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ABSTRACT

This paper discusses library development in the changing environment arising within the forthcoming Information/Knowledge Society. The role of the library as a social institution is examined in the context of the evolution of the whole literary and knowledge system. Ideas about conceptual changes to be introduced by the library in order to respond to challenges of the Information Age are presented. Approaches are offered that could help the library evolve from an institution that conserves and provides access to a patrimony to become an inalienable part of a distributed global knowledge warehouse. The paper includes the following sections: (1) The World in Change: Advent of a Knowledge Society: (2) Evolution of the Literary and Knowledge System; (3) The Library in a New Information Environment: Transformation Challenges; (4) Development Strategy: Towards the Hybrid and Digital Library; and (5) Library Policies for Change. (Contains 11 references.) (Author/MES)

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Migrating from the library of today to the library of tomorrow:re- or e-volution?

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Abstract

The paper considers the ways of the Library development in the profoundly changing environment arising within the forthcoming Information / Knowledge Society. The role of the Library as a social institution is examined in the context of the evolution of the whole literary and knowledge system. There are presented ideas on conceptual changes to be introduced by the Library in order to respond to challenges of the Information Age. There are offered approaches which could help the Library evolve from an institution to conservate and to provide access to a patrimony towards an inalienable part of a distributed global knowledge warehouse.

Paper

The World in Change: Advent of a Knowledge Society

The Information Age has arrived and the rate of change in human society continues to accelerate. This change is ongoing and pervasive - affecting all people, institutions and societies. The change is like a typhoon whose turbulence

has spawned not only problems, but also genuine opportunities. Information and communication technologies (ICTs) are the driving forces of change, and transformation is the order of the day. Human intelligence is replacing physical capital as the chief factor of production: intellectual capital becomes the primary factor of growth in the emerging Information, or, according to the latest concept, the Knowledge Society. Access to, and the effective use of information and knowledge, technologies, and various services are essential tools for sustainable economic and social development at the individual, community, national and international levels. Those in possession of all these tools will enjoy a future marked by abundance, but who are deprived of them will be marginalised.

To make the landscape of this society more harmonious, the Global Knowledge Partnership (http://www.globalknowledge.org), a growing network of about 60 public, private and non-governmental organizations from many countries of the world, proposes to focus on three key themes that are important for facilitating the role of knowledge in development: access, empowerment, and governance.

Access involves assuring that there is universal availability of the strategies and tools essential for the effective use of knowledge: it means accessibility to networks, infrastructures and services, as well as the content that is relevant for political and socio-cultural citizenship; it is a facility that enables citizens to communicate with the relevant outside world.

Empowerment can be defined as being the outcome of activities which build the capacity and skills of individuals, community groups, the private sector, governments and institutions, with the aim of enabling them to take part in the global Knowledge Society and Knowledge Economy, and make informed choices relevant to their needs.

Governance is the process through which institutions, businesses and citizen's groups articulate their interests, exercise their rights and obligations, allocate human choices and opportunities, and mediate their differences. This entails exploring ways in which knowledge societies can employ more efficient, transparent, and participatory forms of governance: locally, regionally, nationally, and globally.

In the context of the development of the Knowledge Society [1, p. 4] the following assumptions can be made:

1. Information and knowledge form the basis for decision-making and action, particularly in development.

2. The quality of decisions is dependent upon the quality and quantity of information. Although there is abundant information, the quality of the information must be evaluated.

3. Access to information and knowledge results in an improvement in the Quality of Life, provided that an enabling framework is in place.

4. There will always be inequality in society. Whilst it may not be possible to eliminate inequality, society has a responsibility to strive to reduce it.

All of these assumptions challenge the role of the Library in today's society forcing it to revise its function in order to retain and to strengthen its mission.

Evolution of the Literary and Knowledge System

In addition to these features of today's reality there are three other macro-factors which have a major effect upon the role of the library in society:

- an exponential growth of information;
- the growing complexity of knowledge and of its representation;
- a transformation of the literary system.

Today more and more people (primarily researchers) use new forms of knowledge representation which is not in the form of a linear text printed as a monograph or an article. These new types of publication can include text, images, audio records of a discussion, video records of an experiment, a software source code for calculation of results etc. - all this is impossible within a conventional publication. Furthermore, the more scientific (or, perhaps cultural) information will be created in this or some other sophisticated format, being constantly updated or revised. Now we are witnessing a process that could be defined as the remaking of the "literary system".

Geoffrey Nunberg, a professor at Stanford University, notes that new formats such as multimedia and hypertext take us "beyond the book" by creating new modes of reading and new forms of intellectual and cultural interchange. A dictionary can be linked to an encyclopedia, or an encyclopedia can take us directly into the primary literature. At the limit we may want to think of these forms as the model for the new services and clearinghouses: not as being static compendia but rather as dynamic interfaces to an open-ended discourse. It is not so much a technological revolution (which has already occurred) but, as Carla Hesse puts it, the public reinvention of an intellectual community in its wake. In fact, knowledge is no longer conceived and constructed in the language of forms at all - not as "bodies of knowledge", or a "corpus", bounded and stored, but rather as modes of thought, apprehension, and expression - as techniques and practices.

Digital technologies enable ultrarapid access (via user friendly interfaces and networks) to the richest sources, wherever they are located in the world's collections, and the rapid exchange of commentaries in electronic forums or videoconferences. These new possibilities favour an 'extensive' reading, the comparison of diverse texts and viewpoints, multidisciplinary transversality, a "conversation" between readers. They are beginning to have a considerable impact, as much on the individual mechanism of the appropriation of texts, as on the sociology of reading. True polytextuality - in which diverse types of texts and images, sounds, films, data banks, mail services, interactive networks may mutually resist or interfere with one another - this process of reading generates progressively a new dimension - polymorphic, transversal, and dynamic. We may call it 'metareading', which is becoming a new driving force of culture. Instead of aprioristic strategies that envisage cataloguing every document using a universal classification, hypertextuality prefers a tactic of using small steps, capable of binding them together after the event, whole corpora generated from research and particular points of view. It wagers, in short, on the plurality of the world of documentation. In other words, the ideal of coherent and convergent, unified knowledge (of which the library would be the microcosm). At the same time that it explodes the limits of text, hypertextuality revives one of the founding questions of culture: by what mediations can private experience and collective practices enter into an exchange? [2, pp. 154, 161-162].

By the way, this new architecture of knowledge has given birth to a surprisingly diverse range of recent library architectural projects, e.g. Bibliotheque Nationale de France - a building without walls, a library that is a nonspace; libraries for the new parliamentary bodies emerging in Eastern Europe - a series of globally

coordinated satellite networks linking far-flung databases that are not really located anywhere at all except in the hands of their users, the Union Media Center of the Michigan State University are but some examples.

The evolution of the literary and knowledge system has reached the stage when many people are asking the sacred question: What is the destiny of the book in the new era? Two extreme viewpoints are presented by "computer visionaries" (or "technophiles"), and by "bibliophiles", and they run something like: "Printed books, brick-and-mortar libraries ... have been superceded by electronic genres and institutions; where linear narrative has yielded in all of its important functions to hypertext and multimedia" versus "Nobody is going to sit down and read a novel on a twitchy little screen. Ever."

Of course there is no sense in getting into a discussion about these two viewpoints. It is more important to understand which printed genres will survive in the Information Age and what will be superseded by new digital forms.

Nunberg argues along the lines that the types of books whose existence in codex form has no particular cultural significance (catalogs, technical manuals, directories, regulations, legal records, and so forth) are likely to disappear soon. Scientific journals are almost certain to move to electronic distribution, but for popular newspapers and magazines, the conversion is less compelling. CD-ROMs have already cut heavily into the use of print encyclopaedias, but print dictionaries seem largely unaffected by digitization. As for novels, self-help books, political memoirs, critical editions, art books, travel guides etc., it is simply too early to say. Some will probably continue to rest chiefly on printed supports, some will divide their existence between print and digital media, some will definitely migrate, taking their place alongside a variety of completely new digital genres. There will be a digital revolution, but the printed document will be an important participant in it.

From this point of view the most reasonable approach appears to be the one formulated by James Billington, Director of the Library of Congress, in 1994: the new technologies of the multimedia era should be used to "strengthen the culture of the book". Or, on the other hand, we like the idea put forward by Umberto Eco, the renowned modern writer and philosopher: when an integrated multimedia sequence of events succeeds in bringing people back to a non-virtual reality, something new can happen.

The Library in a New Information Environment: Transformation Challenges

Libraries and archives have been created to ensure the long-term accessibility of recorded information. That is what they do now, and that is what they will do in the future. This means they acquire, catalog or process, organize, offer for use and preserve publicly available material irrespective of the form in which it is packaged in such a way that, when it is needed, it can be located and used. This is the unique function of the library, and no other institution carries out this long-term, systematic work. Nothing about this changes in the digital world. But digital technology changes the balance of power among the core functions. [3,4].

The change is socio-cultural at least as much as technological. Patric Bazin, Director of the Bibliotheque de Lyon, points out that the growing sophistication of knowledge and that of the methods of information processing appears to be accompanied by an evanescence of stable referents, clearly identifiable and transmittable ones that "the order of the book" (Roger Chartier's term [5]) used

to provide. It seems to be natural that libraries should continue to play a very important role, one that will far surpass the simple conservation of a patrimony. But will they be able to become mediators in the Knowledge Society? At this time they are hardly able to perform this role, at least for researchers and specialists in many practical fields who - driven by professional competition - keep up with new technologies and knowledge extraction methods much faster than any library, or other information agent.

Once the notion of a collection is no longer physically constrained, it naturally tends to extend indefinitely. Of course it will include a great deal of what some users will find trivial and ephemeral; when you take down the walls of the library you should not be surprised to find the reading room filling up with street people. The solution, (indicated by Nunberg) is not to try to close off the collection in some arbitrary way, but to help users to thread their way through the maze.

Access to knowledge and culture from a variety of sources (both traditional and the most recent in terms of format and usage), in a variety of languages, views and traditions includes the process of transforming that knowledge into an accessible format. We consider that these problems should be handled within the context of the hybrid / digital library context.

Development Strategy: Towards the Hybrid and Digital Library

One of the major problems that the librarian has to resolve today is how to navigate in a hybrid space of documents, both in printed and digital formats. The motivation behind the concept of the hybrid library is a need to cope with diversity. Diversity is a major problem as libraries struggle to come to grips with the digital information world. The most important question to answer is what new order of knowledge will emerge, and how libraries can participate adapting to the many transformations of the information and research landscapes. [6].

Without doubting the everlasting value of the handwritten or printed document or that of the conventional library as a place where people meet to fulfill some of their cultural needs, let us honestly state that more and more information is now emerging as 'digitally born' or digitized for the sake of more convenient use. A very important question arises in this context: who will take the responsibility to carefully collect and store this information to make it available for future use? At the moment it is kept by the creators themselves who constantly update their materials and do not care much about retaining previous versions. So some information currently regarded as being of less value, but probably containing some seeds of unrevealed wisdom, is lost. It is important that a social institute should, sooner or later, accept this function. Will this be the library? We would like to answer this question positively. But for this to happen it is essential that the library of today should be moving towards implementing the digital library concept, making this an organic part of its development strategy.

A digital library can be defined as "a distributed information system ensuring reliable storage and effective use of heterogeneous collections of electronic documents (text, graphics, audio, video etc.) via global data transfer networks in a way convenient for the end user" [7]. Or: "an information service in which all the information resources are available in computer processable form and the functions of acquisition, storage, preservation, retrieval, access and display are carried out through the use of digital technologies" [8].

Digital libraries are able to provide for the preservation and migration of electronic information (both digitally born and digitized) as well as enhanced

versions of services we have come to expect from the libraries, for example:

- tools for searching of heterogeneous collections;
- a personalized service based on user profiles representing users' information needs or a user directed summarization system in an information access to help users to decide about the relevance of a document;
- a collaborative infrastructure which allows user groups to index and evaluate documents on specific topics;
- a cross-language information retrieval or interrogation of multilingual databases or a multilingual storage and interface etc., etc. [9, pp. 184, 197, 215, 274, 294, 363].

Today the concept of digital libraries is being realised mainly outside the conventional library world. The main reason for this is not a lack of understanding of all the advances provided by digital libraries (many top library professionals and associations pay due attention to this concept) but simple non-affordability in terms of the costs of equipment and technology. Even the creation of a hybrid environment critically needed to respond to the reality of today is hampered because of such intractable facts as the dependency of digital information on software, hardware, networks, and so forth.

Library Policies for Change

On 17-19 April 2000 Moscow hosted an international conference "Managing the Digital Future of Libraries" which resulted in "The Moscow Manifesto" [10] recognising the following ways in which libraries of all kinds can make substantial contributions in key policy areas:

- Democracy and Citizenship - Publicly accessible libraries have a strategic opportunity to improve the quality of life and democratic opportunities of all citizens by providing free and equal access to high-quality information and ensuring equal access to diverse opinion, helping to overcome inequalities of wealth and location.
- Economic and Social Development and Support for Industry - Libraries support wealth creation by ensuring equal access to information and the opportunities afforded by knowledge. They can be important tools for reducing disparity between the information rich and the information poor citizens of Russia.
- Scholarship, Education and Lifelong Learning - Libraries provide, through their widespread physical network, a cost-effective infrastructure for both formal education and lifelong learning. They support students at all levels of formal education.
- Cultural and Linguistic Diversity - Public libraries are also cultural institutions in the widest sense. They support, preserve and promote directly the written cultural heritage, literature, literacy, authors and publishers. They provide access to knowledge of all forms of cultural expression.

To ensure that this happens it is important to consider and implement at national and international levels policy initiatives aimed at:

- improving conditions for citizens' access to information resources by

addressing the legal, technical, economic and policy issues which can enhance access via libraries;

- assisting libraries in meeting the needs of citizens, for example by recommending suitable infrastructures, alliances and training measures [11].

Training implies, among other points, something deep and long-term: nurturing a strong service ethic, building up a new professional culture based on recognising trends and being constantly ready to respond to the pressure for change. Library managers have to ensure that their institutions are user-centred and managed at all times with users' needs being paramount.

It has been noted above that libraries operate most effectively as a network. This sounds especially pertinent in the digital environment where resource and technology sharing becomes a condition for survival and development. Moreover, networking has to be reinforced by integration which implied the efficient co-operation of libraries with other bodies involved in creating and disseminating knowledge and culture - research institutions, archives, museums, publishers, etc. - in terms of using common formats, standards, metadata, protocols etc., and co-ordination of responsibilities.

Expanding institutional borders can bring other practical benefits to the libraries: they can be made more viable economically and attain a high cost-benefit ratio if they adopt some policies which arise from the expansion of the digital environment, e.g.: collecting licence fees for electronic documents, or digitising original materials. The long-term preservation of digital data with transition technologies also provides an additional business opportunity for libraries and firms in the relevant sectors. Libraries are the most important, and sometimes even vital, customers for electronic publishers; they also serve to market the products of multimedia producers, or may attract the attention of telecommunications operators by providing online access to content and information services via telecommunications networks, etc.

Conclusion

The library has to anchor a key role in the emerging Information / Knowledge Society as a place to ensure the preservation and migration of information in order to make it usable for everyone in need of it. This means not only retaining but also considerably reinforcing its traditional mission. What is needed to achieve this ambitious goal in the shortest possible time - Revolution or Evolution? The right approach would involve a combination of approaches, rather than to take one or other alternatives, i.e. Revolution and Evolution.

The revolution the library has to bring about means first of all entering the digital world as a full-value player. This implies - except working with electronic documents which is self-evident - efficient networking with libraries and other relevant institutions, nationally and internationally, i.e. the library has to contribute to the development of a distributed global knowledge warehouse.

In terms of librarianship the revolution means that the library has to become an 'art of passage' instead of the 'art of classification' it traditionally has been. The library of the future must be organized around disciplines like many attractive pools of water whose contours fluctuate, points of view and shifting usages. We find it that it is true that the password of any revolution in the management of library becomes a realignment in terms of contents - which means that a given thematic will have to be able to mobilize around itself all the pertinent holdings,

information and tools; it will have to be undertaken from the point of view of all possible uses, whatever the level of each user. [2, p. 156-157].

Evolution is acquiring sufficient flexibility to cope with an explosion of documents and technologies coupled with the blurring frontiers between the public and between usages. This includes constant monitoring of constituencies and predicting users' needs via the implementation of advanced methods of user research.

The most challenging aspect is to master the hybrid environment. One of most difficult tasks is to reconcile the fact that, for quite a period of time, the library will have to manage legacy systems while creating and supporting an interface between the old and the new. This means that considerable allocations will have to be permanently invested, but society (since it needs to archive and to use knowledge and wisdom created by mankind) has to bear these costs - as it has done in the past, but traditional libraries were probably less costly institutions.

Libraries must be a meeting point for the many processes and phenomena relating to the Information Society. It is necessary to ensure that they are no less, but even more central now than they used to be in the Industrial Society.

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Summaries

Tatiana Ershova graduated from the Maurice Thorez Moscow State Pedagogical Institute of Foreign Languages in 1980. 1985 through 1998 she worked in the Russian state Library - Russia's largest and world's second largest national library. Her career had consequently gone up from an exchange and acquisition librarian to a Deputy Director and the Acting Director. Now she is Chief Executive Officer of the Russian Institute of the Information Society - an NGO promoting Information Society development in the Russian Federation. She has a vast experience in management, in elaborating concepts and development strategies for a nation-significant institution and a region, in organising and conducting conferences and workshops (both national and international). She has published over 30 articles in professional journals and mass media.

Yuri Hohlov graduated from the Kazan State University in 1976; PhD in Mathematics, 1980. Worked at the Kazan (Tatarstan) and Donetsk (Ukraine) Universities as a lecturer, associated professor and professor (1980-88), lectured at 17 universities and institutes of Europe and North America. Made research at two leading mathematical institutes of the Russian Academy of Sciences (1988-93, 95-98), was Director of the Department of Informatics & Telecommunications of the Russian Foundation for Basic Research (1993-95), Deputy Director of the Russian State Library (Library Automation Services & IT, 1996-98), developer and manager of a number of large-scale information systems for industry and science. Now Yuri Hohlov is Chairman of the Board of the Institute of the Information Society - Russia, Chairman of the High-Level Expert Group on Information Society Development at the Moscow City Council, member of a number of international bodies evaluating ICT implementation projects, Chairman of IFLA Section on Information Technology. He has published a monograph and over 50 articles in major Russian and overseas scientific journals.

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