University Libraries in the South: from Virtual to Real

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Abstract

Deficiencies observed in the virtual library project in Tunisia led us to reflect on the networking of university libraries in the South that often experience "absolute deficiency". Without rational management, virtualization through connectivity and the transitioning of activities to a non-physical, time-independent, uninhabitable cyberworld could result in information spaces that are increasingly ephemeral, even chaotic.

Despite the launch in 1996 of the virtual library project called Bibliothèque Informatisée pour la Rénovation Universitaire [digital libraries for university renewal] (BIRUNI) and the acquisition of hardware and VIRTUA, the powerful, expensive software by VTLS, university libraries still suffer from inefficient information services and the increasing deterioration of their collections and resources.

To overcome the current deficiencies, my aim is to identify the primary trends, tensions and problems in higher education to determine their impact on libraries and consider different perspectives. To accomplish that, it was necessary to establish several hypotheses, present a method and recall the basic principles. Among the hypotheses: this Tunisia case study, with a median sociocultural configuration, could postulate that the Tunisia experiment is a model for the Third World, and consequently the remarks and findings could be extrapolated to the Southern countries. The argument that university libraries should play a crucial role in tertiary education for entry into the information society is a hypothesis that is gaining greater acceptance.

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There are three parts to the study: the first is devoted to trends in higher education and a status report of Southern university libraries in a context of increasing student enrolment and stagnation of public funding; the second involves the management of transitioning from computerization to connectivity for production, the dissemination of knowledge; the third is a normalization system to provide cultural and linguistic diversity and promote unanimity of spirit for the circulation of ideas and universal access to information.

University libraries in the South: From virtual to real

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This proposal presents the challenge that higher education libraries in developing countries will face and suggests some alternatives. The new information and communication technologies (NICTs) are revolutionizing the three pillars of higher education (lectures, laboratories, and libraries) as well as adding new dimensions to learning.

This proposal introduces examples of the contradictions between global and local resources, the opposition between the great potential of virtual libraries and the adjustment of their information services and products to specific user needs, and also presents certain dangers of global virtualisation.

Despite the starting up in 1996 of the Digital Libraries for University Renovation in Tunisia project financed by the World Bank (BIRD 3456 / TUN – PNRU) and the acquisition of virtual library software (VTLS), the conditions of academic libraries are far from satisfactory. These libraries are not outstanding because they haven't reorganized their services and they still suffer from several shortcomings. The services could not level the ever-growing needs of the beneficiary elites, that is, the increasing research and higher education community.

Even with the University National Network (RNU) equipment, the research and educational establishments (EER) sophisticated infrastructures of telecommunications reports indicate virtual system failures and the dysfunction of documentary resource management: insufficient planning of introducing NICTs is causing global ineffectiveness, lack of capitalization and waste of information resources.

A step-by-step realistic approach guarantees a better integration of NICTs: first computerization of administrative functions and control services, then digitalization of the internal collections and resources, and finally virtualization, contribute to rational management of library services.

The virtual university is facing the danger of becoming a multinational industry; higher education is becoming a globalized 'market' without moral values. There is a risk of 'infopoverty' due to the economic imbalance between the countries of the North and those of the South disqualifies the latter. The scientific excellence of the developed countries will have to share the poorest countries.

This article tries also to show that new methods and terms should be involved for the 'cybrarians'. They will have to master this new environment and be mentally prepared for updating their knowledge and their ethics. The need is growing for action to defend their real values: freedom of access to information, public services, conform to IFLA statements: IFLA Statement on Open Access to Scholarly Literature and Research Documentation. and to suggest academic library statements to safeguard their "deontology" code.

Virtual academic libraries should be open portals for knowledge in the service of shared collective intelligence, that main source of the circulation of knowledge, by promoting asynchronous learning resources, a new inter-actor relationship and 'lifelong' education.

Introduction

The new era of globalization, the information society, and scientific and technical change has had a decisive impact on the role that universities play in society. It is realized that the evolution towards the "cognitive society" is dependent on universities that can prepare an elite and that support a scientific and technical environment: breeding grounds of knowledge, which are required for the emergence of new technologies.

They are most assuredly confronted with greater challenges than they have ever faced since they were established. Their environment is experiencing a triple explosion: in the number of institutions and students as well as the quantity of knowledge.[1] New information and communication technologies (NICTs) and changing teaching methods due to the infiltration of new knowledge communication systems are the two main factors in the transformation of universities and their libraries.

The impact of this is felt in university libraries that are undergoing rapid and successive changes.

This article describes the changes occurring in higher education within the new "cognitive society", outlooks for ULs and future opportunities, particularly those provided by NICTs.

1-Current trends among universities within the new "cognitive society"

Changing societies view education and qualifications as essential elements of business competitiveness and personal employability. Promoting investment in human resources impacts economic growth. This principle was demonstrated two decades ago by the Nobel Prize winner Amartya Sen from India, who believes that a country's development is determined by the skills and life choices of individuals. This has also been confirmed by a recent study conducted by UNESCO and the OECD[2] which found that investment in human capital over the past two decades has probably contributed an additional half-point to the annual growth rate of the economies of 16 emerging countries.

The decisive role that higher education plays in knowledge-based emerging societies raises deep-seated fears because that role has not yet been well defined.

It involves identifying the successive changes that have impacted universities. The emergence of a large global market for tertiary education requires greater internationalization of education, increases privatization of educational systems and accelerates the development of virtual universities.

These changes have established general trends that require stakeholders and players to follow them: the globalization, commercialization, massification and virtualization of higher education

1.1 – Internationalization of higher education: an unrealized dream that became a nightmare.

Globalization of the economy, trade, finance and services has included education, culture and communication. Globalization has a strong similarity with the universality of knowledge principle that universities have subscribed to for centuries. University universality, often taken as the apotheosis of the cognitive society, is inconsistent with the new version of the

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[1] - Les Nouvelles (The information letter put out by the International Universities Bureau) October 2004 - Vol. 10 No. 5

[2] - UNESCO/OECD: Financing Education - Investments and Returns. 2002.

knowledge hypermarket. The Humanist ideals of bringing everyone together on an equal footing under the banner of "free exchange of ideas and knowledge" are thwarted by predatory capitalism. New supranational powers, multinational companies are making good use of the contradictions between peoples, civilizations, national law and international law, to exploit resources while maximizing profits, yet with no global, cultural or social responsibility which their economic power should require them to bear. Speculator hegemonisms turn these dreams into fears.

The context of globalization, a centrifugal economic process, has included education and human resource training, which used to be considered a fundamental human right entrenched as a public good. As centres of knowledge production and dissemination, universities are not excluded from this phenomenon: they are increasingly described in terms of their economic benefits. The notion that higher education should even obey the laws of the marketplace is gaining ground.

-The internationalization of higher education as an overall approach of political strategies and technological convergence calls for greater standardization.[3] The mission of the key players[4] in standardization is "collaboration between the public and private sectors for developing common standards, tools and learning content, all of which are critical to future learning environments." Standard development of learning objects must meet the specifications of accessibility, "reusability", adaptability, sustainability and interoperability.

Higher education systems are standardized through a multitude of initiatives that are enhanced through projects developed regionally and internationally. Harmonization (tuning) of educational structures is particularly strong in Europe with the launch of the Bologna Process in 1999. It adopts structures and programs of study common to the three levels and consistent with the US degree levels (Licence/Master's/Doctorate (LMD) which correspond to the US's BA/MA/PhD) with modularization and the credit system. This process, which allows "flexibility and international comparability",[5] was followed in Tunisia. The transition to the LMD system has been done gradually since 1996.

The convergence of higher education trends is a positive development in that students can more easily choose programs and the pace and length of study. They can also more readily access a level of education that is higher than another.

The adoption of common criteria, along with regionally and internationally developed mechanisms, facilitates recognition of education and qualifications, thereby furthering mobility and international cooperation in general.

However, there are both risks and opportunities with European policies and programs for the entire Mediterranean and regions depending on it. This trend can affect or reduce the diversity of higher education throughout the world that results from national and local, historical and traditional requirements.

Today's educational systems are facing increased demand from young people. Those not admitted to university have little chance of finding employment in the labour market, thereby worsening the unemployment problem. The demand meets the great aspirations on the part of their parents, who are often led to upgrade their skills to keep their jobs or land a new one. They sometimes have, along with "young" retirees, cultural concerns, and currently in very advanced countries want lifelong learning. The end of the 20th century and beginning of the

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[3] ISO/IEC JTC1/SC36 Standards Committee for Information Technology in Learning

[4] - The consortium of the Instructional Management System (IMS) and the Advanced Distributed Learning Initiative (ADL) subsidized by the US army's Department of Defense

[5] - *La réforme LMD en Tunisie, Note de cadrage*/ Direction Générale de la Rénovation Universitaire/Ministère de l'Enseignement Supérieur. March 2006

current one will go down in history as the period with the greatest increase in higher education.

1.2-Massification: increased quantity, decreased quality: The trend toward mass higher education that began in the mid-1960s in advanced countries, and the growth of higher education in developing countries, means that the historical threshold of 100 million students worldwide has now been surpassed. Higher education has continued to grow exponentially in quantity: enrolment is 6 times higher worldwide, increasing from 13 million in 1960[6] to 160 million within 20 years according to projections by the US investment bank Merryl Lynch.[7] Significant increases in the number of students are reported in all regions, particularly in developing countries and countries in transition. In the latter, admissions pressure will continue to increase exponentially owing to demographic factors, especially since higher education was lagging behind with a level of access that nevertheless remains very low.

In Tunisia, the student population reached 68,535 in 1990. It practically trebled in 2000, reaching 207,388. The current number in 2006 is 429,894 students.

At the same time, higher education has undergone a drop in the level of learners: they have become mediocre, if not downright deplorable. The diagnosis of an uneducated, illiterate youth has been confirmed over the past two decades through education science studies and surveys.[8] The drop in quality is not limited to young people in developing countries; this calamity has been identified mainly in developed countries.[9] The education and degrees handed out are gradually being emptied of all content and are becoming increasingly less of a guarantee of professional qualifications or the possession of knowledge.

This massive increase lowers the quality of graduates, puts a burden on funding coming primarily from government funds. This situation has led to commercial solutions being contemplated to resolve the problem.

1.3 Commercialization of higher education: government and education officials are establishing new commercial education provider partnerships: "academic companies", alliances between universities and media corporations or publishing houses, "for profit" institutions, etc.). In this context, a potential multi-billion dollar higher education market has surfaced (in the OECD zone, educational services represented at least US$30 million in exports in 1999[10]).

The liberalization of "educational services" and other public services such as "health care services" in the General Agreement on Trade in Services (GATS[11]) within the World Trade Organization (WTO) has given rise to an opposition campaign and a general outcry. The opposing associations, representing over 5,500 US and European institutions,[12] are in favour

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[6] - Cynthia Guttman.- Education in and for the Information Society. Paris: UNESCO, 2003 (UNESCO publications for the World Summit on the Information Society)

[7] -- UNESCO – Synthesis Report on Trends and Developments in Higher Education since the World Conference on Higher Education (WCHE), (1998-2003)- Paris 2003

[8] -Allan BLOOM.- L'âme désarmée.[French translation of *The Closing of the American Mind*] - Paris: Julliard, 1987

[9] -   The international PISA surveys and the OECD's adult literacy surveys show that the current level is low, with a high rate of illiteracy. See the International Adult Literacy Survey (IALS) (OECD and Statistics Canada, 2000) conducted by 22 countries.

[10] - Cynthia Guttman, op. cit.

[11] - GATS signed in Marrakech in 1994

[12] Kurt Larsen, Stéphan Vincent-Lancrin.- The learning business: Can trade in international education work? Centre for Educational Research and Innovation.- in: *OECD Observer*: February 2003

of a freeze of the WTO trade negotiations on educational services and are going as far as radically rejecting the commercialization of educational services.[13]

The protests are warranted because the bulk of world trade in higher education is going on within the OECD zone, which receives 85% of the world's foreign students. International trade in OECD countries has also taken new forms such as certain universities establishing campuses abroad or the transnational provision of distance services through online education.[14] The volume of online education provided by private institutions increased 68% in 1999, and the estimated sales figure for 2003 is $365 billion.[15] With figures like these, international competition has become unavoidable.

1.4- Virtualization: the quantity of different terms and expressions surrounding the concepts of electronic learning, distance education, open education and online learning lead to confusion, which justifies the effort to categorize them to prevent misunderstandings and differentiate the major historical and forward-looking lines.

Distance education has had a relatively long history compared to the new concepts, from correspondence courses to systems using remote audiovisual (satellite based). *Virtual education,* using the Internet, experienced significant growth, first in US universities and now in European universities, due to the net boom, networks that, for a decade now, have touched all areas of human activity (e-economy, e-learning, e-business). The concept of the virtual university is a combination of technological tools with a view to radically changing the educational equation that enables:

- new modes of scholarly communication
- a new relationship among players, access to information directly at work stations
- asynchronous learning, continuing education
- increased collaboration and resource sharing
- availability of digital documentary resources

The phenomenal advance of NICTs in university education, particularly distance education, fully demonstrates their ability to reduce costs and improve access to higher education.

Open education and online learning are therefore becoming standard practice in universities, the structure of which is becoming complex.

The most promising projects are those that rely on a historical infrastructure and effort and that have been able to keep up with technological advances (UK Open University, Canadian projects, etc.). They involve universities − some in existence for over 100 years − that have both on-campus and distance activities. *In North America* - Penn State University: the US historical baseline - Stanford University's virtual campus - Simon Fraser University, British Columbia…the list is long: 60% of US universities today have e-learning programs. The UK Open University, the European "mega-university" leader with over 100,000 students, has developed initiatives (a wide-dissemination process called Stadium whereby it transmits courses over the Internet to several thousand students). Ten of the world's largest universities are located in developing countries, thereby going beyond borders.[16] The African Virtual University (AVU) established in 1997 is intended for students from Africa's 17 English-,

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[13] - Porto Alegre Declaration signed in 2002 by Iberian and Latin American associations and public universities. This declaration radically rejects the commercialization of educational services.

[14] -Australia for example exports increasingly more post-secondary education services (28% of all international students in 2001 attended campuses established outside) whereas the others (9% and growing) are taking distance education from abroad.

[15] - UNESCO. - Synthesis Report on Trends and Developments in Higher Education. Op.cit.

[16] -. UNESCO .-Final Report: Education in and for the Information Society, Paris, October 17-18, 2002

French- and Portuguese-speaking countries. Its mission is to provide broad access to permanent higher education, increase connection opportunities in the academic centres and universities where it is hosted and provide education in engineering, computer science and business. In 2002, the AVU educated over 24,000 students, who completed a full cycle, and over 3,500 professionals participated in seminars for executives and managers.

The *Université virtuelle francophone*, because of the very nature of the concept, can only be considered a meta-project. On the heels of that, a virtual Tunisian university was established, the VUT, with the objective of being a large regional training centre. The Ministry of Higher Education has therefore issued several objectives for digital media development; to use distance education platforms (the objective for 2006 is that 20% of courses will be given remotely). Thus, a very real effort is being made to achieve these objectives, and there has already been a number of accomplishments: online student registration, online communication of exam results, scheduling software, several digitalized courses and educational software.

However, the VUT's e-learning is facing considerable criticism. The lack of institutional culture, lack of reflection on teaching and lack of infrastructure hinder the development of this mode of education. Establishing a virtual university implies an evaluation process centered on the criteria of quality and performance. Among the benchmarking evaluation criteria pertaining to e-learning is access to a virtual library.

2- Virtual libraries and the information society

The roles assigned to libraries in the production and reproduction of knowledge are acknowledged by all education standards and have been entrenched by national bodies and international conventions.

By helping to enhance their relationships of students to knowledge, the functions that ULs have for helping students understand and further explore the lessons are essential for acquiring autonomy in access to information. They are therefore an instrument for improving student success and for carrying out scientific and technical research.

ULs should be a documentation service embedded in the framework of their environment. They provide an interface for the information sector with university and research institutions, other documentary bodies, players and users.

UL involvement for entry into the information society must be based on a positive vision, contained in declarations of principles[17] and the plan of action promoting the information society as well as in a set of international targets[18] that the majority of nations are committed to.

It must be part of the IFLA's efforts, to ensure recognition of *the central role of libraries in the information society*.[19] This involves arguing for the need to place librarians and libraries, as mediators between information resources and users, among the key players in the establishment of the information society.

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[17] - The Declaration of Principles for the 2003 World Summit for the Information Society stated that "Public institutions such as libraries and archives should be strengthened so as to promote the preservation of documentary records and free and equitable access to information."

[18] - I reproduce only a few paragraphs from the World Summit for the Information Society Plan of Action: "Section B Objectives, goals and targets: d) Connect public libraries, cultural centres, museums, post offices and archives with ICTs; Section C8 Cultural diversity and identity, linguistic diversity and local content: b) Develop national policies and laws to ensure that libraries, archives, museums and other cultural institutions can play their full role of content—including traditional knowledge—providers in the Information Society, more particularly by providing continued access to recorded information."

[19] - See the resolution in the proceedings of the "Libraries @ the Heart of the Information Society" pre-summit: - Proceedings of the IFLA Pre-World Summit Conference, Geneva, 3-4 Nov. 2003, The Hague, IFLA, 2003, 142 p.-

Virtual libraries make distance- and time-independent resources and services available to users. Through these "extramural" resources, learners would be at the centre of the virtual world, developing their knowledge themselves.

"In these ways libraries contribute significantly to addressing the digital divide and the information inequality that results from it.…They will do more with quite modest investments. The value of the return is at least 4-6 times the investment."[20]

3- Difficulty with the virtualization of Tunisia's university libraries (TULs)

In this context, increasingly more credits are allotted for improved performance of the communication and information network.[21] Despite the explosion in the number of students inundating Tunisia's academic institutions, which would require investment in the basic infrastructure (amphi, educational equipment, etc.) and raising the level of coaching, decision-makers instead consider the acquisition and installation of computer and telecom equipment to be an investment priority.

The TUL computerization project, known as BIRUNI (*Bibliothèque Informatisée pour la Rénovation UNIversitaire*) is part of the *Programme National de Rénovation Universitaire* (PNRU) and funded by the World Bank (BIRD 3456 / TUN – PNRU).[22] BIRUNI relies on the *Réseau National Universitaire* (RNU), uses the most modern computer equipment allowing remote querying of libraries, interaction and encourages sharing between them to promote top-quality services for education and research.

For virtual management of the TULs, the powerful VIRTUA (VTLS) software was acquired to introduce an online public access catalogue (OPAC). The OPAC for the BIRUNI project is considered to be the project's cornerstone. The catalogue is especially important since the university libraries house collections that should include the most significant acquired knowledge in human intelligence (145 TULs house nearly 1 million documents) and the most valuable products of Tunisian academic literature (100,000 theses and dissertations). Building a catalogue required standardization and historical conversion. This is based on downloading and converting bibliographic repository notices (primarily in French, *Electre* CD and the *Bibliothèque nationale de France* (BNF) using monograph ISBN numbers. The notices were directly entered for collections in Arabic or for works without an ISBN number.

However, despite the 1996 launch of the virtual higher education library project, the catalogue that was built is only a modest descriptive directory of Latin monographs. Only 13% of the references in the collection are entered using the UNIMARC format and are available on line through the collective catalogue (130,000 bibliographic notices, 25,000 of which are in

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[20] - Alexandria Manifesto on Libraries, the Information Society in Action, Bibliotheca Alexandrina, November 11, 2005

[21] -See the two five-year development plans: the IX Plan and the X Plan

[22] -The UL data are the result of collections that I undertook throughout the monitoring of the BIRUNI project. Among the experts on the launch team, I was opposed to it being poorly managed and monopolized by computer specialists and bureaucrats: "Infocrats" aside, I continued the data collection as a World Bank researcher and expert for the "Bisrat" project: network of agricultural research and higher education institution libraries.

Arabic[23]). All the other documentary operations, such as collection development, analysis were blocked; the OPAC is currently blocked as well.[24]

3.1-Reasons for the failures

Why the blockage? Because the virtual world is merely a reproduction of reality. The conditions of the TULs are far from satisfactory, which means there are multiple reasons for this blockage.

These libraries do not have an effective mechanism because they are experiencing "absolute deficiency": a lack of skilled staff (non-professionals train the two levels of staff in the agricultural research and higher education TULs, and half of them in the other TULs), the mediocrity and deterioration of the collections (average of 2 to 30 titles, over 250 in some developed countries, whereas it should be, according to the Tunisian standard,[25] 50 titles per academic user) versus an increase in staff.

The TULs report a delay in information collecting and processing and have been unable to fulfil their usual duties of managing the documentary resources. The result can only be poor electronic representation. When the basics are missing, the image on mirror networks can only be lacklustre.

-Limited use

In this context, the TULs have not been able to meet the growing needs of the various categories of users. Owing to a lack of exploration and awareness, they have not realized the gap they have helped widen between them and their users.

Knowing that students are not familiar with traditional university libraries, advances in virtuality do not make much of a contribution, and searching for information in the OPAC can only be very limited. Data from a survey at the Faculty of Humanities and Social Sciences of the University of Tunis I show that 57% of students never use its TUL, one of the best equipped; they do not even feel the need to.[26] Most of our students make do with photocopies and course notes.

The meagre use made of NICTs (Internet and databases) by literature students at the University of Tunis and the mediocre use of them among scientists, as revealed by the *Projet National Mobilisateur* (PNM) research study[27] should spur further reflection on the use of media and information networks. In our context, it would seem that the true difficulties are less technological (although they do exist[28]) than sociocultural and would require another review of the facts and data.

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[23] - Jameleddine HAJRI.-Le réseau informatise des bibliothèques universitaires tunisiennes: Mirage ou réalité ? In: Colloque international: L'information numérique et les enjeux de la société d'information, ISD, Tunis, April 2005

[24] - At http://www.cck.rnu.tn/biruni/, the link to the catalogue no longer works. http://193.95.34.57:8000/cgi-bin/gw_41_11/chameleon?/lng=en&skin=biruni

[25] - Mohamed ABDELJAOUED. -Les bibliothèques en Tunisie : Introduction à la mise en place d'un réseau national.- Tunis : Les éditions Salammbô, 1988.- 277 p.

[26] - Mohamed ABDELJAOUED-. Bibliothèque universitaire de la faculté des sciences humaines et sociales de Tunis // BUER information , Vol. 8 and 9 (1994)

[27] -La jeunesse estudiantine et les nouvelles technologies de l'information, in: Culture, Société et Nouvelles Technologies de l'Information. -Tunis : CERDOJES, 2001. pp. 251-304

[28] - The penetration rate of the Internet in Southern countries is very low, especially in the African and Arabic countries, according to ITU Digital Access Index: World's First Global ICT Ranking, with Tunisia falling in the middle with a rate of 4.50%, according to the UNDP report on human development in Arabic countries, 2003

When the TULs are unable to fulfil their duties and when reading and literacy habits are not rooted in users, the worst can be expected. The slump during the university period, when it is merely virtual, when there is no true, in-person coaching, it encourages isolation. A semi-literate student youth that is only semi-aware of current knowledge in humanities and humanism is soon targeted by religious fundamentalism.

-Lack of a permanent coordination structure:
Because of this, the gains made in this area through the State's efforts are seriously threatened. Most studies and reports[29] indicate that the primary cause of the difficulties is the lack of a permanent coordination structure in the Ministry of Higher Education.

This lack has brought about a permanent insufficiency in TUL data. As such, it is impossible to contemplate a proper evaluation of the TULs because the data and statistical comparisons among national and foreign ULs needed for developing normative evaluation indicators have been collected only rarely and not objectively.

This lack of structure delays the passing of legal and regulatory texts governing the UL sector (TULs' lack of internal rules and regulations, defects in their administrative structure and abdication of the library responsibility, etc).

In fact, new academic institutions are being established without libraries and with no planning for the dissemination of scientific and technical information. The lack of a documentary policy gives rise to a lack of human resources and a paucity of equipment.

This lack of a permanent structure is the cause of ongoing problems, including:

- Wasted resources and the dispersal of library collections: even though yearly expenditures for acquiring books and journals exceeded $4 million in 1996, documentary resources in university libraries are still very limited. The dispersal is also inconsistent with the provisions of the decree governing higher education institutions[30] and the definition of UL stipulating the existence of a central library within universities. The lack of cooperation among players clearly results in the scattered nature of projects and does not enable economies of scale.

- The lack of cooperation and TUL network means that cooperation among academic institutions is nonexistent. One isolated UL relying solely on its own means cannot hope to meet the needs of its users. In the 1960s, several library networks[31] were formed naturally in developed countries to create a collective dynamic by forging connections and encouraging sharing. The 1980s would see electronic networks established. Built on basic documentary principles, they stipulated the requirement to distribute tasks and duties such as acquisition, processing, analysis and exchange services (for example, interlibrary loans).

- Inadequate registering of theses and dissertations: The TULs and information and documentation services have been unable to control the academic community's intellectual production and have not managed to release and disseminate the immense amount of knowledge contained in these documents, which are only rarely published.

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[29]- Key reports by foreign experts such as the report by the Inspector General of French libraries, Gérard THIRION, in 1991 and the report by the World Bank expert Mr. Alan HOPKINSON in 1997 reveal a lack of coordination.
[30] - Decree No. 1939 dated December 14, 1989 on the organization of academic institutions.
[31] - Association des Bibliothécaires Français.- Travailler ensemble : bibliothèques et réseaux, Conference (1995, Saint Etienne) .- Paris, Ed. ABF, 1995

In fact, the TULs and the *Centre National Universitaire de Documentation Scientifique et Technique* (CNUDST)[32] have registered only a minute amount of this production (at this centre, which has been in operation since the early 1980s, only 5680 university theses have been registered nationally, and this is the output of a single faculty). The unified records of theses and research in progress have not been done by these information and documentation services.

These deficiencies demonstrate that, if virtual technologies are implemented without appropriate management, they will only result in confusion and missed targets. The major neo-liberal international organizations require digital and connection options, whereas traditional libraries in Southern universities are still inadequately equipped. Compensation through data communications equipment has too frequently drifted towards sterile policies: glitzy strategies, demobilization of educators, shelving of unions and professional associations that are capable of true reflection on the promotion of use.

Especially since the introduction of virtual technologies in Southern countries muddies the waters by providing the illusion of a reversal in the domination logic (unbalanced relationship between Southern and Northern researchers, pupil/teacher relationship). The virtuality effect inherent in the diffractions of the burning mirror will lead, if not rectified, to decoys that are conceivable in a non-physical world. The devotion to NICTs, the misrepresentations as a consequence of virtualization and mediatization, should not lead to loss of direction or to passive attitudes stripped of critical thought and creativity.

The process is not simply to avoid the new technology circus, even if the priority is to spread NICTs throughout the world with no thought to the costs, but also to demonstrate that data communications equipment alone does not solve anything.
Virtual technologies cannot produce results in a context not suited to it. They achieve the best results in strategic planning conditions that draw on experience, the environment and international cooperation.

4- Transitioning to connectivity through local knowledge production
Skipping steps in the introduction and transfer of new information technologies can only lead to defeat. Information goes straight to virtualization, i.e. to the use of networks, without evaluation from the previous phases, since digitization, that vital path for the capitalization of content, is omitted.

To rectify this omission, a national digitization construction site must quickly be initiated so that the leap towards virtuality does not end in a digital fall and fracture. The goal is to publicize and disseminate the local knowledge contained in theses and dissertations that are only rarely published.

Digitization does not take hold in a social and organizational void; it is brought by players needing to get their bearings in specific, unique situations, in tune with action and streaming logic, updating or implementing skills, opportunities, strategies that take environmental and organizational opportunities into account.
The objectives of the TUL restructure could be summed up in three words: Re-organization, Capitalization and Digitization.

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[32] - Decree No. 2241, dated October 11, 1999, on the organisation of the CNUDST, assigns it the mission of housing the virtual research library

4.1-Re-organization:
Re-organisation is essential in the evolution and success of TUL documentary services. It is paramount because advanced technology cannot combine with outmoded work processes. Re-organization should take into account the environment and context, the documentation unit's situation within the administration in charge and human and financial resources. These primary factors determine the effectiveness of UL services.

- Unfavourable environment
A positive view of the changing technological, economic, legal, sociological or cultural environments would ensure adaptation to the new context, which is characterized by tremendous difficulties. The contradictions that the Southern ULs are operating within speak of the limitations of the current model:

-Massification in the number of students / Drop in funding, significant staff shortage and service degradation

-Explosion in the number of documents / Reduced acquisition of titles, mass cancellation of subscriptions to periodicals due to rising prices of scholarly publications

-Diversification of media /Lack of processing tools and standardization

-Defending freedom of access to these resources / respecting licences and copyright and suppliers' rights

Given these contradictions, ULs are required to be open to new organizational models. Libraries give greater attention to user needs, adapt to changes in new information technologies, are interested in service quality and performance indicators in order to develop mechanisms for analysing usage-based cost-effectiveness.
The organizational aspect is important because, with respect to staff, an awareness of loads qualifications that are still too unbalanced has been observed.

-Human resources development required for implementing the TUL network:

One of the lessons from BIRUNI is the education and retraining of professionals who started in 1997-98 through the introduction of a university degree in Library Management. Forty-three TUL managers were recruited as a result. Some 287 executing agents were retrained in document techniques to upgrade operational services. However, this effort ceased in 2000. The lack of qualifications and efficiency observed among TUL staff and examined in a number of studies will only be resolved through statutory continuous professional development and promulgation of professional promotions for strengthening the network's scientific management.

Documentary training for users

Every training institution and research unit is involved in the upgrading to ensure improved UL integration into the environment of its potential users. This will require very methodological comprehensive documentation and information training to be incorporated into all higher education curricula and all educational projects.
Incorporating this documentation and information component into university education and adapting it to the specific character of each discipline includes aspects as varied as awareness and expression of information requirements, knowledge of the information space, use of documentary resources, information criticism and evaluation, information use, etc.

This training involves three human resource categories in educational institutions and research units: research teachers, students, and other technicians and professionals.

4.2 Capitalization

Changes in collections and processing have been very slow and appear not to keep pace with the development of technical know-how and research in the field.

Collections are inadequate and cannot meet the expressed needs of users. At the current pace, tremendous effort would be required to meet the current and potential needs of users in educational and research institutions, the number of which is estimated to be 548,999 users in 2010. In fact, with the limited means available to the TULs, it would be difficult to imagine acquiring such a large quantity of documents, even over a long period of time.

*Collection development and federation of search tools

Our direction is essentially to make better use of the means available. Centralization of the description of the collection and pooling in the same catalogue will increase access. Given the importance of setting up a collective catalogue and its contribution to the information conversion, the struggle to combat document loss and the scattering of the collection, resources need to be pooled and efforts focused to achieve internationally recognized standards.

Therefore it is vital not to dismiss the contribution of any existing documentation unit. The bases gathered under the same authority (Ministry of Higher Education) and under the authority of the research administration should not be abandoned.

*Institutional aspect: The dispersal of resources is due to the division of the administration of research and higher education, which are usually separated into two different authorities, currently two ministries, but sometimes they are grouped under one authority: the Ministry of Higher Education and Research, yet the funds remain separate.

The recommended solution is cohesion of documentary resources by the federation of catalogues and enhancement through document acquisition and processing.

TUL collection development is driven by capitalization of content.

This requires a purchasing policy and procedures to be developed by **consortium** like the one that exists in most ULs in developed countries. This provides negotiating power when faced with increasing power of the publishing and disseminating multinationals.

-Federation of catalogues and the establishment of an integrated bibliographic information system

This re-organisation is based on the desire to take into account the diversity of local practices while ensuring intellectual cohesiveness of the collective work. Practices and methods need to be harmonized using the same procedures that would gather into a collective catalogue all the divided records into a single information system allowing online consultation. Integrating all bibliographic and factual databases of all TULs and the CNUDST is a priority. The same is true for adopting copyright free software designed using the logic of production groups. A multitude of freeware or shareware, often developed by universities, is available on the networks in accordance with the acquisition rules specific to this type of tool. It will first involve doing an inventory and analysis of scientific products. Compilation, after validation of research notes and data sheets in "groupware", should provide improved circulation of research work. There are numerous structured knowledge bases available, but they are scattered around the world. They need to be identified and located to make them available to the scientific community.

Despite this, it should be pointed out that the route to achieving the level that some ULs in the North have already reached will be long and winding indeed. The commercial involvement of US[33] and European university libraries in the Google Print and Yahoo book digitization projects have demonstrated the prime importance of the multinational content industries. This increasing knowledge has become a marketable good, and the Web giants want to take over the organization and design of it.

Conclusion

The upgrade process for the Southern ULs is encountering real difficulties that, for the most part, are less technological (although they do exist) than political and cultural. Therefore an examination of sociological aspects must go hand-in-hand with introducing technology into developing countries. Sociological studies of cultural practices are focusing on identifying differentiation factors and demonstrating appropriation mechanisms.

They especially help manage conflicting standards and values, consequences and uncertain futures, and knowledge on a progressive basis.

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[33] - Open Content Alliance (OCA) is the Yahoo project. Its consortium members include the libraries of the University of Toronto and the University of California. The OCA members are working to digitize some 18,000 US literary works selected by the University of California.