

Seven Years after the Open Access Revolution: (Research) Libraries as Media and Knowledge Management Centres

by Giuseppe Vitiello

More than ten years ago, Nicholas Negroponte, a technology guru at MIT, declared that the universe of information and communication technologies would replace the Gutenberg galaxy – he wrote it, of course, in a book.¹ Many pundits have backed Negroponte’s arguments, but obituaries for books and libraries are still to be written. Book production has almost doubled in the last two decades. Library and information science curricula are steadily successful. And isn’t it a better demonstration of the vitality of libraries than the new buildings in which the national or the university libraries in Alexandria, Paris, London, Frankfurt, Copenhagen or Riga are hosted? No, there is no loss of vocations in the library world and libraries do have a future.

In spite of such evidences, and notwithstanding what has been just said, I would like to claim in this article that Cassandras are not entirely wrong. Libraries do have a future, but their prospects are not to be found where one might expect and where they are now.

1. Methodological preamble

As a frame for the concepts I am going to develop, I would like to resort to two methodological tools. The first is the notion of paradigm as described by Thomas Kuhn, a philosopher of science.² I would also like to describe the methodological scheme designed by David Easton, a political scientist, and apply it to the decision-making process in research libraries.³

In his book, Kuhn demonstrates that the evolution of scientific theory is not a linear history of facts and evidences piling up the foundation of the scientific truth. Rather the opposite, it is the strenuous and often painstaking result of changing intellectual circumstances and possibilities. New ideas come in the form of conjectures, new discoveries and refreshing interpretations that eventually tilt the current concept of science. This

GIUSEPPE VITIELLO, NATO Defence College. This article summarizes one of the chapters of my book: Giuseppe Vitiello, *Il libro contemporaneo. Editoria, biblioteconomia e comunicazione scientifica*, Milano: Editrice Bibliografica, 2009.

1 Nicholas Negroponte, *Being digital*, New York: Knopf, 1995.

2 Thomas S. Kuhn, *The structure of scientific revolutions*, 2d ed. enl., Chicago: University of Chicago Press, 1970.

3 David Easton, *The political system: an inquiry into the state of political science*, New York: Knopf, 1968. Of the same author, see David Easton, *A framework for political analysis*, Chicago: University of Chicago Press, 1979.

is the stage when the “paradigm shift” occurs; this is the moment when the architecture and the arsenal of the “normal” science break down and become a legacy of the past.

Science, however, is not only policy, it is also politics. Each scientific-professional community has its own patterns and processes. Their actors can be represented in a functional and systematic way. Easton has devised a model according to which “demands” for a certain “output” supported by people or groups are processed by decision-makers and translated into policy. At an intermediate level, “gatekeepers” filter demands and let them get into the decision-making “black box”. Once the decision is taken (e.g. a certain policy), the interaction with the environment will generate new demands and groups in support or against the said policy; this is conventionally called “feedback”. The Easton model is usually represented as follows:

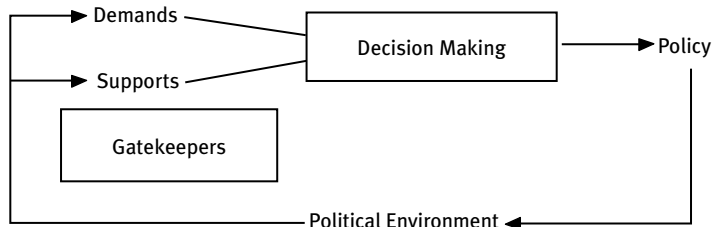


Table n. 1: Easton's model

2. A library within the Easton's framework

What is a library? «A library is a collection of information, sources, resources and services, organized for use, and maintained by a public body, an institution, or a private individual» (I have taken this definition from Wikipedia). Few people, if any, would argue against it. Albeit comprehensive, this definition does not say anything about ends and means; it does not tell why public bodies should maintain a collection of information and sources, for which objectives and policies. The remarks I am going to make now only apply to research libraries. Remarks of similar kind, however, can also be made for public libraries.

Why is a research library established for? What would users wish to find in it? The following is an uncomplete list of demands, but likely to be compiled as such in many contexts. A research library is expected to meet:

- a) general needs, such as, for instance, books, periodicals and other sorts of information designed to fulfill the basic information needs of teachers and students;
- b) practice-related needs (e.g. teaching practices), as is the case of materials designed for course guides, syllabi, etc.;
- c) community-linked needs, for instance, materials used by researchers for the topics they investigate;
- d) special purpose needs, such as specific literature for study projects, cooperative undertakings with other institutions or for joint initiatives within the private sector.

Teachers may expect that library acquisitions and policies are consistent with university curricula and that the works they recommend are always present in the library, well in advance. Researchers usually investigate on distinct topics and may find it useful to have access to very specific research material available on library shelves. Both communities will look for support in their professional associations or representatives. Conflicting demands may be regulated by a club of gatekeepers, individuals who are legitimated to select demands, to arrange them in a priority order and to shape them in

the most appropriate way for the decision-making process. Decision-makers may be representatives of the Dean and of the financial bodies responsible for assessing demands and transforming them into policy. The response to the policy will provide feedback and will inspire new demands either in support or against the library policy (“feedback”).

In Easton’s terms, this would be represented by the following table:

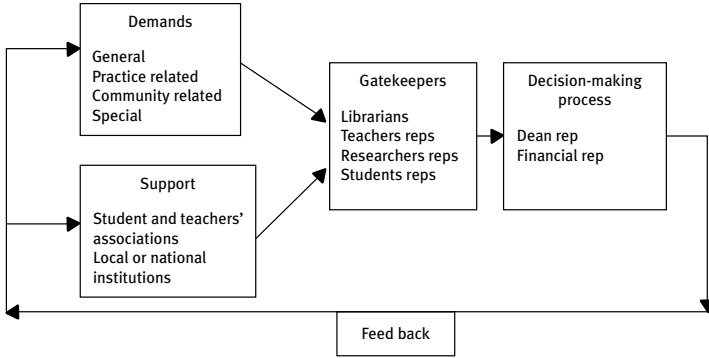


Table n. 2: Libraries’ demands and support

There is a missing link in this table: libraries themselves. What role are they expected to play in the execution of a policy? Libraries normally deal with management; their job is usually staged in three phases: information acquisition, information processing and information dissemination.

In the first stage, books, periodicals and other materials are selected and purchased. In the second, they are catalogued, indexed and classified. In the third, they are disseminated to relevant groups of users through loan transactions or document supply. An important component of dissemination is the provision of reference services, i.e. recommendations addressed at users concerning documents that may be relevant to them. We are now able to present the complete scheme:

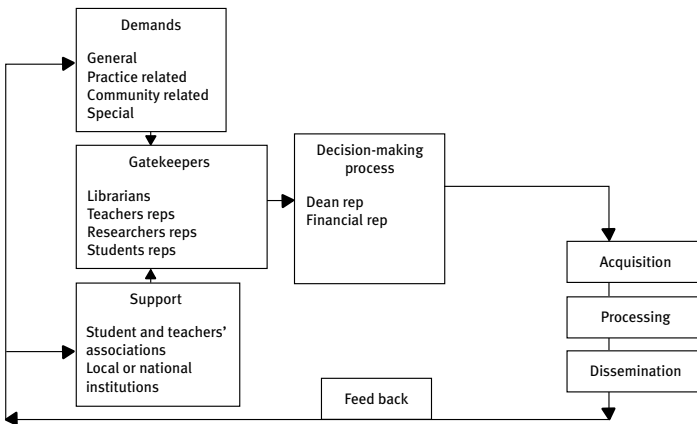


Table n. 3: Libraries’ demands and support (complete scheme)

Together with a vast array of technical concepts, standards, methodologies expressed in a specialized language, this is what may be called today's library paradigm.

3. Libraries within the book and the scholarly communication chain

Research libraries, however, do not work in a vacuum. They are terminals of an information chain initiated in research and teaching institutions and addressed at users through a series of intermediaries, in particular academic publishers. This process is usually called the information chain in its specialised segment – i.e. Scientific, Technical and Medical (STM) publishing.

Not even ten years ago any school of publishing would have presented the publishing chain in a way that would have looked very much like this:

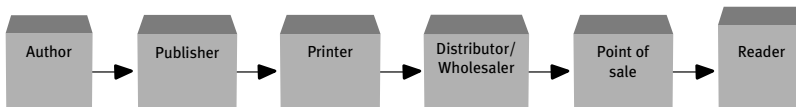


Table n. 4: The book chain

In this chain, an author delivers the manuscript to a publisher who, after having made the necessary adjustments and prepared the layout, releases the final version of the would-be publication to a printer. Distribution is ensured by a wholesaler (although the physical distribution is made by somebody else) who sells the publication to selected points of sale (e.g. university bookshops). These are the outlets where books are purchased by readers.

There is a meaningful variation of the scheme: periodicals. As you know, books are not the main product of academic publishing as they are in leisure literature (fiction or general essays). The main academic product is the scientific, peer-reviewed journal. The information chain for scientific journals would look very much like the following chart:

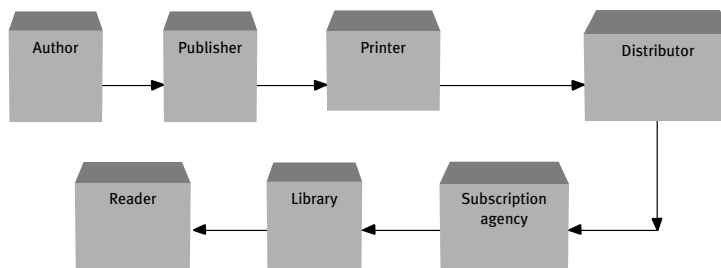


Table n. 5: The publishing chain – scientific journals

This table differs from the previous one in two points. First, the peripherals of the chain are libraries, and not points of sale. This is easy to understand: only institutional customers can afford subscriptions to scientific journals worth each \$ 2,000 and even \$ 3,000 per year. Second, an additional actor is present in the chain: subscription agencies, that receive orders from libraries, process them and liaise with publishers for ordering and claiming-related issues.

The advent of information and communication technologies has profoundly altered the traditional publishing chain. Publishers have tried to eliminate intermediaries (such as subscription agencies); their commercial target is to sell their publications directly through their portals. This is the reason why, together with low-cost air tickets, STM publishing is perhaps the most successful example of disintermediation in what is called the “information economy”.

Leading scientific publishing houses have worked towards a full integration of the information chain, both horizontally and vertically. Horizontally, they have proceeded to massive acquisitions of smaller publishing houses operating in the same disciplinary area in order to become leaders in the sector and gain a quasi monopolistic position. Vertically, they have integrated the distribution sector by either taking over subscription agencies or by making special arrangements with them. In general they have been keen in avoiding the cannibalization of existing markets and have maintained parallel distribution chains. STM publishing is today dominated by a handful of firms with strong positions and financial clout in some disciplinary areas. Their global turnover is quite impressive. Elsevier, the biggest scientific publisher, has alone a turnover twice as big as the whole of the Italian book trade.

This flourishing trade also presents some dark sides. A 2006 study commissioned by the European Commission reports of a market “full of imperfections”, with many “entry barriers” and pricing policies that are not always transparent. Whatever its nature, it is a fact that the prices of journals for libraries have increased – the same report says – of more than 300 per cent *beyond inflation* in only fifteen years.⁴

The result is a dual system dependent on whether publications are printed (longer chain) or online (shorter chain). Therefore, today’s market for academic publications can be described by the following table:

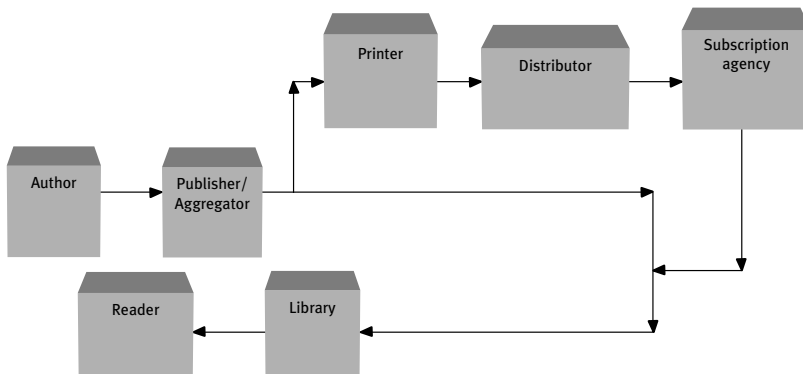


Table n. 6: The double chain of scientific publishing

As a response to publishers, and with a view to keeping journals’ prices low, libraries have banded together and created consortia. By joining forces, by playing the game

⁴ Commission of the European Communities, *Study on the economic and technical evolution of the scientific publication markets in Europe* - January 2006, <http://ec.europa.eu/research/science-society/pdf/scientific-publication-study_en.pdf>.

at only one negotiating table, they rightly assume to have a bargaining clout in their negotiations with publishers. As a result, in some scientific disciplinary areas, the information chain is now highly simplified and has become a process divided into four stages, as is described in the following table:

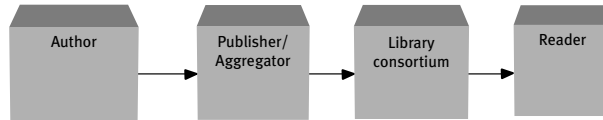


Table n. 7: Scientific publishing: simplified information chain

4. Libraries within the open access chain

From Kuhn's theory we have learned that the cause of a paradigm shift lays in a revolutionary concept or a new discovery. What is then the trigger of the library paradigm shift? The trigger is to be found, in my opinion, in open access.

What is open access?⁵ Open access is the practice of depositing scientific works in institutional repositories having special characteristics. Authors who publish their works in commercial journals are obliged to provide a copy to their institutions. This copy will be made freely accessible. Open access reflects institutions' legitimate concern that the property of the products, whereby research results are disseminated, rests in their hands and is not used exclusively for commercial purposes.

Open access is not just posting a publication on the website and making it universally available. Deposit must be done in accordance with standardised procedures – in conformity with the OAI protocol (OAI stands for Open Archives Initiative) and its related metadata, so that deposited works are made interoperable with other open access archives. Open access also means providing the adequate copyright and licensing framework, and combining OAI materials in flexible collections to meet users' needs.

The success of open access has been tremendous in the last decade. The OAI protocol was created in 2002. The Berlin declaration – the policy document that created awareness among European scientific institutions – dates 2003. In 2009 almost one hundred universities all over the world have established a policy according to which the full text of any work resulting from a research grant of the institution and published in journals or conference proceedings, must be deposited in an appropriate OAI conform repository. One hundred institutions may seem a slim number. Not so slim, if they are named: Harvard, Cornell and the University of California in the US (in all branches, schools and faculties), the Wellcome Trust, the Medical Research Council and the Biotechnology and Biological Sciences Research Council (BBSRC) in the UK, the Deutsche Forschungsgemeinschaft, the Humboldt University in Berlin and the universities of Bielefeld, Bremen and Hamburg in Germany. And many others.

⁵ An exhaustive bibliography on open access is Charles W. Bailey Jr., *Open Access*, <<http://dlist.sir.arizona.edu/747/>>. In Italian see: Antonella De Robbio, *Archivi aperti e comunicazione scientifica*, Napoli: ClioPress, 2007.

There are several models of open access. The most widespread may be described in the following terms:

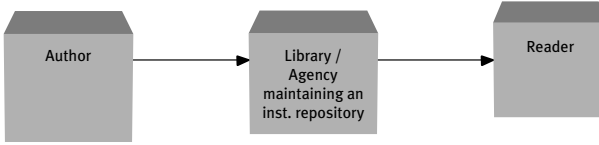


Table n. 8: A typical open access publishing chain

Authors post their works in a repository managed by the research library of their institution or by an independent agency. Libraries are the process organisers. They solicit works from authors, establish copyright rules, process the material according to the OAI protocol and have responsibility for the creation and the maintenance of OAI repositories.

5. Research libraries as scientific media and knowledge centres

What are the consequences for library work? In order to analyse the impact of open access on library activities I would like to come back to Easton’s scheme. Inserting open access publications is an activity that meets the needs of teachers and researchers, both as authors and as users. Support for their demands can be found in professional associations, including students’ associations, and in local and national communities (for instance, JISC in the UK or DFG in Germany). In an academic institution, gatekeepers will be the same as those who are involved in library activities. And also the decision-making “black box” should not be different: the Dean (or his/her representative), the head of finances, and people having key responsibilities.

In the following table, libraries’ demand and support also include open access activities:

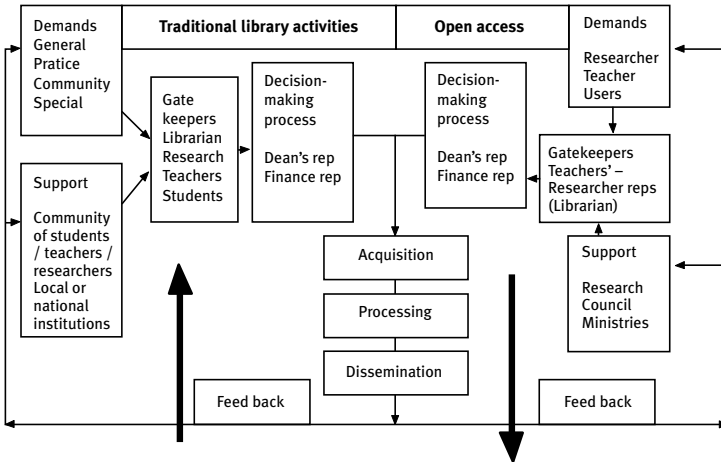


Table n. 9: Libraries’ demands and support including open access activities

Apparently, the system remains unchanged. Actors are more or less the same as those identified for ordinary library activities. At a closer look, however, it becomes obvious

that everything is different. It is as looking inside a reverse mirror. Normally, libraries mediate externally produced information, to communities inside the institution; in the open access environment, instead, internally produced materials are disseminated externally. In their ordinary routine, library users are to be found within the campus; in the open access environment, potential readers are anywhere in the world. Libraries consider researchers' and teachers' communities as users; researchers and teachers are instead the originators of open access publications. Whereas libraries are normally information disseminators, for open access activities they will have to act both as information producers and as information distributors.

What is exactly the nature of open access activities? Are librarians more like archivists? Or do they play the role of publishers? There is no agreement on this issue. Storing a publication in a repository according to the OAI protocol without further transactions, may be felt as an archival job - after all, isn't the word archive also present in the acronym OAI?

One should not fall into naïve nominalism. It is clear that, by using as platform the mass of open access documents, researchers and teachers will find it natural to set up open access collections, to arrange information packages, to create ad hoc readings according to specific needs. In practice, to create concepts, frameworks, architectures of ideas - which is very much the publishers' job.

6. Four forecasts

It is time to draw conclusions and to set the scenario for the next decade. I would like to shape it in the form of four forecasts.

1st forecast: *In the short term, research libraries will become communication media and knowledge management centres; libraries not undergoing change will lose power within the institution and will eventually be at the periphery of knowledge flows.*

This is an easy forecast, as this process is already going on in many special libraries. Transformation started a few years ago, when libraries lost their monopoly on documentation and users took the permanent habit to bypass library catalogues in favour of search engines. Suddenly, cataloguing heading rules and pre-coordinated indexes became inadequate for searching purposes - much more effective was a simple search on Google. Cataloguing rules are now being reviewed; FRBR, the *Functional Requirements for Bibliographic Records*, are intended to help users to find, identify, select and obtain a document. To be sure, there is a lot of scepticism even among librarians on the cost-effectiveness of the operation. And definitely, for searching purposes, FRBR will never prove to be more effective than search engines.

Therefore, libraries that stick to the library catalogue will be progressively put at the periphery of the mission of their institution. To maintain a leading position in documentation, they will have to master and make the most out of the knowledge / content / document management systems in use in their institution. This is the only way to move again in the centre of information flows from the margins.

2nd forecast: *in the short term, research librarians will address issues of content management rather than of information management.*

This is a consequence of the first assumption. So far, librarians have been passive disseminators of information. Sometimes, they have been criticized for having a book cover culture limited to peri-textual information, with the only view to feeding the library catalogue. At the best, they were able to provide reference services, the most advanced form of content handling.

As research libraries become knowledge management centres, librarians' mission will be to arrange, organise and re-combine materials. They will have to develop content-related competence. Their main asset will be to resort to subject specialists, *Fachbibliothekare*, – i.e. librarians having a dual competence, both professional and disciplinary.

3rd forecast: *in the medium term, research libraries will open departments specialised in knowledge marketing.*

Marketing is a misleading term as it is used mainly in the sense of “bringing to the market” or as an equivalent for commercial advertisement. Marketing ideas means instead to bring new forms of expression at the centre of disciplinary arena or forum (but the words “arenaing” or “foruming” have not yet been invented).

Within the general policy set by their institution, research librarians will be the driving forces in bringing new concepts and ideas developed by faculties and research centres into the mainstream of the intellectual debate. To use a trendy word, they will be the masters of content bundling; their proficiency will be tested in their ability to deliver open access information packages and reference services, and to market institutional intellectual products.

4th forecast: *in the medium term, research libraries will look very much like 18th century coffee houses and like 15th century publishing houses.*

Jürgen Habermas, a German philosopher, has developed the idea that in 18th century coffee houses, literary societies and *salons* were instrumental in the exchange of communication and in the diffusion of different points of view.⁶ Martin Lowry, a British scholar, so describes the activity of Aldous Manutius, probably the most famous 15th century printer, incidentally, the inventor of the Italic style.⁷ His printing-room was described as a mixture of the sweatshop... the boarding house and the research institute.

Apart from the sweatshop, the ultimate goal of libraries will be to become like the coffee and publishing houses in the modern history: an environment where an unexpected mixture of activities linked with digital work, new information dissemination concepts and research discoveries take place. Through the knowledge management tools they will help to establish, libraries will be the incubators of burgeoning ideas, the outlets of innovative theories and the arena for public debates.

These have been years of technological hype and valued information. As the International Federation of Library Associations does not stop recalling us, it is now time to come back to the core values of libraries: freedom of expression and free flow of information. We have to re-invent and to re-discover them in our daily work and put them again on the front stage of our activities.

⁶ Jürgen Habermas, *Strukturwandel der Öffentlichkeit: Untersuchungen zu einer Kategorie der bürgerlichen Gesellschaft*, 5. Aufl. Neuwied und Berlin: Luchterhand, 1971.

⁷ Martin Lowry, *The world of Aldus Manutius: business and scholarship in Renaissance Venice*, Oxford: Blackwell, 1979.

Sette atti dopo la rivoluzione dell'Open Access: le biblioteche (di ricerca) come media e centri di gestione della conoscenza

by Giuseppe Vitiello

Questo articolo, basato sugli studi di Kuhn e Easton riguardanti rispettivamente la filosofia della scienza e il sistema politico, analizza l'impatto dell'accesso aperto come concetto bibliotecario e come forza innovativa in seno alla comunicazione editoriale scientifica.

Tradizionalmente le biblioteche (di ricerca) hanno dato risposta ai bisogni della comunità accademica fornendo servizi di carattere generale o speciale. Il loro lavoro si è fondato sull'acquisizione, sul trattamento e sulla diffusione delle pubblicazioni elaborate dagli editori, un agente, cioè, operante all'esterno della loro sfera operativa. In seguito alla rivoluzione dell'accesso aperto le biblioteche acquisiscono, trattano e diffondono il materiale elaborato all'interno dell'istituzione alla quale esse appartengono.

Il loro paradigma fondamentale è mutato: esse hanno raggiunto il punto critico oltre il quale diventano incubatrici di sapere nella diffusione scientifica e un nuovo *medium* nell'universo della comunicazione.

Nelle conclusioni, l'autore illustra lo scenario per il prossimo decennio, facendo quattro previsioni, approfonditamente commentate:

- 1) A breve termine, le biblioteche di ricerca diverranno mezzi di comunicazione e centri per la gestione della conoscenza; le biblioteche che non si adegueranno ai cambiamenti perderanno potere all'interno dell'istituzione e rimarranno ai margini dei flussi della conoscenza.
- 2) A breve termine, le biblioteche di ricerca si indirizzeranno verso problematiche inerenti la gestione dei contenuti, piuttosto che la gestione dell'informazione.
- 3) A medio termine, le biblioteche di ricerca apriranno dipartimenti specializzati nel marketing della conoscenza.
- 4) A medio termine, le biblioteche di ricerca somiglieranno maggiormente a un caffè del diciottesimo secolo o alle case editrici del quindicesimo secolo.

GIUSEPPE VITIELLO, Nato Defence College.

Bollettino **AIB**, ISSN 1121-1490, vol. 49 n. 2 (giugno 2009), p. 171-180.