revolutionary multidisciplinary journal that is completely open and devoted to the new Web 2.0 tools: a reader can post a comment, starting an open peer-review, but can also introduce with a wiki tool a phrase or a “correction” in the text of the article — something like a virtual academic debate.³⁶

The difference from traditional, commercial journals is that OA journals let authors retain the copyright, and that they have a different business strategy: they are free of charge at the point of use. A common misunderstanding is that OA literature is costless to produce: that is not true, a quality scientific literature is not free to produce or publish, as demonstrated by some business plan helping to start a new OA journal or to convert a traditional one into OA.³⁷ The argument is whether to charge readers and create barriers to access, or find alternative sustainable ways to pay costs. Many of the OA publishers — but not all — adopt the “author/institution pays” policy, that is, paying once and in advance — but once — and grant the free access for everyone, all over the world. Comparing with the costs of subscriptions, that increase every year, have to be renewed every year and only give a temporary license to access, with restriction based on IP address or UserId/Password, the fees charged as subsidy for publication are definitely lower. Paying for dissemination costs less than paying for access licences. Institutions should have to change their minds, and get used to paying for outgoing articles, rather than for incoming ones: but if one assumes that the cost of dissemination is only the final cost of the research, expenses could be included in the starting budget plan of the research project, and so be funded.³⁸ This fact can be contested to the opponents of OA, who argue that some authors cannot afford the publication fees. Moreover, in cases of economic hardship, PLoS, BioMedCentral, and other OA journal publishers waive their processing fees.

DOAJ, Directory of Open Access Journals, edited by the University of Lund, lists 2703 journals, searchable by title or subject area, and, for 808 journals, at article level.³⁹ To help researchers make their choice, DOAJ has a “For authors” link, that lists together OA journals completely free and also hybrid journals which offer options to publish OA.

Being free from a strict commercial logic and from

other interests, in the OA world you can also read negative results of previous researches: this will not necessarily prevent you to pursue an hypothesis, but could help in decision making about starting points or research funding, and surely can avoid biased or untrue representations. BioMed Central publishes «The Journal of negative results in Biomedicine», as well as the John Hopkins University that edits «NOGO, Journal of Negative Observation in Genetic Oncology», and the Canadian Public Knowledge project «Journal of negative results: Ecology and evolutionary biology».⁴⁰

In the biomedical field, one must know at least these main publishing initiatives:

BioMedCentral, a for-profit publisher, has a core of 176 e-journals: most of them have a high Institute for Scientific Information (ISI) Impact Factor (IF)⁴¹, and the newest one has already an unofficial IF;

PLoS (Public Library of Science), a non-profit publisher, publishes 8 journals, among which PLoS Biology, that ranks as the most highly cited general biology journal by the ISI, with an IF of 14.7;⁴²

SciELO (Scientific Electronic Library Online), is a model for cooperative electronic publishing of scientific journals on the Internet. Especially conceived to meet the scientific communication needs of developing countries, particularly Latin America and the Caribbean countries, it provides an efficient way to assure universal visibility and accessibility to their scientific literature, contributing to overcome the phenomena known as “lost science”;⁴³

BioLine International is a gateway for journals in the developing countries that operates on a not-for-profit basis, focused on improving the distribution of scientific information despite borders and barriers;⁴⁴

MedKnow is an Indian publisher with a core of 40 journals.⁴⁵

Mind the gap: new impact, new assessment tools

Our starting survey on definitions, pathways and tools being done, let us consider the concrete advantages and challenges of OA. Why should an author choose to publish in an OA journal and/or to self-archive in a open archive? Because maximizing the dissemination these tools maximize the impact of his work. This is the primary, original revenue for a scientific work, this is what an author expects from publication — *i.e.* making his work public, of public util-

ity —, this is what science deserves — a free circulation of ideas, to create more knowledge. Impact and citation analysis go together: citation analysis has been used since the mid-20th century as a tool to measure impact and visibility of scientific articles, to monitor a subject trend, and to evaluate the scientific impact of a researcher or an institution. Several surveys in other disciplines (*e.g.* physics, due to the popularity of ArXiv, the disciplinary open archive became necessary in the field) demonstrates that OA versus non OA articles perform an average advantage of citation of more than 300%.⁴⁶ Gunther Eisenbach, Centre for Global eHealth Innovation, Toronto, published on «PLOS Biology» (May 2006) his survey *Citation advantage of Open Access articles*: he demonstrates that for a period from 6 to 18 months OA articles in the same hybrid journal, «PNAS - Proceedings of the National Academy of Science», doubled their citations in comparison to non OA articles, and in the following months the citation gap between OA and non-OA papers continues to widen.⁴⁷ The OA advantage «has at least three components: (1) a citation count advantage (as a metric for knowledge uptake within the scientific community), (2) an end user uptake advantage, and (3) a cross-discipline fertilization advantage».⁴⁸ As Derek Law, professor at the Strathclyde University, pointed out in the recent congress *Institutional archives for research: experiences in Open Access*, held at the Istituto Superiore di Sanità in Rome at the end of November, 2006, OA articles are cited sooner and downloaded more frequently: they are more immediately recognized in the system of scholarly communication on the net.⁴⁹ There is a significant correlation between downloads today and citations two years later, as shown in Tim Brody's *Earlier web usage statistics as predictor of later citation impact*. The survey opens a new chapter in order to provide a new usage-based metric, more respondent to the new net context: download counts can be used as early performance indicators for papers and authors, even before their impact is reflected in citation counts.⁵⁰ Here is another innovative challenge of the OA movement: contributing to establish a new metric could also shift from the traditional and so criticized «IF» towards new performance indicators and new systems of evaluation. The IF is «misused» — according to its founder himself, Eugene Garfield⁵¹ — in the evaluation of research, being only a quantitative indicator raised to the status of indicator of quality, main-

ly in the biomedical field. Wellcome Trust itself, in the *Position Statement in support of Open Access publishing* affirms the principle that it is the intrinsic merit of the work, and not the title of the journal in which an author's work is published, that should be considered in making funding decisions and awarding grants.⁵² Since 1997 Per O. Seglen discussed with close arguments *Why the Impact Factor of journals should not be used for evaluating research*: because it depends on research fields and language areas coverage, because of self-citation, because it is not statistically representative of the value of individual journal article, and so on.⁵³ Alessandro Figà-Talamanca, professor of Mathematics, in a picture tailored on the specific Italian reality, judges the very high costs in terms of «damages» that the use of IF could present in the assessment of the research outputs compared to the few, uncertain benefits.⁵⁴ But, IF is still one of the criteria for national research assessment, and for personal choice in submitting a manuscript – to the purpose, notice that most of OA journals could have no IF only because they are recently born, not because of the quality: in fact those which are more than two years old have already a great IF. In the United Kingdom a serious review of the RAE (Research Assessment Exercise) is in progress, considering also these new metrics: criteria to evaluate the 2008 exercise states that «no panel will use journal Impact Factor as a proxy measure for assessing quality».⁵⁵ The IRR project of UK JISC is devoted to investigating the potentiality of Institutional Repositories for Research Assessment.⁵⁶ Maybe a cultural change is needed, as well as new transformative uses of the digital medium gain ground. Valentina Comba and Maria Laura Vignocchi, of the University of Bologna, discuss the research evaluation factor and the need of new complementary measures, calling our attention on the Open Access citation Index Group — which works since 2004 to review existing evaluation methods — and on new scientometric engines like Citebase, a web-based citation-linking and impact-rank service developed for Open Archives in a global project at the Southampton University.⁵⁷ The Andrew W. Mellon Foundation has awarded a grant to Los Alamos National Laboratory (LANL) in support of a two-year project that will investigate metrics derived from the network-based usage of scholarly information. The project is called MESUR, and the latest news and development have been presented at the cited CERN Workshop in April 2007.⁵⁸

TABLE I.—*Useful tools to not get lost in the OA world.*

| | | |
|---|---|---|
| <i>Search engines for digital objects (articles, theses, raw data, presentations...) in open archives</i> | | |
| OALster | http://oaister.umdl.umich.edu/o/oaister/ | Worldwide – title, author, subject, language – limit by resource type |
| Pleiadi | http://www.openarchives.it/pleiadi/modules/openarchives/ | Italy - each field - limit by MIUR class |
| Openarchives.eu | http://www.openarchives.eu/home/home_do.aspx | Worldwide - each field – no limits allowed |
| Scientific Commons | http://www.scientificcommons.org/ | Worldwide - each field - also citation tracking service |
| ROAR search | http://roar.eprints.org/index.php?action=google | Only records in ROAR repositories |
| DOAR search | http://www.opendoar.org/search.php | Only records in DOAR repositories (trial) |
| <i>Search engines for digital objects in OA journals</i> | | |
| Open j gate | http://www.openj-gate.com/advancesearch.asp | Title, author, keyword, abstract, institution/ address – Limit by peer-review journals, publication date, latest update |
| DOAJ (only for 769 of 2577 journals) | http://www.doaj.org/doaj?func=searchArticles | Title, author, keyword, abstract – Limit by journal title or ISSN |
| <i>Directories of Open repositories (to find the name of an archive or an institution)</i> | | |
| ROAR | http://roar.eprints.org/index.php | Find by any keyword or browse by name, country, software, content type |
| DOAR | http://www.opendoar.org/find.php | Search or browse by keyword, subject area, country, content type |
| Openarchives.eu | http://www.opendoar.org/countrylist.php?cContinent=Europe http://www.openarchives.eu/search/search.aspx | Browse by country Search by name, creator, subject, content type |
| <i>Directory of OA journals (to find the journal title fitting your discipline)</i> | | |
| DOAJ | http://www.doaj.org/doaj?func=findJournals http://www.doaj.org/doaj?func=expand http://www.doaj.org/doaj?func=forAuthors | Search or browse by title Browse by subject From “For authors” link lists also hybrid journals |
| <i>Copyright policies of scientific publishers</i> | | |
| ROMEO | http://www.sherpa.ac.uk/romeo.php http://www.sherpa.ac.uk/romeo.php?colour=green | Search by journal title or publisher name Browse only “green” publishers |
| Funding agencies' OA policies | | |
| JULIET | http://www.sherpa.ac.uk/juliet/index.php | Browse only |
| <i>Institutional archives mandatory policies</i> | | |
| ROARMAP | http://www.eprints.org/openaccess/policysignup/ | Browse only |
| <i>Traditional publishers “open access options”</i> | | |
| Options list | http://hal9000.cisi.unito.it/wf/BIBLIOTECH/Portale-bi/Open-Access/Bibliograf/Editori-tradizionali-e-Open-Access.doc_cvt.htm | List of traditional publishers options in OA |
| Charges comparison | http://www.biomedcentral.com/info/authors/apccomparison/ | A table compares charges for OA publications |
| <i>Creative Commons licences</i> | | |
| CC Italia | http://creativecommons.org/license/?format=text&lang=it | Licences based on the Italian law |
| Science Commons project | http://sciencecommons.org/projects/publishing/index.html | A study on specific licences for scholarly communication. Useful <i>Addenda</i> to copyright transfer agreements |
| Scholar's copyright addendum engine | http://scholars.sciencecommons.org/ | Engine to generate a PDF form that an author can attach to a journal publisher's copyright agreement |
| <i>Citation tracking</i> | | |
| CITEBASE | http://www.citebase.org/search | |
| Scientific Commons | http://www.scientificcommons.org/ | Beta phase - citation tracking only for half of 1.500.000 records |

“Some rights reserved”: balancing the interests of all the stakeholders in scholarly communication

The second challenge, and a cultural change, too, is the increasing awareness of the author's rights and his opportunity of repositioning the role of the author himself in the chain of scientific information. As we reminded at the beginning, if an author retains the copyright on his work, he does maintain the control of his work: it is he who decides. No legal issue requires that a publisher must get the copyright with a “transfer agreement” to publish a work. Antonella De Robbio, of the University of Padova, wrote clear pages on *Copyright and Open Access*, and a guideline *I diritti dell'autore*.⁵⁹ According to the Italian law (633/1941⁶⁰) an intellectual work is charged by moral and economic rights. Moral rights (including intellectual paternity) are always inalienable; economic rights — that is: publication, reproduction, distribution, communication to the public, translation (artt. 12-18) — can be transferable, but they are independent (art. 19): the author can transfer a right retaining another one. That's why a wider awareness is needed: no indiscriminate transfer is due to publish an article. Authors have to think before signing their rights away. It is possible to negotiate the terms of the publishing contracts, as shown in some useful tools made available by important research institutions like MIT, or scholarly committees like SPARC or JISC, which prepared “amendment forms” to contracts in use or new agreement models. A new tool is the “Scholar's Copyright Addendum Engine”, that will help to generate a PDF form that an author can attach to a journal publisher's copyright agreement to ensure that he retains certain rights.⁶¹ Another possibility, coping with copyright according to the concept of “copyleft”, is represented by the *Creative Commons* licences.⁶² Most of OA journals apply them. They are prepared by a legal staff from the United States — but provide different licenses on the basis of national jurisdiction — and apply to a work some rights according to the author's willing. There are three options you can choose - besides attribution, always guaranteed — simply by flagging a Yes/No button: commercial use; derivative works; share alike — that is, with a similar open licence. Then a threefold licence will be associated: a human-readable, a machine-readable (with appropriate metadata) and a legal formula tell in different ways to the users what they can

do and what not with your work. The logic is from “All Rights Reserved” to “Some Rights Reserved.” A new project group within *Creative Commons* is working on *Science Commons*, and especially a *Scholar's Copyright project*, to determine specific needs of scholarly communication and academic world.⁶³ A significant work in this field to assist stakeholders - including authors, publishers, librarians, universities and the public - to achieve maximum access to scholarship without compromising quality or academic freedom and without denying aspects of costs and rewards involved, was carried out by the “Zwolle group” in a project ended in 2006.⁶⁴ Good rights management procedures are as important for OA content as they are for purchased content: copyright must be a kind of protection of the intellectual property, not a barrier against its diffusion, as stated in a clear paper by Fred Friend, another of the OA advocates.⁶⁵ And only a clear and correct allocation of rights and responsibility, that balances the interests of all the stakeholders, can serve the interests of the scientific community in its way to progress.

By the way, did you notice that you can freely read all the bibliographic citations? That's because they are OA (Table I).

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