The Open Catalogue of Manuscripts and Other Information Systems for a New Role of Libraries in Education

Antonio Cartelli and Marco Palma

University of Cassino, Italy

Abstract: The online information systems the authors planned and constructed for research and teaching on the ancient manuscripts are described as first. The corresponding web sites, used to store the bibliography and more general data on ancient manuscripts, are soon after analyzed; it is also shown how they contributed in the creation of communities of learning and practice with the people involved in their use. The special case of the Malatestiana Library is then described; the staff in that library is in fact responsible for the implementation of the Open Catalogue of manuscripts and its continuous updating. At last, some considerations on the influence of new technologies and the role that ancient libraries can play in education are discussed.

Keywords: Ancient library, Community of practice, Community of learners, ICT, Information Systems, Learning Organizations, Manuscripts, Writing types, Web technologies.

1. Introduction

During the last century multi-media and digital equipments underwent progressive growth and evolution and they are nowadays predominant with respect to printed matter in many communication fields; broadcasting news, propagating more structured and organized information and creating new knowledge, are in fact deeply influenced by these instruments.

The revolution in communication and information transmission induced by digital equipments is usually attributed to the structural features of new media, and especially to electronic media with respect to printed texts, because of their directness, effectiveness and immediateness. Otherwise stated, one can say that these media talk to the body more than to the mind (D. de Kerckhove, 1995). Furthermore new media and digital media extend individual capabilities and skills in space and time (i.e., they cancel the response time to external stimuli); they let human beings have at least two new senses: distance seeing, letting people see distant events just when they happen, and distance acting, letting them modify events without being really present in the context where these events happen.

Digital media do not affect only the perception of reality, they also influence the creation of communities and the way people build knowledge. These results are usually attributed to new dimensions for human communication and knowledge construction induced by the ICT; many authors, based on Ong’s (2002) and Olson’s (1991) ideas, suggest that these effects are the result of a connection between technology, literacy and new orality (sometimes called second orality).

Recently the social effects of new media have been widely analyzed and different levels for the influence of the ICT on knowledge construction have been hypothesized. They are reported in the statements below:

- firstly, the subject’s point of view is considered; otherwise stated, subjects build their knowledge autonomously, mostly constructively, by interacting with real or virtual phenomena;
secondly, a community level is suggested; individuals interact in fact with other subjects in a community, where mediation, interpersonal contacts, informal knowledge sharing and support from peers have a more relevant role (and ICT are important in helping subjects create communities or induce new communities);

at last a wider social level must to be considered; individuals participate to activities in the society they are immersed in (with respect to community, emulation of behaviours as well as codified and socially accepted rules may modify pre-existing learning strategies or determine new ones).

Main conclusion of the above statements is that subjective knowledge can be thought as made of three components: the individual, the community and the social ones, with their own contents, learning strategies and possible communication channels (Cartelli, 2006). Figure 1 gives a snapshot of the suggested tripartition.

Main conclusions are:

- Knowledge construction is the result of the influence of all three components.
- Planning and construction of information systems for the management of information must consider all the reported knowledge components (i.e., a new socio-technical approach to MIS - Management Information Systems, must be considered).
- The use of information systems for the implementation of practices shared by a group of specialists or by subjects working together has the features of a new pedagogical paradigm; it forces people (students, general users etc.) working on the online system to create a community (or to enter the already existing community), makes easier the socialization and transformation of individuals’ tacit knowledge in explicit knowledge and displaces the problem of “information research” to that of “information creation”. In the following sections the instruments and the experiences the authors made while working on the data from ancient manuscripts will be reported; the effects they had on ancient libraries and the changes they induced in historical and humanistic disciplines will be kept separate from each other.
2. The Influence of the ICT and Information Systems on Ancient Libraries and Palaeography Students

In this section the online information systems the authors planned and built for the management of data on ancient manuscripts and the people who wrote them are reported. A separation between the instruments they used in the autonomous context of ancient libraries and the ones concerning palaeography students is made. The first is referred to the Open Catalogue as general proposal and to the case of the Malatestiana Library at Cesena (Italy) for its implementation. The second describes three information systems used for teaching and research in palaeography.

2.1 The Open Catalogue of the Malatestiana Library

It is well known that writing a catalogue of manuscripts is a very difficult task, because it requires a deep competence in a lot of fields, from philology to history, from the art history to palaeography, from literature to library science; furthermore, many different problems affect its realization (i.e., manuscripts can be very difficult to access and analyze by the authors and the final book can have a very limited audience and can be very expensive).

It is probably for the above reasons that radical changes in catalogue publishing intervened in the last years. First of all the Internet helped in making available the manuscript heritage all over the world and became the main place where people could publish catalogues (as an example DFG, the German National Research Institute, decided to publish catalogues of manuscripts on the Internet); scholars had from the ICT new and more powerful tools to improve their work and to create Open Catalogues (i.e., catalogues in progress, constantly changing with the continuous contribution of new information).

A dynamic web site underpinning an information system looked suitable enough for the creation of an Open Catalogue (Cartelli & Palma, 2002); the following environments were kept separate in it: a closed place, where researchers and scholars had the responsibility of the scientific materials to be published (in the form of images and texts), and an open space, to be used by people occasionally or systematically accessing the information in the site (i.e., not producing it).

In the Open Catalogue five sections, to be intended in a flexible manner, were hypothesized (i.e., the presence of each section depends on the resources the library has at its disposal and on the different solutions it adopts) (Cartelli & Palma, 2003):

a) the first section is devoted to documents explaining the history of the library and its manuscripts;
b) the bibliography ordered by shelfmark and, eventually, alphabetically and chronologically, can be housed in the second section;
c) in the third section the descriptions of the manuscripts, i.e. previous printed catalogues or ancient handwritten catalogues (suitably digitized) and new descriptions (according to nationally/internationally defined standards) can be stored;
d) the fourth section is devoted to the images from the highest number of manuscripts in the library (possibly all);
e) the fifth and last section is based on a communication subsystem including electronic blackboards, chats, forums and special Web solutions granting the easier acquisition, writing and editing of texts among the members of a selected community of scholars/students interested in the study of the materials in the library.
The staff of the Malatestiana Library supported the idea of the Open Catalogue since its beginning and decided to find the resources for building it. The advantages of this choice were:

- the system could be developed in a programmed and gradual manner;
- all the information already acquired could be retrieved even in a partial and non-final form;
- ancient sources, difficult to be accessed by everyone, could be made available and used to extend the research sources;
- the information available by qualified specialists and scholars could be increased interactively and continuously updated.

The Open Catalogue of the Malatestiana Library as made by its staff has four parts:

- The first part credits people working to the project and its carrying out.
- The second section contains general texts on the Library and the manuscript collections (i.e., the history of the library, Cesena humanistic culture, the scriptorium, the illumination, the collections etc.); classical texts suitably digitized have been put on line, special works and graduation theses are continuously added to the former ones, together with the descriptions of the Library coming from foreign visitors.
- A list of all the manuscripts according to shelfmark, author and title can be accessed in the third part. For each codex there is the description and the bibliography (made on the basis of the traditional catalogues and more recent studies). The reproductions of many codices are available and the Library is working to offer the complete reproduction of all the manuscripts.
- The fourth section plays a fundamental role in this project; it hosts users’ requests, opinions and articles. Here, scholars and/or persons interested in the Library’s manuscript collection can contribute with their observations, as well as with the publishing of online contributions.

Recently this section enriched of two special functionalities:

a) collaborative bibliography, where everyone entrusted with the access to the section can insert his/her personal bibliographical records,

b) works in progress on some manuscripts, by which a community of study and research is granted permission of accessing all the texts in the area and produce new information.

The open catalogue neither excludes nor acts as supplementary to a printed work, which is always possible and even desirable. Instead, the open catalogue is updated constantly by the Library staff, particularly by those who are involved in manuscript preservation. It is their duty to actively administrate the site and to promote research even encouraging interested specialists to provide critical contributions.

2.2 Information Systems for the Teaching of Palaeography

Since 2001 the authors worked at the construction of special web sites (mostly information systems), used both for research and teaching in palaeography. The spreading of the Internet and the easy use of the web for getting information and putting new data in a given database were the main reasons for the construction of the online information systems. The sites described below were used to manage bibliographical data on medieval manuscripts; they also implemented the processes usually adopted by researchers for the collection of bibliographical data.

*Women and Written Culture in the Middle Ages* (Cartelli, Miglio & Palma, 2001), reports the names of women who wrote manuscripts in the Middle Ages and the manuscripts they wrote; when suitable images are available, people ac-
cessing the site can also see the women’s handwriting types. The database can be accessed by the authors and allowed people for the management of bibliographical data, images, bibliographies etc. and be only queried by everyone for reading. The site URL is [http://edu.let.unicas.it/womediev/](http://edu.let.unicas.it/womediev/)

*BMB (Bibliography of Beneventan Manuscripts) on line* (Cartelli & Palma, 2004) is a pure bibliographical information system; it manages the quotations of Beneventan manuscripts (i.e., an important part of the manuscripts produced in Southern Italy during the Middle Ages). People engaged with the collection of the quotations of those manuscripts are grouped into three categories: contributors, who can access web forms by writing, modifying and deleting bibliographical data; scientific administrators, who can manage all the data contributors are charged with and write, modify, and authorize bibliographical materials (i.e., this last operation can be done only once, because authorized records cannot be reviewed by contributors and scientific administrators; they can only be accessed by general users); the system administrator, who is allowed to do all operations, including the modification or deletion of authorized bibliographical records.

General users can access authorized materials in the site according to different query pages: by author’s name, by manuscript, by contributor, and by one or more words or part of them in the title, the location, or the bibliographical abstract of a given publication.

Within the system are also implemented:
- a closed communication subsystem (it can be accessed only by people working on the information system: contributors, scientific administrators and system administrator), letting people quickly exchange messages and texts among themselves,
- special functions, available only to the system administrator, for the production of printed versions of the collected data (to be used to create a printed publication concerning the bibliography yearly collected).

The site URL is: [http://edu.let.unicas.it/bmb/](http://edu.let.unicas.it/bmb/)

Recently the *DigiSytlus* information system (Cartelli, 2009) has been planned for helping students find in an easier way plates and documents in the site of “Teaching Materials for Latin Palaeography”. It does not modify the former site, which is a static web site, so that people who like to access those materials in a more traditional way can use the links in former web pages. The construction of this new web site became a necessity when students’ difficulties in finding the materials to be studied became evident.

The *DigiStylus* structure is based on a relational database; it is made of tables containing the following data: a) personal identification data of contributors (students) and scientific administrators, b) shelfmarks of the manuscripts containing the plates reproduced in the site, c) the bibliography of the manuscripts and of the medieval documents in the site, d) the writing type of the plates and all the data (as far as they are available) which can be used for a better description of those plates, e) the links to the web pages with the reproduction of any plate and its transcription, f) the keywords letting people access the transcription of a given plate, g) the parameters for the calculation of the difficulty in making the transcription of a given plate, h) the bibliographic records of the documents in the site, with links to the corresponding documents, i) a subsystem letting people working on the system easily communicate, manage bibliographical records and input new data in the DigiStylus database.

People accessing the database have different roles and permissions: general users can only see the plates, the transcriptions, the list of the bibliographies and any other information about materials in the site. The contributors (students)
can access a special Web area (by means of their ID and password) with a menu of the allowed operations, i.e. they can manage the records on the plates and their transcriptions, the bibliographic cards and the electronic blackboard. The scientific administrator/s can manage all the data in the database and write, modify and authorize the bibliography. This last operation can be done only once because when the bibliography has been verified it can no longer be accessed by the administrator. The system administrator can do all the operations allowed to the scientific administrator/s and access the verified bibliography in order to modify or delete it.

As soon as the systems were available they have been used for research and teaching. Students attending the courses of Latin palaeography have in fact been involved in the data management of the above information systems. The observation of students behaviours during the lectures and at the final examinations led to the detection of complex and articulated effects. A selected list of phenomena obtained by comparing the results of North American researchers on communities of learning and the experiences described in former sections is reported below (Cartelli, 2007):

1. information systems contributed in the creation of constructivist learning environments and helped students develop cognitive apprenticeship strategies, as they were defined by D. H. Jonassen (1994); they were also very useful for the improvement of students’ learning and performances,

2. the features of communities of learners (CoLs) and fostered communities of learners (FCL), as defined by A. L. Brown and J. Campione (1996) were detected in the classes involved in the use of the described systems; otherwise stated, the online information systems not only supported and extended traditional learning strategies, they also induced the creation of special communities never detected in traditional courses,

3. new skills emerged in the students while working on the information systems described above (Scardamalia & Bereiter, 1996): a) talent in group work, b) easier facing of complex tasks and c) raising of the individual skills,

4. new transversal competences were detected (Cartelli, 2008): a) better computing skills than those students who attended traditional computing literacy courses, b) development of meta-cognitive strategies.

3. Conclusion
Two different remarks follow the considerations reported in former sections:
- ancient libraries can play a relevant role on university students education; they have in fact the documents for any philological, historical and bibliographical analysis of reality and can make them available to students by means of the ICT and online information systems,
- ancient libraries can have a new role in adult education by adopting the strategies the authors used with palaeography students or adapt them to a wider audience.

It is not an aim of this paper the analysis and discussion of the analogies between the education induced by ancient libraries and museum education, but new technologies have undoubtedly a great role in opening libraries to people and in overcoming the difficulty that people have in accessing the materials stored within ancient libraries. The hypotheses mentioned in the introduction on the effects of online information systems on students draw new scenarios for libraries because:
- students are now the creators of the information on the web site (they or-
ganize and input into the system a part or all the data concerned with the
documents in the site),
- the information in the database is available not only to the students but to
everyone who may be interested in it, by means of the web,
- any information the students put in the system has to be verified by one or
more scientific coordinators before being publicly available on the web,
- a closed forum within the information system letting students communicate
and discuss among themselves and with the library staff and scholars, is
needed,
- the evaluation of the students’ work includes different elements: the
evaluation of the work they made, the support they gave to colleagues, the
accessibility and usability of the information retrieved by external readers
(i.e., general users), the suggestions they gave to the system and its func-
tions.

It can be easily recognized that students involved in the use of systems with the
above features will participate in the activities at different levels:
- individually, by critically studying and meaningfully understanding the ma-
terials in the library (or they reproductions on the web) and writing the re-
cords in the databases (this job is made easier by the presence of supporting
materials and the use of communication subsystems letting them easily ask
for suggestions from colleagues and library staff),
- at a community level, by adopting different strategies: a) the legitimate pe-
ripheral participation (LPP) suggested by Lave and Wenger (1991), helping
the management of the community by including the weakest subjects, b) the
implementation of practices with the ICT (Information Communication
Technology), proposed by Cartelli (2008), letting the online information
system implement processes the community had to conform to, and govern-
ing the management of the information acquisition, storing and validation,
c) team competency learning, suggested by Jewels and Albon (2006), induc-
ing the library staff to act as coach and assign to every student the best role
with respect to his basic knowledge and skills,
- socially, by considering the effects of the information they produce on the
people who can access systematically or not the materials in the site.

The same strategies, with little or no change, could be adopted for people who
are willing to participate in works and researches on materials in the library. It
might be a good occasion for ancient libraries to get out from the routine pa-
perwork of the administration of their materials, to recover the central function
of culture promoters they progressively lost and enter a new phase of knowl-
edge construction and development by creating communities of learning and
practices actively cooperating on the study of their materials.

References
jective Learning Environments: On Procedure, Principles and Systems. In L. Schaube
Cartelli, A. (2006). Semantics, Ontologies and Information Systems in Education: Con-
cerns and Proposals. Journal of Issues in Informing Science and Information Tech-
Cartelli, A. (2007). From Socio-Technical Approach To Open Education: MIS and ICT
for the Definition of New Teaching Paradigms. In D. Remenyi (Ed.), Proceedings of
ECEL 2007 International Conference. Reading (UK): Academic Conferences Lim-
ited, 97-106.
Cartelli, A. (2008). The Implementation of Practices with ICT as a New Teaching-
Learning Paradigm. In A. Cartelli & M. Palma (Ed.s), Encyclopedia of Information