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**Barriers to information access and provision in academic libraries with
special focus on the Cape Technikon Library.**

By Nomoya Mahlangu, MDLNOMO02

A Dissertation submitted in partial fulfilment of the requirements for
the award of a Masters Degree in Library and Information Science
(MBibl) of the University of Cape Town

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DECLARATION

This work has not been accepted in substance for any degree nor is it being submitted in candidature for any degree other than the Masters Degree in Library and Information Science of the Department of Information and Library Studies at the University of Cape Town.

Candidate

Signed by candidate

signature removed

STATEMENT OF ORIGINALITY

I certify that, except where otherwise indicated, the concept, organization and writing of this dissertation is the result of my own independent investigation under the supervision of

Prof. Peter G. Underwood, MBA, FLA, MIInfSc

Candidate

signature removed

Supervisor

signature removed

Prof. P.G. Underwood

University of Cape Town

ACRONYMS and ABBREVIATIONS

AACR2	Anglo American Cataloguing Rules
ASK	Anomalous State of Knowledge
CALICO	Cape Libraries Cooperative
CD-ROM	Compact Disc - Read Only Memory
ILL	Inter Library Loans
ITS	Integrated Tertiary Information Software
LCSH	Library of Congress Subject Headings
MARC	Machine Readable Cataloguing
NPHE	National Plan for Higher Education
OCLC	Online Computer Library Center
OPAC	Online Public Access
PC	Personal Computer
RLG	Research Libraries Group
SAQA	South African Qualifications Authority
UCT	University of Cape Town
UNESCO	United Nations Educational, Scientific, and Cultural Organization
WIPO	World Intellectual Property Organization
WWW	World Wide Web

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ABSTRACT

The central theme of the study revolves around barriers that affect information access and provision in academic libraries. Various barriers are identified and recommendations to overcome such barriers are highlighted.

Cape Technikon in the Western Cape is used as a case study of academic institutions subjected to challenges of the information age, globalization, technological advancement and broader transformational imperatives. The dissertation examines difficulties experienced by users from the moment they enter the library to search for information, up to the point where they achieve the objective of their search. It also explores the processes that happen "behind the scenes", before the sought information can be located and utilized. These include the requisite funding to obtain the information, ordering, acquiring and cataloguing and finally shelving the material in an accessible manner.

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CHAPTER 1 INTRODUCTION

1.1 FRAMEWORK

Academic libraries are part of the academic institutions within which they exist. They are therefore subjected to the same challenges, barriers and other dynamics that characterize these institutions. Like most public institutions that rely on government, donor funding and patronage, academic institutions exist within the context of constrained resources. They also are subjected to the challenges of the information age, globalisation, and technological advancement and, in the case of South Africa, broader transformational imperatives.

The need for a National Plan for Higher Education was identified by the first democratically-elected South African government (the Government of National Unity), elected in 1994, as a response to a report by the National Council for Higher Education (Republic of South Africa, Ministry of Education, 2001:1); this imperative was perpetuated by its successor administration, elected in 1999.

The National Plan establishes indicative targets for the size and shape of the higher education system, including overall growth and participation rates, institutional and program mixes and equity and efficiency goals. It proposes that the participation rate in higher education should be increased from 15% to 20 % in the long term, to address both the imperative for equity, as well as changing human resources and labour needs. However, the plan notes that it would not be possible to increase the participation rate in the short to medium term because of the inadequate throughputs from the school system (Republic of South Africa, Ministry of Education, 2001:2).

At the centre of these changes is the idea that in the 21st century, knowledge and the processing of information will be the key driving force for wealth creation and thus social and economic development. It also emphasizes the fact that higher education has a critical and central role to play in contributing to the development of an information society in South Africa both in terms of

skills development and research (Republic of South Africa, Ministry of Education, 2001:5). However, the higher education sector has experienced financial difficulty in the past years. This means that the institutions of higher learning need to do more with less. It is within the above background that this dissertation focuses on how to make use of the limited resources available, taking into consideration the probable changes in the number and constitution of student intake.

One of the main reasons for the existence of academic libraries is to set in place a process for information provision for research and teaching purposes, and, in so doing, to acquire, organize and package the information to be provided. This process is expensive and potentially complicated in that it involves a myriad of activities that need to be carefully collated and coordinated. It is not as straightforward as it may seem to a distant observer. There are elaborate behind-the-scene activities that have to take place before a researcher can successfully access information from a library. These entail constantly monitoring, examining and alleviating any obstacles and barriers that impede successful access to information.

1.2 PURPOSE OF THE STUDY

The researcher's professional experience suggests that there are barriers to information access and utilization that arise from the nature of interaction between the library and the user. The barriers arise in many ways. The ones that will be covered in this dissertation include institutional elements such as: inadequate funds to purchase requested items; organizational aspects, e.g. inadequate catalogue records; and user elements, for example, inadequate academic preparation of users. The researcher intends to use experience drawn from observation by considering a set of crucial incidents and then consulting the literature to discover similar examples and methods of dealing with them.

The said barriers can manifest themselves in numerous and diverse forms (Haag, 1989). Hence the focus of this paper will be specifically on:

- a) **The reference service**, which entails the reference interview and the interface between the user, and the medium for accessing the sought information;
- b) **Subject indexing and information retrieval**. This encompasses cataloguing systems, library classification schemes and the effect of these on the retrieval of information;
- c) **Information technology**, which covers the computer phobia and the effects of the lack of sufficient training for both librarians and users;
- d) **Information literacy**. This covers ways in which students can be guided to find, evaluate and use information from appropriate sources. Significantly, information literacy has been identified by the recently-formed South African Qualifications Authority (SAQA) as one of the critical cross-field outcomes to be integrated into all qualifications. While the implementation of outcome-based education is in its early phases in South Africa, the need to develop students who can work with and produce information critically, has been on the agenda for some time. As information literacy mean different things in different contexts and different disciplines, integrating information literacy tasks with regular academic activities seems to be the most effective way of supporting the development of these competencies.
- e) **Availability of resource material**, which is directly and indirectly influenced by library procedures and policies. These would include loan policies, copyright legislation, acquisitions, cataloguing, binding and shelving of materials. And finally,
- f) **Adequacy of funding**, which is an exploration of the difficulties faced by libraries in securing funds, and the strategies to circumvent the financial problems identified.

1.3 IMPORTANCE OF THE STUDY

Libraries need to be aware of obstacles or barriers that may affect service provision in order to provide efficient and effective access to information. One may assume that the change would not be easy and smooth with so much development in libraries in the areas of technology and information explosion. The variety of users that academic libraries serve presents a challenge to the library manager because all these users have different needs and attitudes towards libraries in general.

Developments in technology demand that users become computer literate and librarians need to be effective teachers of such technology. The wide spectrum of users means that librarians need to understand the different levels of orientation to libraries, in particular the user level of information search and handling skills. This means that acquiring reference technique skills is of importance to librarians.

In their efforts to design a barrier-free academic library, it is imperative that professional staff is aware of barriers and the effects these might have on the free flow of information.

1.4 DEFINITION OF CONCEPTS

1.4.1 User: the concept refers to anybody seeking information in the library and to whom a service is provided in this regard.

1.4.2 Barrier: refers to structural, organizational and interpersonal dynamics that directly or indirectly prevent, delay or negatively impact on a user's ability to access information from the library.

1.4.3 Librarian/Academic Librarian: this covers the subject librarian, the reference librarian and any other library staff that directly interfaces with the user (anybody generally involved with the provision of information in the library, albeit in an assistant capacity).

1.4.4 Information technology: refers to the medium of information provision, for example, the Online Public Access Catalogue (OPAC), and the CD ROMs.

1.5 METHOD AND SCOPE OF STUDY

This study adopts both a descriptive and analytical approach in its engagement with the consulted literature on the subject. This means that the researcher's personal experiences and observations were tapped into, and the literature was used to validate these experiences where appropriate, and vice versa.

Even though interviews and questionnaires were not conducted for this particular study, the researcher based her observation on what she found at the Cape Technikon Library. She was enriched by the insights drawn from her internship exercise conducted at the five Western Cape academic libraries that fall within the ambit of the Cape Libraries Cooperative (CALICO). The internship constituted part of the Masters course work program and was conducted for a period of four weeks in five different institutions. The focus of the study was on examining the relationship between the academic librarians and faculty members in the CALICO institutions. Some of the barriers uncovered during the internship were associated with information literacy; the lack of an effective working relationship between librarians and academics, and the attendant gaps in the library collection.

This thesis does not intend to present an exhaustive exploration of all the barriers to information provision. It however provides a basis for future and further research on a much more elaborate basis. This endeavour will have to examine socio-economic (e.g. family and educational background), racio-ethnic, gender, as well as structural barriers that ultimately manifest themselves during the process of information provision and access.

1.6 CRITIQUE OF THE METHOD USED

The approach used in this study has been to collect incidents where barriers to information use seemed to be a cause of problems and then to try to relate them to published research in library and information science. The aim is to try to establish which of such incidents were the product of policies or deficiencies at Cape Technikon and which are the symptoms of broader, societal problems. No attempt has been made to quantify the number of incidents of each type or to arrive at any conclusions about the impact of such incidents upon the individual or the library staff. Such an attempt could only be made with a very clear understanding of the academic and financial policies supporting the provision of the Cape Technikon and its library and some insight into the long-term effects of these incidents upon the academic and working life of the students concerned. This study is therefore to be regarded as preliminary, "mapping", and preparatory to a more sustained and detailed study.

Unsystematic observation of students in Cape Technikon Library has been used as the means of becoming aware of critical incidents. There is an inbuilt bias evident in such an approach, governed by the limitations of the observer. At the simplest level, the researcher as observer was not available during all possible library-opening hours and could only review a small part of the library and its services during working hours. Dealing with students having problems means that the role of the researcher changed from observer to active participant. The alertness and personality of the researcher introduces an additional level of subjectivity.

The issue of subjectivity raises concerns about reliability. Reliability in this context is the extent to which the study can be replicated. Therefore, in this instance, one cannot be absolutely sure that the result of the investigation would be the same in another investigation of this nature. What it means is that the same behaviours or events can have different meanings in different situations. One of the reasons for unreliability could be the fact that data used is unstructured and therefore more open and overwhelming.

The dissertation is only presenting facts from the writer's point of view as there were no interviews or questionnaires conducted in order to further define the problem observed. However, in terms of developing a better learning space, the library manager would have to make judgement on the weight of each type of barrier. His or her decision would be governed by the weight of each barrier and its impact. As a manager, one would have to pay attention to things that have a big impact on individuals and things (events) that happen often.

Despite its limitations, a qualitative and reflective approach allows the researcher to get in-depth understanding of the situation. In the writer's case, first hand knowledge of events and situations cuts two ways. It admittedly raises the issue of bias, but it also provides a sense of immediacy, direct contact and intimate knowledge. Immersion with the situation under study gave the researcher an intimate familiarity with the subjects and the environment. Being at Cape Technikon Library for a period of 5 years, and having done internship on the "relationship between librarians and lecturers" at CALICO (Cape Libraries Cooperative) libraries, suffice to say that the researcher has been immersed in the situation under study. CALICO is a collaborative venture between the Western Cape tertiary education institutions, namely the Universities of Stellenbosch, Western Cape and Cape Town and the Cape and Peninsula Technikons.

This method of study entails much more sustained contact with the subjects under study, especially because participant observation is the central method used.

It is impossible to completely eliminate the effects of the researcher on the study. However, recognizing the human factor does not mean that the writer arbitrarily interjects personal prejudices. The researcher's presence in this dissertation has always been an explicit issue. Admittedly, the researcher took advantage of her personal insights, feelings, and perspective as a human being to understand the environment under study, but, at the same time, she was always aware of her values and assumptions.

Being part of the Subject Librarians group at Cape Technikon Library makes one's interpretation of facts subjective. However, opportunities for dishonest research exist in all research environments.

Concerning the method used in this study, the reader will have to place trust in the researcher's integrity and interpretations. However, checks on the investigation results have been included to ensure that the research reflects the available evidence. This includes references to sources used and the fact that other researchers are also known to have conducted similar studies.

1.7 BACKGROUND INFORMATION ON CAPE TECHNIKON

The Cape Technikon was established in Cape Town, Western Cape, South Africa in 1979 to provide higher education in technology. It has grown from an initial enrolment of 5,583 students to more than ten thousand in 2001.

It offers 65 full-time National Diploma courses and 46 Bachelor degrees in Applied Sciences, the Built Environment, Business Informatics, Design, Engineering, Management and Teacher Education. It also offers Master's and Doctoral degrees in most of these fields of study.

The Cape Technikon employs over 700 permanent staff members. There were 2,928 African, 3,117 Coloured, 237 Indian and 4,431 White students in the year 2000. The intake of African students has increased from 6% in 1987 to 56% in 2001. However, there has been a decline in overall student intake and donation income in the year 1999 and 2000. In order to maintain and strengthen its position, the Technikon recruited students with academic potential to maintain academic standards in the past two years. The emphasis on transformation in the period 1998 to 2000 led to a management focus on a new education vision, greater awareness of financial responsibility of all departments, academic development to accommodate students with inadequate school education, capacity in the field of research, greater dependence on the information technology and closer cooperation with higher education institutions in the Western Cape and on an international level.

The Cape Technikon's strong ties with the other local higher education institutions, that is, the Universities of Cape Town, Stellenbosch, Western Cape and the Peninsula Technikon is strengthened through cooperative projects aimed at the collective utilization of the resources of

the five institutions. All the cooperation projects are coordinated by the Adamastor Trust established by the five higher education institutions in the Western Cape.

Cape Technikon Library operates within the framework of the broader Technikon policies. However, the Library too has policies that guide its operations. Library collection development policy and the loan policy are the ones that are more relevant to this dissertation. The principle is that the academic staff and the librarians are jointly responsible for the development of the library collection, both with regard to addition and withdrawal of resources. Approval to order books rests at the level of the Director of the Library in terms of the financial policy of the Cape Technikon.

The Library avoids duplication of resources as far as possible. It (the Library) uses the "fair dealings" allowance of the Copyright Act (as advised by Janette van der Merve: CALICO Publishing Liaison Officer) to duplicate small parts of some resources and make them available in the short loan section on a temporary basis for internal use. The lecturers have the responsibility to bring such needs to the attention of the Library, in order to have such needs met. Textbooks are not supplied to the lecturers and students because ownership of intensively used information is a fundamental part of the teaching and educational process. Most importantly, long-term loans are in conflict with the principle that the Library is a central resource, and current financing is also inadequate to satisfy these needs.

Loaning of material has an impact on the availability of sources, and as such is limited to the following items: books are available on loan to primary users and to outside parties who are users by subscription; only bound periodicals are available on loan on the same basis as books; video material is available only to lecturers for use in class, although students may use the material in the library. The limit on the loan of audio-material is based on the high costs of such material.

The library staff component structure is also important in order to understand the problem presented by the dissertation. The Library has two different sections: the Technical and User Services. Two senior librarians who report to the Library Director head the sections. Under User Services there are subject librarians and the information point and circulation desks. The subject

librarians are professional staff with a degree in librarianship, whilst the service points or circulation desk staff are all non-professional staff with mainly matric as qualification. The Technical Services side is comprised of acquisitions and cataloguing librarians and library assistants, also with a matriculation qualification. Then there are library workers who maintain the library shelves and book stock. There are also two information technology specialists with matric and a systems librarian with a degree in librarianship.

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CHAPTER 2

THE REFERENCE BARRIER

2.1 THE REFERENCE SERVICE

Reference service in this dissertation refers to the contact between the user and the reference staff of the library. The process that takes place when the user puts his or her request to the librarian and the latter's reaction is very important in determining the success of the user's information search. This contact entails the reference interview, the language of the user as well as the reference librarian's language and skills. These attributes of reference service could present a barrier to information retrieval if not handled appropriately. This section will examine the potential difficulties that can be encountered through the reference interview and the language barrier, as well as present suggested solutions to the identified problems.

2.2 THE REFERENCE INTERVIEW

The reference interview is made up of a dialogue between the user and the librarian. It helps patrons to define and articulate their real information needs. This is especially so because "the difficulties in determining the patron's actual information needs are hidden under the indirect or faulty information question" (Halldorsson and Murfin, 1977:385). Experienced reference librarians should therefore seek for clarity and test understanding so as to avoid ambiguities in the original question put to them by a user.

There is indeed a need for the librarian to dig deeper for information, to clarify needs and to ensure that users get what they ask for. A productive reference interview represents a successful collaboration between the reference librarian and the user, with the interaction itself adding considerable value to the user's perception of an information solution.

The initial reference interview is crucial in determining how much information a particular client needs or will be able to use. Thus, at the reference interview, librarians need to be able to assess when it is appropriate to complete the research process for the patron, and when to completely guide the patron and facilitate his efforts in finding the information. The help screens on Online

Public Access Catalogues (OPACs) and other printed aids augment the assistance required from the librarian.

The concept of "information need", as espoused by Fidel (1990:132), is an elusive one. This is mainly because of the fact that even if a real and precise need for information exists in an objective sense, it is difficult to define that need accurately. Asking users to define their information needs requires them to describe in exact terms what they do not know. This situation is very contradictory in nature and it presents the reference librarian with the challenge of probing for the user's real needs in a non-intimidating way. Belkin and Oddy (1979) emphasize the elusiveness of "information needs". Their retrieval approach recognizes that the fundamental element in the information retrieval situation is the user's information need. They therefore suggest that the means to an appropriate representation of information need is the consideration of that information need as an "anomalous state of knowledge"; i.e. when an information need arises from a recognized anomaly in the user's state of knowledge concerning some topic or situation. As a result, the user is unable to specify precisely what is needed to resolve that anomaly. Belkin and Oddy suggest that it is more suitable to attempt to describe the anomalous state of knowledge than to ask the user to specify his or her needs as a request to the information retrieval system. However, the difficulty with the ASK (anomalous state of knowledge) hypothesis, as pointed out in Belkin's study, is the question of determining the best system response to a particular ASK structure (Belkin and Oddy, 1979).

Librarians may be limiting their ability to meet users' information needs by taking requests at face value; that is, by only examining the question being asked instead of exploring why the question is asked in the first place. In other words, by accepting the old rule that it is inappropriate to ask the user why information is needed, librarians are in essence declaring that they are not responsible for the effective use of information sources or for the information contained in those sources. This action presents a barrier to user access to information (Durrance 1990:167). One needs to acknowledge that trying to probe the user further could also pose a bridge to information privacy and in so doing compromise professional ethics.

In Halldorsson and Murfin's findings (1977), professionals were said to be reluctant to probe further when presented with a query, due to a lack of sufficient time to interview for clarification or to consult sources. This is obviously a major source of professional failure and thus a barrier to information access. On the other hand, library users also have the mistaken idea that librarians can only meet their needs for books and information if they are provided with the correct title and author, both of which offer a quick and easy route to success in answering reference queries. Under these circumstances the librarian usually responds by asking for the author of the book. It is for this reason that librarians need to emphasize that the name of the author is by no means the only route to finding information.

It needs to be pointed out, however, that there are other factors independent of the reference librarian's performance that affect successful reference service to users. Several catalogue user studies conducted in the 1970s focus on some of the following factors: incomplete bibliographic information provided by users; users' attitude towards information finding tools; insufficient preparation for information search by users and, finally, the constant availability of intermediary to help users with their searches. Lombardo and Condic (2000) in their study of user attitude towards the new OPAC in Oakland University indicate that users overwhelmingly prefer the new OPAC and find it easy to use. They determined that users experience some difficulty using special features like truncation. The study further concludes that the most popular feature of the new catalogue is its remote access capability (Lombardo and Condic, 2000).

Much of the present literature on the use of online catalogues can trace its origin to the landmark study done in the early 1980's (Ferguson, Kaske, Lawrence, Matthews and Zich, 1982). The Council on Research Libraries Group (RLG) and the Online Computer Library Center (OCLC) sponsored the study to assess how online catalogues are used. The researchers found that over 90% of OPAC users liked the online catalogue. According to the above authors, the acceptance rate could be influenced by the fact that such users found some relevant material from their online catalogues. The study also found that users of the card catalogue preferred it to the online catalogue. Users consulted for the study preferred searching by subject, topic or keywords. Most users however did not employ the more advanced OPAC features such as Boolean logic,

truncation or limiting. What influenced preference for online catalogue could also be the ability of the system to allow users to search on more than one entry point or any known entry point. In conclusion, the study determined that students who received training on online searching were more successful in their searching than those who have not received training (Ferguson, Kaske, Lawrence, Matthews and Zich, 1982).

Other studies linked instruction and overall patron satisfaction. Stamatoplos and Mackoy (1998) did a survey on students who received library orientation to find out if they were satisfied with the library as a whole. They found that user satisfaction was related to the use of library computers. Increasing patron's confidence in their skill of using libraries in itself has been seen as having a positive impact on their views of the library (Stamatoplos and Mackoy, 1998:333).

In the researcher's experience, most users provide incomplete or incorrect information when seeking information in the library. This could be due to an unpreparedness on the user's side with regard to information retrieval endeavour. Borgman (1987) supports this argument in his study. He states various reasons for reference search failure. One of them is the fact that trained end users tend not to prepare well for searching and that the quality of the search is related to the degree of topic definition before going online. One could therefore deduce that it is not only the novice searchers that struggle with information searching, but also the trained users. Borgman (1987) further argues that users tend to search infrequently for information, perhaps a few times a year. This may be insufficient to master complex commands and to stay current with system changes.

Borgman's contention relates closely to the researcher's work experience in encountering fourth year or third year students and even lecturers who know very little about search tools. When asked how they managed before, the response is that they do not use the library or they did not have to use it in previous courses they have studied. O'Connor (1984) prefigures the contentions in the study by Borgman (1987) where he reveals much about users' attitudes towards the library catalogue, its usage and the library per se. One of the findings of his study is that ninety percent of the users interviewed said that they had completed some college work or were graduates. He states that on the contrary, the non-users of the OPAC and the library were even more highly educated (O'Connor, 1984:144). The same attitude with regard to computer usage in finding

information in academic libraries is seen where lecturers prove to be the most reluctant users of the OPAC system.

The argument on attitude towards the reference service and OPAC usage is taken further by Zoltan and Chapanis (1982) and is also supported by Noble and O'Connor (1986). The former investigated the various professional people and their views towards computers. They found that one's disciplinary background has a lot to do with attitude to information retrieval systems. For instance, certified public accountants, lawyers and physicians were studied to determine their experiences with and attitudes towards electronic computers. The results show varying attitudes amongst the groups. Some viewed computers more positively than others who labelled it with negative terms such as "depersonalising" and "difficult" (Zoltan and Chapanis, 1982:56).

Beside all the attitudes displayed by various users so far, Borgman (1987) discovered that the constant presence of intermediaries plays a role in the performance of the user in information searching. He states that the more the library has available trained intermediaries, the less likely it is for users to find sources on their own and think through their own needs. Borgman further argues that those without access to an intermediary tend to be more interested in learning to do their own searching (Borgman, 1987:46). These findings are very true for academic libraries, where most students and lecturers tend to walk straight to the subject librarians for their information needs and often with no attempt to search the system themselves. As a result, these users are shown how to find information every time they visit the library and information is given to them. From this, Borgman concludes that many users make infrequent use of the retrieval systems and tend to remain novices.

Catalogue user studies emphasize the fact that it is not always the librarian's problem when a user cannot find the information they seek from libraries. There are other factors to be borne in mind, which might need to be investigated and researched further in order to address the barriers arising from them.

The importance of the reference interview as the key to a successful information search suggests that communication skills for reference librarians and all the circulation staff in the library should be enhanced. Studies of traditional reference services have concentrated on reference failure originating from the search process. For the most part, they ignored failure due to communication problems. A report done on the study of reference interview (Halldorsson and Murfin, 1977) indicates that communication in the reference interview is an aspect of service that is seriously in need of improvement. Such concerns can be understood because only an experienced mediator can instinctively identify errors in clues to information that might affect the clarity of the request. This means that the ability to communicate clearly and unambiguously (effectively) drives the process of information acquisition throughout.

There are important functions that human intermediaries can accomplish with relative ease, such as functions that are far beyond the present capabilities of information technology. The ability to interact sensitively and flexibly with a user who is working on a problem is one example of such functions. Computers as we know them now cannot recognize a user experiencing failure of perception. It is even less likely that they will be able to deal with both the affective and cognitive contents of a situation. A smile, a friendly tone and a warm attitude can go a long way towards reducing the anxiety levels of a searcher. Hence, the best approach for the present and the foreseeable future will be to establish a partnership in which human intermediaries play an important role, while allowing information technology to do what it does well. The ability to be able to communicate effectively with users would enable the reference librarian to identify and address the problem of indirect or faulty information questions. Here, the issue of the type of library personnel involved is very important. It is notable that only some people have the above-mentioned traits or qualities. That is why it is important when recruiting persons for such posts as reference librarians to look for these qualities or in training persons for such post that these issues are factored in. Knowing the library collection, for instance, would enable the reference librarian to respond to a student request immediately with an evaluative statement that would prepare the student for the effort ahead.

Not only do librarians need to be able to communicate well, they also need to have a good understanding of information searching strategies that are embedded in information literacy. Krivine (1993) concurs by highlighting the conclusion that obtaining effective and efficient access to published information for research is not a simple procedure. Information handling in the research process is an ongoing and complex interaction between the researcher and information sources that demands a well-developed information searching strategy. Krivine (1993) further argues that this is not a skill that is readily acquired, but it matures through training and experience.

The following attributes are demanded from the researcher and the library personnel attending to the information needs of the user: a realization of the value and importance of information, knowledge of the subject being researched and its terminology; sufficient and sustained interest and time to trace the required information, as well as familiarity with published information and its sources. In this regard, students would therefore need to structure their search strategies clearly and know the parameters of any assignments they have to complete. The librarian's role in this instance would be to remind students to define terms and to use primary sources of information.

The most evident barrier to the provision of information as outlined above is the lack of training and understanding by some service staff that each encounter with a user could be of benefit or disadvantage to the user, depending on the skills of the staff in contact. It is for this reason, as it was so eloquently argued by Jennerich and Jennerich (1987:27), that the circulation staff and the student assistants (where applicable) need to understand and use effective interviewing skills. They need to be able to discern the nature of the patron's needs in order to make a referral to another part of the library: training for both the circulation staff and the student library assistants is essential. Unfortunately, teaching interviewing skills is not yet automatically included in the professional curriculum. Consequently, new graduates vary in their abilities and awareness regarding interviewing skills. In-house training should therefore be provided to bridge the skills gap.

Drawing from the researcher's five years experience as a librarian and from the literature on the subject, it can be safely inferred that if one does not undergo some kind of formal or informal training on reference interviewing, this can have a negative impact and many users may be disadvantaged.

The reference interview discussed above, highlights some of the barriers to information access. Haag's findings (1989:14) on these barriers indicate that subject librarians are sometimes not aware of the developments in the subject(s) they are attending. They are also said not to be taking interest in the departments that they serve, and that they do not know how to use reference tools. The librarian needs to understand better the terms and concepts that are critical to discovering the information sought. The extent of such knowledge of subject fields will, in many cases, determine whether or not demands for information can be met.

Lastly, as Halldorsson and Murfin (1977) points out, the type of personnel utilized may influence faulty information questions. They argue that the idea that queries should be presented to inexperienced persons and fed upwards to those qualified to help, is a disservice and inconvenience to researchers. Even though this may not be the intention, the fact that assistants to subject librarians are encouraged and expected to help users in their search for information, simply means that they either handle the query or push it upward. Usually the non-professional members of staff do not know where the question should lead. They could be reluctant to probe further because they feel a lack of authority to do so. In their findings, Halldorsson and Murfin (1977) further report that the main reason for both professional and non-professional staff to perform well is due to personal knowledge of the subject matter of the question. The lack of knowledge of the subject handicaps them in recognizing faulty information and knowing where and how to correct it.

It is, however, increasingly becoming common practice to put paraprofessional staff in reference areas. A study conducted by Halldorsson and Murfin (1977) highlights the performance of both paraprofessional and professional staff in both academic and public libraries. In the study, 25 "indirect" and faulty information questions were asked at two university reference centres. One

centre was composed of professional staff, and the other centre by non-professional staff. The purpose was to determine the relative success of both groups in probing beyond "indirect" questions and correcting faulty information. The results of the study show that professional librarians in the sample were superior to the non-professionals in achieving successful solutions to faulty information questions in the reference interview. The authors of the study identify the lack of personal subject knowledge as the reason for failure to address faulty questions addressed to both professional and non-professional staff. The study shows that professional staff were superior in the amount of personal subject knowledge, demonstrating familiarity with the subject matter and less so for non-professionals. Lesser knowledge on the part of the non-professionals could be due, in part, to limited education and experience.

In assessing the utilization of non-professional staff at the reference desk, one needs to focus on the reasons for the differential performance of both professional and non-professional staff in the consultation and referral process. In the study conducted by Halldorsson and Murfin (1977), the reason for the different performances is failure to utilize referral and consultation to the fullest. The concept of an information centre staffed by non-professionals but backed by qualified reference librarians who are available for consultation, is based on the premise that the less experienced personnel will refer whenever they fail to answer a query. Halldorsson and Murfin's study demonstrate that in case of faulty information questions, this premise is questionable, because, out of 21 questions which non-professionals failed to answer, only 6 were referred (Halldorsson and Murfin, 1977:392). In support of their view of the questionable benefit of staffing the reference desk with non-professional staff, the following problems that occurred when the 6 questions were referred to the reference librarians, were noted:

- a) The subject specialist was busy.
- b) The subject specialist was not available.
- c) The patron was referred to the wrong subject specialist.
- d) The non-professional staff called the reference librarian on the phone, but due to a communication problem, the patron did not get the information.

- e) The non-professional staff repeated the patron's misleading information to the professional staff and it was accepted at face value and the professional staff failed to conduct an interview.
- f) The non-professional staff distorted the query slightly in transmission.

The paper however does not argue against the use of non-professional staff at the information centre. Rather, it supports such use with the following recommendations:

- Orientation and training must be given in communication problems arising from the handling of questions, including techniques for gaining information from the reference interview;
- In-service training should be provided and encouraged, aimed at increasing subject knowledge of reference sources;
- Selection of non-professional staff should be made both on the basis of high education level and paraprofessional courses;
- A policy of referring all questions for which answers cannot be found or for which no approach to the problem can be discovered, should be established;
- Frequent referrals should be encouraged and rewarded as resulting from high standards and concern with good service. In this way, the attitude that says that referrals are an annoyance and a reflection of a lack of competency, will be discouraged.

It is important to note that the success in answering reference queries does not always depend on the professional and non-professional status of the reference service staff. Experience, knowledge of resources, reference skills and subject knowledge have a big impact on the performance of the

reference service. Olszak (1991), supports the argument by pointing out that reference mistakes are common to everybody irrespective of their professional status. His study explores the incidents where mistakes and failures were made by qualified and non-professional reference staff in an academic library. As Olszak describes types of actions that constitute a mistake or failure, it appears that both student assistants and reference librarians do make some of the mistakes mentioned in the study. Olszak further argues that individuals who provide a reference service, make mistakes with about half of the questions that they answer. No mention was made on the varying performance of the different groups. He says that at some point in his study, student assistants or paraprofessionals would identify incorrect answers given to patrons by qualified staff and the other way round. One may therefore argue that it is not yet clear whether one could generalize about the use of professional versus paraprofessional staff at the reference desk or information desk. However, as Halldorsson and Murfin (1977) points out, there are several steps that need to be taken in order for paraprofessional staff to be productive in providing a successful reference service.

Now that some of the barriers presented by the information interview have been explored, it is appropriate at this stage to examine some tentative solutions. Though training should not be seen as the panacea for all the librarian's problems, Halldorsson and Murfin (1977) are correct in proposing orientation and training in resolving the communication problem. To ensure that this kind of training yields concrete results, personnel should be encouraged to develop a sense of responsibility and concern for communicating difficult questions, and for taking pride in the successful resolution thereof. Halldorsson and Murfin propose that in-service education as well as knowledge of reference sources should be provided and encouraged. The suggestion that the selection of non-professional staff for the r

eference desk should be made both on the basis of high educational level and professional courses, should however be coupled with clearly defined key performance indicators that are not only dependent on academic qualifications. For example, the capacity for problem solving should be explored by the interview. The point being made here is that the focus should not just be on the "paper" qualifications. An effort should be made to define the core competencies required to meet and exceed the requirements of the job, and evidence for the existence of such competencies is

what should be sought actively. This does not only lie in "high educational level and library science courses" as proposed by Halldorsson and Murfin (1977).

Over and above the competency argument, questions for which answers cannot be found or for which no approach to the problem can be discovered must be referred to someone who can be of help. This is to say, personnel should avoid judging the boundaries of others' knowledge by their own boundaries. Thus, instead of decrying a lack of approach to a problem, one should explore the possibility of referring the problem to someone else who may have a solution. In cases where personnel lack experience or are incapable of resolving a reference query, they should be encouraged to refer it to more experienced personnel. This would require discouragement of the view that referrals are an annoyance and reflect a lack of competence and failure. Unless the librarian is committed to the idea of the reference interview being an integral part of an effective and efficient information provision, the user will always be disadvantaged in his or her search for information.

2.3 THE LANGUAGE BARRIER

It is generally accepted that information is power, that access to information should be universal and that impediments to the transfer of information should be eliminated. One of these hindrances arises from the use of language.

In this context, language refers to both the day-to-day common usage of the concept, and the specific jargon used in the discourse of information provision. The point being made here is that the concept of language must not be confined to every-day human communication purposes. The jargon used in a particular field of study can be said to be forming the "language" of that field. Hence, it is possible to talk about the engineering of scientific language. Even in this sense, language still forms a barrier in that the scientific language or jargon may be inaccessible to the non-scientist.

The influence of the language barrier, according to Van Bergeijk and Risseeuw (1980:37), is felt more and more as a result of the application of modern methods in literature searching, particularly the online use of databases. Indeed, the reference interview cannot be successful without the common understanding of the language used by both the patron and the reference librarian. Language is the important driving force in the access to either printed or online information.

Encapsulated in the language barrier is the difficulty caused by the lack of cross-cultural understanding of the diverse needs of our diverse users. Every librarian has a set of prejudices, stereotypes and attitudes that exist at any given moment. These serve both as a filter and context for service provision by the librarian, and could eventually affect the patron's access to information. It is for this reason that the following paragraphs will focus on ways of dealing with cross-cultural communication and attitudes. The barriers caused by online and printed information will also be examined.

The language barrier becomes operative when the researcher is denied access to relevant information because it is published in a language that he or she does not understand. According to Haag (1989), every researcher is, to a varying degree, exposed to the foreign language barrier. He states that in general, the smaller the proportion of research published in a researcher's own language, the more dependent he or she is on research published in other languages. In this way, he argues, the researcher is exposed to the language barrier. In general, the under-utilization of one's own language and the over-dependence on foreign language material is detrimental to the research activity.

The language barrier to information acquisition and utilization becomes much more acute when one considers, as pointed out by Kaula (1983:85), that 52% of the world's literature is in the English language and only 48% in the rest of the languages of the world. The cumulative effect of this, as reported by UNESCO, is that whilst most research documents are published in the English language, two thirds of specialists and the reading public have no access to this literature. This is mainly because they do not understand the English language.

To understand the validity of Haag's (1989) argument, one needs to examine the practice where users get a list of references from CD-ROMS that are often not clearly identified as foreign language articles. Users would then request the articles through Inter-Library Loans (ILL), only to discover when the article arrives, that it cannot be accessed due to language problems.

Be that as it may, Van Bergeijk and Risseeuw (1980:37) make the poignant observation that due to nationalistic feelings, political backgrounds and other factors that do not form the immediate subject of scientific research, it is improbable that scientists will ever standardize on publishing scientific literature in one language.

A question still needs to be asked as to what should happen to publications that are written in a language that is not accessible. What aids are at the disposal of the librarian and what are the latest developments in the field?

To emphasize the significance of these questions, Riley (1992) points out that a questionnaire of a study done on the subject showed that developments of services specifically designed to assist researchers to access foreign language resources, are needed.

Most authors on the topic (Kaula, 1993; Van Bergeijk and Risseeuw, 1980) suggest that translations, either published or unpublished, are still the only means by which many people can keep abreast of developments reported in languages other than their own. These authors argue that cover-to-cover and ad hoc translations are the best systematic means of penetrating the language barrier. It is notable however that the development of computer translation systems has accelerated since the early 1990s. AltaVista, amongst others, offers translation facilities for electronic documents.

Van Bergeijk and Risseeuw (1980) point out that there are translation centres that have international emphasis. One of the centres mentioned is the International Translations Center,

which is a network of international cooperation of a number of outstanding libraries and information centres. The objective of the said centre is to:

- a) Maintain as complete as possible an index of translations of publications;
- b) Publish lists of information of translations or arrange for their publication; and
- c) To cooperate with institutions engaged in similar activities and serve as the main co-ordinating centre of an international network for improved utilization of translations.

However, according to Van Bergeijk and Risseeuw (1980), the centre itself is not always able to satisfy the applications because there are a few restrictions. They point out that either the literature are not all translated or translations are not available until some time after the literature's original publication. In this way, the time lag may be problematic when attempting to access information. It would be interesting to know to what extent the South African academic libraries have access to such translating centres and to what extent they are used.

Even though the development of computer translation systems has accelerated, access to electronic documents is not yet as widely available to all library users, let alone the understanding of search engines. Even though the library under study has installed Internet facilities, these are not yet accessible to all users. Cape Technikon Library does not offer access to such facilities. Therefore, access to the foreign language sources would still be problematic. Only when academic libraries manage to offer Internet access to all users as well as relevant training on the Internet, the translations services will become a reality to all users.

Libraries should develop services designed to assist users in accessing foreign language resources. They should also create awareness of translation services and act as an interface between the researchers and the translation services. This would encourage those users that have ignored foreign language material, to use them in future.

Furthermore, the language barrier should be seen in the light of the challenges presented by cross-cultural communication as highlighted above, in the sense that these impact on the efficacy of the reference interview. Most academic institutions in South Africa, for instance, are composed of a majority of students for whom English is a second or even third language. Their inability to express themselves in English may serve as the cross-cultural communication barrier. A distinction must be made, however, between the articulation nuances like accent, pronunciation and intonation on the one hand, and a poor command of the English language on the other hand. A thick accent or poor intonation, or a combination of both, often creates a communication barrier. Given the notion that language is a strong vehicle of culture, not all library staff members in this instance are culturally prepared to serve these students.

Reference librarians need to understand that non-verbal behaviours, that is, eye contact, gestures, body language and tone of voice differ from one cultural context to the other. Needless to say, reference librarians can better enable themselves to understand the individual needs of their users by employing listening skills with an acute awareness of cultural differences. A coping mechanism suggested by Jennerich and Jennerich (1987:74) is that in order to understand patrons better, librarians should ask them (patrons) to repeat what they say or write it down, with the hope of getting someone else who speaks the language to assist. Librarians could also avoid using complex sentence structures and vocabulary, as well as refrain from using library jargon unless it is absolutely necessary, as a way of dealing with the cross-cultural language situation.

It is not the intention of this dissertation to present an in-depth discussion of how librarians can acquire the skills and sensitivities necessary to interact and communicate with ethnically and culturally diverse faculties and student bodies, though these require some immediate attention. The purpose is to highlight the effect of cross-cultural barriers to the provision, acquisition and utilization of information in the libraries that are being researched.

Neither is it the purpose here to present an in-depth analysis of the barriers of cross-cultural communication. Suffice to mention that the cross-cultural challenges should be understood in the context of broader societal inter-personal relations that are heavily characterized by a racial,

gender and class discourse. A detailed exposition of how race and gender dynamics play themselves out in the service provider/patron interface would require expansive research efforts on its own. This however falls outside the parameters of this study.

The discussion of the language barrier will not be complete without mentioning the barrier caused by the "online language." As any textbook dealing with online searching will emphasize, natural language searching requires care and thought if the results are to be satisfactory. A good example in this regard is the "Ask Jeeves" search engine. The searcher must choose search terms that both encapsulate the information request and are suitable for the selected search engine. This makes it necessary to note synonyms, singular and plural forms, variant spellings (including the English language database, American and British spelling conventions), broader and narrower terms, etc.

These requirements can prove to be a hindrance for novice searchers even when working in their native language. The degree of the difficulty becomes intensified when operating in a foreign language. Indeed, the degree of success achieved in the communication of published information depends largely upon the mutual understanding of the terminology used. As Haag (1989:216) asserts, this situation becomes more rife as the advancement of science and the specialization of research are accompanied by an expansion of the terminology required to describe new concepts, techniques and processes. Haag further argues that this situation contributes to the looseness and instability of terminology as it decreases universal understanding and creates problems for the information retrieval systems. As a result, it becomes much more difficult for other researchers to recognize and understand relevant terminology. Over and above these difficulties, the more sophisticated the interface software, as so aptly pointed out by Large (1990:258), the more problems it may create for a user who does not have a good grasp of the language in which the user/computer interface communicates. However, there are advantages of using "natural language" searching systems. Aldous (1996) points out that the use of natural language in database searching is good because it allows the user to access relevant information without understanding how to formulate queries or knowing about the structure of the database. In this way, as Mauldin, Carbonell and Thomasson (1987) confirms, natural language interfaces can

translate user queries into coherent search frames. Library novices will therefore benefit from services such as those offered by "Ask Jeeves" , through the availability of computer facilities.

As a way of dealing with this online language barrier, both Large (1990) and Van Bergeijk and Risseeuw (1980) advise that databases with bilingual or multilingual elements are clearly of great help as long as the searcher knows at least one of the carrier languages. The availability of an up-to-date printed or online thesaurus helps in search planning, directing the user to related terms.

The tremendous information delivery capabilities of online CD-ROM services will only be fully realized when the database producers themselves pay more attention to the language barrier(s). It would be necessary, therefore, for the major role-players in the online industry to apply more sustained efforts in providing multilingual access, at least in more widely used languages. Large (1990) suggests that the willingness of individual companies to invest for the sake of a clientele outside of the database heartland of North America and Western Europe, remains doubtful. Yet, the contradiction, as pointed out by Large, is that "it is by such investment that the expanded market they so fervently crave for may be realized!" (Large, 1990:260).

CHAPTER 3

THE INFORMATION RETRIEVAL BARRIER

3.1 SUBJECT INDEXING

The manner in which stored information is organized and packaged will determine the ease with which such information can be retrieved. Moreover, the point of retrieval is the most critical in the chain of events comprising the process of information search and provision. Indeed, the value of the related steps in this process is dependent on the contributions they make towards information retrieval.

The user query cannot only be resolved by good communication and reference skills as mentioned above. Most answers to the query demand that users consult various reference tools in the library. These tools are used to organize and control scholarly records in the research library collection, and they are referred to as cataloguing systems and classification schemes.

Cataloguing systems are intended to provide a descriptive inventory of the physically discrete items included in each library collection (Smith, 1990). Library classification schemes, on the other hand, are an attempt to relate each item in each collection to its most relevant discipline.

3.2 CATALOGUING

Cataloguing is a job requiring great detail to ensure that entry points are provided in all the possible places that readers may expect to find them. If this is not achieved, the user becomes disadvantaged by the inadequate system, as he or she assumes that when the book is not in the catalogue, then the library does not have it. Users seldom approach librarians or the reference desk after they have searched the catalogue.

At another level, the cataloguing challenges presented above are magnified by the level of indexing, which is appropriately identified by Haag (1989) as being too shallow. Notwithstanding

the usefulness of indexes in searching for references in any given topic, indexes are woefully inadequate when it comes to tracing references on aspects of a topic. A good example to illustrate this point is that American and European classification schemes are said to be not expansive enough to cover Black Studies material. Most libraries today have acquired a lot of African literature, which cannot be easily retrieved due to the shallow nature of indexing tools. However, it is unlikely that the problem with Black Studies material is due to a lack of specificity. Nevertheless, an indexer or classifier also need to know about a topic in order to apply the index language correctly and at the appropriate level. The failure of the level of subject indexing to meet the required level may indeed pose a barrier to information acquisition.

The African Studies Library of the University of Cape Town (UCT) is a notable attempt to address this situation in a much more comprehensive way. The whole section of the library is dedicated to African Studies. The attempt at UCT was prompted by the fact that the African Studies Library was established to cover broad African topics and therefore the librarians felt that they needed to make the subject index more relevant to the African issues. The Librarians felt that the Library of Congress Subject Headings were limited in covering African literature and terminology. They therefore designed a database by identifying new African terms as they were cataloguing new information sources. The terms identified had to go through a committee that was established to approve the inclusion of the terms onto the African Studies database. The Librarian at the African Studies Library at UCT has pointed out that currently, there is not much use of the special database as the Library of Congress database has included most of the African terms in its database. Nevertheless, the above is an example of what could be done to make all sorts of information accessible to users.

To get back to the issue of cataloguing, the database index sometimes limits access to information acquisition and retrieval. For instance, the database managers do not pick up certain aspects of a journal when indexing. This restricts users from accessing the sought data in the sense that the searcher uses different keywords.

3.3 USE OF TERMINOLOGY

The choice of terminology assigned to materials, the number of subjects assigned and the lack of consistency in some instances constitute a barrier to information. Malholt (1990:96) suggests the importance for library staff of investigating the standards and criteria used by producers in determining inclusion and exclusion of terms. Indexing quality should be a major concern for investigators who focus on the applications aspects of research in indexing. In other words, the indexer needs to understand the needs and thoughts of the user to a certain extent.

Bibliographic information and indexing systems can serve as barriers to information retrieval, as reported by Haag (1989). This is due to the fact that bibliographic descriptions in references were found to be lacking, incomplete and inaccurate. Moreover, such references are not standardized. For instance, periodical publications are inconsistent in their use of titles in that these do not reflect unique names. The fact that a user searches for a book and calls it up on the OPAC screen with incomplete bibliographic information is a disappointment for that user.

The online catalogues used by the libraries under study could cause this problem or it may just be mistakes committed by the cataloguing staff. Even though the catalogue is the key to a library, cataloguing codes may limit some cataloguers so that they forget that their readers are unaware of such codes. They do not consider that readers may expect to find books under entry points other than those laid down in those codes. We all know that if a record of a book is not found in a catalogue, where the reader expects to find it, then that book is as good as lost. Discussion on control language versus the natural language issue will follow in the next section that deals with the impact of online catalogues on the users.

3.4 PAMPHLETS AND MONOGRAPHS

The difficulties generally experienced when retrieving monographs and pamphlets illuminate further the challenges of subject indexing. The extent of the barrier presented by subject indexing is best illustrated by the fact that monographs, just like pamphlets, are not all easily accessible to users even though they sometimes constitute the bulk of the library's acquisition. Even though they are given bibliographic descriptions and are indexed in the subject catalogue, there is still a barrier to accessing such monographs and pamphlets. Wormell (1981:26) observes that the classification systems are defective when it comes to more specific and detailed subject retrieval. She points out that the library's investment in books is partially wasted. This is mainly due to the fact that the books are under-utilised as a result of access being available only to those who search for known items. In other words, Wormell's point is that subject indexing should go beyond overall description to encompass micro themes in each document.

Though many current computer-based abstracting and indexing services provide detailed subject access to journal articles, little has been done to provide better retrieval capabilities for monographs and pamphlets. Currently, most libraries keep pamphlets in a pamphlet file "hidden" somewhere in a corner without any serious cataloguing done with them. Kranz (1985:39) points out that a broad and diverse compendium of under-utilised information is available in pamphlet format in the academic library. Its enhanced use, as seen by Kranz (1985) is impeded by a lack of effective means of catalogue access. Complete cataloguing is often done to selected pamphlets only, and then generally for cost reasons. Consequently, the library patron is provided with only one access point to an item in the pamphlet file collection.

The reality, as put forward by Kranz (1985) is that the majority of pamphlet materials purchased for academic library collections are of sufficient informational importance to justify first level AACR2 (Anglo American Cataloguing rules) description. This means that they deserve complete description, like monographs. This description will provide an informational adequate bibliographic record to which an author main entry, if appropriate, and additional entries, including multiple subject entries, may be attached.

In order to facilitate access to the pamphlets information, Kranz (1985:41) suggests that pamphlets be assigned headings using the same subject authority applied in cataloguing the library book collection. This broad classification would be sufficient to achieve subject collation and browsability in the pamphlet file. Such information is part of "grey literature".

Grey literature also forms an important part of the collection of many academic libraries, and it constitutes the most current material on some topics. These materials belong to the primary sources of information and it plays a very important role in the information transfer process. Debachere (1995:94) defines "grey literature" as documents not readily available via conventional bookselling channels and difficult to identify and obtain. An example is information about companies, annual reports, financial reports, etc. These information sources used to be difficult to procure, but with electronic publishing, they are now willingly provided by companies. The issue is organizing such information, which is normally kept in files without being properly indexed and catalogued on the library system.

There are barriers in the organization of grey literature. The problem is not knowing about its existence, identifying it, processing it and accessing it. The search for grey literature has always been a challenge for librarians because of its worldwide extension and rapid development. However, there are some very creative opportunities for information professionals to become better informed about grey literature in an electronic age.

Debachere (1995) points out that the number of researchers is growing, whilst office automation provides possibilities of publishing the results of the research by means of sophisticated workstations. He states that this is due to the cost of traditional publishing that is rising steadily, whilst the budget for libraries is decreasing for the acquisition and processing of such information. Hence, electronic grey literature is becoming an attractive and convenient way of rapidly disseminating information. This is more so for the sciences, where scholarly communication holds as its cornerstone the tenets of scientific enquiry and distribution of the results of research to the academic and the industrial communities. It is however expensive to accomplish such through print, and there are delays as well. In this way, electronic grey literature plays an important role in

this field. However, not everybody can access electronic grey literature. The question of access becomes an issue as only a limited number of users have access to PCs.

There are, however, advantages in the use of grey literature. Gelfand (1998) lists the following advantages:

- a) Distance education has great success in reaching students in remote locations with access to material that were once only found in major libraries;
- b) Professional meetings and conferences can share the information exchanged speedily;
- c) Additional opinions can be canvassed from experts with fewer time delays. One can deduce from the above that the potential rift that divides the rich and the less endowed is made up by simpler technology and better access. Furthermore, in making grey literature easily accessible, wide spread availability of computers for all college and university students and faculty would be recommended. Debachere (1995) asserts that there is a need to realize that it is not enough to collect material in our libraries but that active information consolidation and repackaging is required so as to provide information capable of effective dissemination.

Another problem related to the subject retrieval of monographs is the difficulty in describing the varied and extensive contents of a book by means of a limited number of classification codes. For instance, most books in libraries have more than one subject aspect, and they often overlap with each other. Architecture books, for example, might have some art and design material in them.

Wormel's (1981) discussion of the subject access project that was done in her library highlights potential solutions to the subject access problem. This project was an approach to develop an efficient on-line catalogue for retrieval by subject as well as by bibliographic data. The said database had references to pages or chapters wherein the search term is dealt with in a book. To take this point further, a file was created where every word and search string would be searchable in the free text mode. Selecting terms from the table of contents and/or the index would do this. Wormel (1981) indicates that enriching existing catalogue records with terms like "content" and

"index" would augment the subject description of the contents of the book. The idea of this project would be to produce descriptions of books taken from books themselves, using the terminology found in books. With the tools currently available in the libraries under study, the subject of a book can be determined only through the classification codes and title words. This permits searching a broad subject area, but not specific aspects of a book.

Seeing that the subject descriptions will then be abstracts from each book, some efforts will have to be made to improve the content pages and indexes in books so that those extracts will be more content bearing. The standards for book indexing should therefore be seen as the means to ensuring that the index will allow the reader the most precise effective access to a book's contents.

With the Internet providing most of the information in this age, one can notice the barriers caused by the lack of catalogue standardization or even lack of cataloguing itself. Internet sources have become the standard of the resources in academic libraries. Despite this fact, issues surrounding the selection of these sources as well as providing access to them through cataloguing, continue to present problems for these libraries. Cataloguing decisions are further complicated by the fact that long-standing cataloguing conventions do not readily apply to Internet sources. Moreover, as more and more information becomes available electronically, the problem of finding it becomes more acute because of the lack of organisation and quality control.

Chapesiuk (1999) however points out that in 1995, a number of librarians, archivists and scholars met to reach some agreement on what the core of a descriptive record for items on the Internet should include. The result, he states, was 13 elements that they named the Dublin Core Metadata Element set. Metadata therefore connotes cataloguing and the professional control of materials by use of predictable terms and fields. The initial core elements have since been expanded to 15. These include: title; author/creator; subject; keywords; description; publisher; other contribution; date; resource type; format; resource identifier; source; language; relation; coverage and right management (Chapesiuk, 1999).

Milstead and Feldman (1999) point out that metadata is crucial for searching because it can improve matching by standardizing the structure and content of indexing or cataloguing information. When used effectively, metadata makes information accessible by labelling its contents consistently. It leaves a pathway for users to find the information they need in one place. However, to be successful, a metadata scheme must also establish standard structure and terminology. It is not helpful to have fields labelled author/creator/sculptor or composer, if these fields, which all serve the same function, cannot be mapped to the same single concept (Milstead and Feldman, 1999). Similarly, creating an author field but allowing use of, for example, Joe Smith, smith Joseph R or Smith JR as alternative forms of the same name does not serve the purpose of grouping all works by the same person, regardless of what form of name is used. These authors suggest that one form be established, through either an automatic authority list or a standard controlled vocabulary whereby links would then map alternative forms to the established form.

The above method of standardization is the one that information professionals use. On the other hand, authors without a library background catalogue some Internet sources. In this case, more attention is given to the structure of the data than to its contents. This represents severe limitations because the authors are concerned with the fields that are established but not with the terms that are put in those fields. Metadata cannot fully enable access to sources of information unless it is subjected to a certain amount of standardization. Milstead and Feldman (1999) point out, however, that the newer search engines are designed to search on ill-assorted collections of unstructured text. The web search engines of this nature will always be significantly helpful, as most web authors (non-information professionals) are the ones applying metadata. Unless the author of the book is a trained indexer, he or she is not likely to produce a high quality index. Even though the author or the creator knows his or her work better than anyone else, this does not mean that the person is able to see how his or her work fits into the universe of knowledge so as to apply useful tags.

Despite the concerns mentioned about metadata, the Dublin Core could be useful if used properly. At the moment there is lack of formal maintenance, the technical state is unstable in that changes

are made on an ongoing basis and stability does not appear to be improving. Moreover, the core has not been widely applied and as such a critical mass of use is lacking (Millstead and Feldman, 1999).

The library profession needs to broaden its vision to deal with the enormous challenges and opportunities that the Internet brings. In a nutshell, using Internet encounters provide barriers to information access in the same way as accessing pamphlets and monographs in academic libraries. The above outlined efforts will alleviate the difficulties of subject indexing.

3.5 THE IMPACT OF ONLINE CATALOGUING ON USERS

This part of the thesis focus around the difficulty experienced by users when retrieving the organised information, and suggested solutions to deal with this situation are examined.

At one level the retrieval barrier, as highlighted by Smith (1990), embodies the highly structured formality that the research librarian took great pains to develop, and which is essential to the organization of scholarship. This functions not as a help but as a barrier that divides the scholar from the library. This is mainly due to the fact that even though users have similar needs which evolve around the desire to find and retrieve information, they have differences amongst themselves. They cannot therefore be treated as a homogenous group.

These differences exist mainly in how the individuals perceive the world and what terminology they use in describing a problem and identifying its parts. It can sometimes make or break an information search. It is notable that modern OPACs usually offer keyword access that rather reduces the problem of needing to know precise subject headings, but it introduces the problem of context.

In addressing this situation, Markey (1986:61) makes some very comprehensive recommendations to help users with subject searching. These include:

- a) The availability of cross-reference online to increase the searcher's chances of matching his or her own entry access point to the correct term;
- b) The availability of online-related word-lists to direct users to more general terminology. In this way the users could browse online-related word-lists in order to select more general subject headings.

These recommendations are strengthened by Malholt (1986:99), who identifies that users require and deserve systems with rich and varied access vocabulary that will lead them into standardized and controlled vocabulary of the discipline. Markey (1986:61) also argues that the existing and future on-line catalogue must contain on-line vocabulary assistance and prompts to help subject searchers who fail to retrieve any relevant output.

In a study conducted by Markey (1986) on catalogue use in various libraries, it was discovered that users prefer subject access above any other access point in the search for information. Furthermore, Markey found that getting the right subject word to use is not easy, and this presents a barrier to information acquisition. Students often have to use dictionaries to see if the word is spelled correctly or whenever they need to check the Library of Congress Subject Headings (LCSH). Difficulties are experienced with the fact that there are no books in the library on the subject words listed in the LCSH. On this issue, Markey (1986) suggests the creation of the augmented subject access to online bibliographic records. He perceptively argues that the augmentation would increase the users' chances of matching the input terms with the vocabulary in the online catalogue.

Unfortunately, students may not know that they must look under the full bibliographic record to find subject headings and similar books with relevant headings. Patrons in Markey's study aptly illustrated this point. Frustrated about not finding the right subject heading, these patrons noted that they entered many different terms before they matched the online catalogue's indexed subject heading terms. Alternatively, they depleted their supply of subject terms and gave up the search.

On the other hand one can argue, like Markey, that there is no statistical difference in retrieval performance between controlled and natural-language indexing systems. His contention comes out of the Cranfield experiment conducted by Belkin and others. The test was designed to compare the performance of different indexing languages, including natural language, in a laboratory environment.

Belkin and Oddy (1979) found that natural language, with the right modification of confounding synonyms and word forms combined with simple coordination, could give a reasonable search performance. However, a number of evaluation studies have indicated that natural language may offer several advantages over controlled vocabularies in many retrieval situations (Lancaster, 1979:287).

A natural language system has the major advantage that it is completely specific. In contrast, a controlled vocabulary system is not completely specific. Instead of using all the terms occurring in the literature of a particular subject field, the controlled language uses a selection only. Lancaster (1979:284) argues that the thesaurus may be very specific, but it will never be as specific as natural language. If one were to conduct a highly specific search, the natural language system is likely to be much more useful than the controlled vocabulary because the former is the language of the discourse of a particular subject field. It is a language used by its practitioners to write and communicate.

It might seem as though there is contradiction with regard to the use of metadata on the World Wide Web and the author's support for the use of the natural language system on online databases. The use of metadata in online databases is most relevant because of the underlying nature of the World Wide Web. According to Taylor (1999), the Web has become a two-edged sword because it has become more difficult to find relevant information. For the outsiders and casual users, much of the useful material is difficult to locate and therefore the information contained is effectively unavailable. Thus, the introduction of the metadata elements as part of the HTML coding, was in part an attempt to encourage search engines to extract and index more structured data, such as descriptions and keywords (Taylor, 1999).

According to Taylor (1999), the Dublin core metadata elements can also be extended to meet the demands of more specialized communities. Taylor argues that from the onset, the Dublin core creators recognized that some resources could not be adequately described by a small set of elements. That is why they allowed the addition of specialized fields. Cover (2001) concurs with Taylor's argument by saying that the majority of work on the Dublin core has addressed the definition of semantics rather than syntax or structure, in so doing allowing rapid conceptual development free of constraints imposed by specific implementation environments.

In the view of authors mainly compiling their own metadata elements, rather than a professional cataloguer, it is worth mentioning that metadata is good as a systematic method for describing resources and thereby increasing access. If the information is worth making available, then it is worth describing it with metadata so as to maximize the ability to locate it. The bottom line is that some form of description is better than none at all, as long as it is able to facilitate in the consistent discovery of resources.

Given the above situation, Malholt's (1986:107) advice regarding the traditional media merits some consideration. He suggests that new levels of access must be designed to address information needs at the chapter, subsection, diagram and illustration level. This view also came out in Markey's study. In that particular situation, the library patrons in the focus group interviews were eager for the addition of any information to the MARC (Machine Readable Cataloguing) records that would give them information about the subject contents of books. Some of the things they asked for were the inclusion of indexes and tables; annotation; summaries or abstracts of books, titles of essays in volumes of collected works and assignment of more subject headings to books. When online catalogues manage to have most of the above-mentioned access points, then students or library users will be able to find most of the information they are looking for in the library.

It is therefore time for a large-scale review of access to databases that are not tied to existing systems, but which are seeking commonality among the idiosyncratic approaches that individuals

take in accessing information. In other words, users must be given an opportunity to choose material with increased precision without having such materials at hand. The new system would therefore have to respond to users as individuals, rather than in classes.

University of Cape Town

CHAPTER 4

THE INFORMATION TECHNOLOGY BARRIER

4.1 INFORMATION TECHNOLOGY

Generally speaking, the utilization of technology in a particular field is supposed to enhance developments in that field. There are instances, however, when technology serves as a barrier rather than as a facilitative tool for information retrieval. When it comes to information technology, it is important to note that not only do the online indexes and subject catalogues, as discussed in the previous sections, pose a barrier to subject retrieval, but also that information technology per se is a barrier to information access. The computer phobia that users, and in some cases the librarians, have towards this vehicle of information delivery, cannot be left unmentioned. The tendency of some academic libraries to give up other forms of information delivery for the sake of computer technology does not make it easy for the users to acquire the information they need.

It is unquestionable that libraries should have access to this kind of technology. What is being examined here are the barriers that are associated with information technology and how libraries can address some of the problems encountered by users.

4.2 COMPUTER PHOBIA

From the researcher's experience as a librarian, the reluctance of both students and faculty members at the Cape Technikon Library to approach the OPAC to search for information was observed. Users would ignore these tools and instead approach the reference librarian or any other staff member they came across for information, rather than engaging the OPACs that are strategically placed at the entrance of the library. What this means is that the user is already threatened by the OPAC system before even punching in a key and attempting to struggle with the right commands. When this happens, the librarian is expected to help out and this usually entails literally conducting the search for the user.

There is nothing unbecoming about the above-outlined situation. The fact remains that in most cases the users cannot find exactly what they are looking for anyway, as they experience too much pressure and tension caused by the computer contact. Malholt (1986: 100) attests to this fact by pointing out that technology limits access in most libraries in a psychological way. The psychological barrier presented by information technology has been noted by Smith (1990: 24) where lecturers stay away from libraries, and prefer when necessary to send research assistants in their place. Needless to say, the lecturers' action is obviously not caused only by the computer technology phobia. There could be many reasons, but the bottom line is that the phobia exacerbates the barrier to correct information acquisition. Scholars such as Smith (1990) and Malholt (1986) have shown that users have a tendency of ignoring the bibliographic apparatus that the librarian has so painstakingly created and assembled, and proceed to locate information by other means. In this way, they generally invest very little time in the entire process of the library.

It should be noted that the barrier under examination is not in any way caused by library systems or personnel. It is a barrier inherent to the user's predisposition to utilize all the search tools available in the library. The key remedy for this barrier is for the reference librarian to put an extra effort in offering assistance in the use of the OPAC systems and CD-ROMs, amongst others.

4.3 SUBSTITUTION OF OTHER INFORMATION MEDIA

Some library users are not entirely comfortable with change. This could be the reason why they are seen to be shying away from the library's new technology (though not so new), still preferring the old card catalogues, print indexes, etc. The problem presented by information technology to this group of users is caused by the fact that some academic libraries substitute electronic forms for print-on-paper and other media because it makes economic sense and provides improved access. However, the users do not find it easy to do searches on the network. There are those who miss out on important information because of computer phobia. That being the case, one may not argue against the long overdue change that the libraries under study are experiencing. What is needed, is training for all users.

Besides the fact that users may still prefer other forms of reference medium, it is also important to note that not all information material will be captured by the technology. The impact of technology on users could be that availability would be reduced rather than improved, as lucidly observed by Plassard (1989:8). The essence of this argument is simply that there is a risk that advances in technology may restrict rather than improve availability. Thus, not providing microfiche or print index facilities to a user who is comfortable using them could be presenting a barrier to information provision. The mistake that librarians make, is to assume that the need for information is finite, and that it can be satisfied through any single medium.

4.4 LACK OF TRAINING IN THE USE OF TECHNOLOGY

[Lack of] "Training is the greatest barrier to the growth of successful online search operations. It plagues everyone – professional searchers, end-user searchers, and professionals who enable end-users to become searchers" (Quint, 1987:57). Having to face the use of technology in all aspects of the library, most users lack training in the use of the systems. Consequently, a substantial group of experienced searchers are performing simple searches and making little use of the interactive capability of online systems. It seems that only an elementary understanding of the online search process is available.

With the continuing expansion in the volume of published information, there is a demand on parallel increase in the information search and handling capacity of the users. Mauldin, Carbonell and Thomasson (1987) aver that because this capacity is limited, the required information may exceed the available search capacity. This situation makes information handling and retrieval much more difficult, thus causing a decline in information search effectiveness. What this means is that when a user or searcher fails to spread his or her discipline demands, an information barrier occurs. Mauldin's argument is still true today, as seen with the information overload on the World Wide Web. Users are getting too many hits when searching on some of the search engines and as a result, they give up the search due to time constraints and exhaustion.

One may argue that the need for intensive training in the command language, modes and protocols of these systems and the need for intermediaries to perform searches may be presenting barriers to many users who are used to self-service at the printed index or library catalogue.

As highlighted by Niemeier (1986), there is a strange twist of irony presented by the extra-ordinary development of information technology. This technology, which has made the academic librarian more effective, more efficient and able to make contributions to instruction, also has the potential for misguiding and frustrating the librarian's objective.

4.5 MECHANISMS TO DEAL WITH THE EFFECTS OF TECHNOLOGICAL BARRIERS

It is important to note that only certain barrier conditions can be corrected by better system design, equipment or relevant or appropriate choice of databases. Other barriers, like ignorance in the use of computer systems in libraries, will have to be removed by training the users and staff. The development of more communication across information systems and services will also help to alleviate the barriers. This means that every stakeholder in the library under study needs to be trained, and a strong liaison cultivated between the publishers of the computer systems and the librarians in order to sustain the training.

The literature stresses the need for collaboration between the suppliers of information systems, print and non-print and the librarians. When considering new systems, librarians should choose vendors that take cognisance of user demands, or they should rather choose systems that will meet customer needs. This move will indeed simplify library use by not forcing users to learn too difficult systems. Taken a step further, this move necessitates a market research approach that should take the system developers into libraries to have a feel and understanding of how librarians think and work. This will help the developers to understand the logic employed by the patrons in seeking for data and the technical expertise of the people who will use the reference product. The above argument takes into consideration the fact that the way database producers market their products is partly through differentiation: one chooses a database from one supplier rather than another because of some features that the search mechanism might have, amongst other things.

The above line of thinking, when fully unpacked, implies that academic libraries should even go to the extent of boycotting products that make the finding of information a painful process. It should not matter whether the products are books with poor indexes, or OPACs that make the process of finding information in the library overly complicated for the average user. As it has been argued already, the diversity in the features of languages of online retrieval systems and the myriad of databases that are currently available, present a substantial barrier to information transfer.

The main objective, as argued by Plassard (1989:9), must remain being the provision of high quality service to users. Hence, the most important goal is to provide easy, efficient and immediate access as well as long-term availability. Downes (1990:61); Plassard (1989:9); and Malholt (1986:100), are all in agreement with the researcher's view that developments in new technology should be reviewed periodically with the view of determining implications in the light of that goal. A strategic decision needs to be taken about the steps that must be followed to ensure that technological advances are beneficial to all stakeholders, particularly users. This elaboration is important because, after all, librarians are close to the consumer (i.e. faculty and students), who must in turn decide whether they like the product to be consumed.

4.6 TRAINING OF LIBRARIANS

It is a paradox of technological advancement in the information industry that, while users have become more independent as computer technology advances, their need for librarians' assistance to solve complex problems is becoming more apparent than before. As students and other users become more sophisticated in their understanding of the electronic environment, they rely on the librarian to respond effectively to their needs. It is therefore obvious that the advancement in technology impacts greatly on the librarian's role as the facilitator of information access, and for this purpose the librarian needs to acquire new skills and develop special expertise. In fact, librarians need to acquire a myriad of expertise in a large variety of subjects (Fidel, 1990:147; Reichel 1988:29). These are ranging from knowledge of computers to principles of bibliographic

control and methods of training. Such expertise is necessary to enhance the information literacy levels of students and other users.

The demands placed on the librarians due to the large-scale automation of the services they provide are more immediate than they ever were in the past. Special training interventions must be embarked upon to clear the hurdles that might be caused by this situation.

The training of librarians should not be seen as a solution to all the ills and challenges presented by technological advancement in the provision of information. The training should rather be viewed and understood in a much broader context of information literacy for both librarians and users.

University of Cape Town

CHAPTER 5

INFORMATION LITERACY

The point cannot be emphasized enough that the effective use of the modern academic library requires a lot from both the researcher and the librarian. A researcher, library user or any other user for that matter, must first become familiar with the library's bibliographic apparatus. This means not only knowing the organization and functions of the library's catalogues, but it also entails being aware of and knowledgeable about the numerous other catalogues, indexes and bibliographies.

The barriers to information access that have been examined in the preceding sections can be adequately addressed by information literacy training intervention for users. The concept of information literacy must be differentiated from user education. The former concept covers a broader base and encompasses a wider range of skills. This does not only include knowledgeability of a particular subject. Information literacy also refers to the ability to find and effectively utilize information of any kind, in any format.

Information illiteracy or lack of bibliographic skills presents a barrier to information retrieval. The library can have adequate resources and sophisticated technology, but if the users are not able to find the information they are looking for, this equipment would be of very little use to them, if at all. No matter how well indexed and catalogued the books are, and irrespective of how well the reference librarian conducts his or her reference interview, information illiteracy can still present a barrier. This is mainly due to the fact that not every reference interview can lead to bibliographic instruction. For this to happen, often the library would need extra staff to handle the pressure. Furthermore, books cannot be catalogued and placed in collections if people cannot read them. Information literacy is essential in the reduction of information access barriers.

Due to the fact that the extent of a user's subject knowledge and information handling experience somehow determines the level of information literacy for that particular user, it is safe to conclude that the information acquired by users is can be limited. There is the risk of exposing the

researcher to a number of failures, including producing doubtful and possibly outdated results, if the requisite skills are not soundly developed. Computer searching is a dynamic and challenging experience that can also be frustrating, chaotic and demoralizing. Indeed, for most of the information retrieval tasks, one does not simply ask the computer a question and have it respond with relevant articles, and nothing else but relevant articles. A dialogue between the user and the computer must ensue (Wormell, 1981:24), because it is this interface and dialogue that accounts for the positive aspects of the search.

This means that on the one hand the online system represents the technology, whilst on the other hand the researcher must provide the technique. In other words, if technology improves access to information only, it does not necessarily enhance intellectual access (Madaus,1987:608). The information handling process is a constant and complex interaction between the source and the user, and this calls for more than just the ability to access the information. The said interaction demands a well-developed repertoire of information handling skills. These are not readily acquired but they mature over time through training and experience. Librarians must embrace these skills in information seekers who display them. In this context, the point that is argued by Fidel (1990:139) should be emphasized - that library instruction, reference assistance and staff experience are of paramount importance in that patrons need help in forming a correct mental model of the online catalogue.

Haag (1989) has argued, in a very fitting manner in terms of the line of argument pursued herein, that it is incumbent upon the user to have the following attributes: Knowledge of the subject being researched; realization of the value and importance of information; familiarity with library stock and available information facilities and services, etc. Unfortunately, not every researcher possesses these attributes. The biggest barrier, it seems, is that although many users may lack these skills, only a few of them are willing to request assistance from the librarian. There could be many and varied reasons for this reluctance to ask for help. One of these is certainly the "ignorance" of the fact that librarians are there to help users in their search endeavours and not just to serve as custodians of information. The other reasons could be the librarians' misunderstanding or underplaying of their role as assistants and service providers to the patrons.

One of the ways of effectively removing the barriers to information access and utilization is to embark upon well-organized and stable information literacy programs for users. These should entail, for instance, constant training of students in a systematic way, with evaluation mechanisms and activities in place. There is already ample literature on how this can be achieved, for example Durrance (1990); Fidel (1990); Jennerich and Jennerich (1987). The main theme emanating from the literature reviewed revolves around the need for librarians to learn about specific information requirements and characteristics of well-defined user groups, in order for bibliographic instruction programs to succeed. The users' information requirements highlighted herein can be met by a variety of formal and informal methods of instruction, and these can be tailored to patrons' individual needs.

The experience of the researcher in interfacing with students, for instance during the orientation period, suggests that the librarian should try to conduct at least one interview with the lecturer / subject teacher to determine what type and extent of instruction will be required, before library instruction can take place in any meaningful way. Indeed, the gist of the information literacy barrier lies in getting academics to play a value-adding role in the process of bibliographic instruction.

It is not surprising, therefore, that there is a very weak working relationship between the academic staff and librarians (Mahlangu, 1998). The crux of the matter is that librarians do not feel accepted by academics as educators, or at least co-educators. This stems largely from the misconception that the librarian is trained to perform basic routines and to administer the library. Hence, it is seemingly not expected of the librarians to be involved in the utilization of organizational resources in this regard.

The essence of this argument is that the role of the librarian should not be relegated to the status of mere administrator or conduit in the chain of information seeking, accessing and utilizing. This is particularly true when applied to the arena of information literacy. Training is everyone's problem, especially librarians, because they constitute the "resident experts" for most end-users (Quint, 1987:58). Indeed, most of the literature consulted on information literacy stresses the need

for collegial and co-operative relations between academics and librarians. The latter should understand that educating, rather than retrieving information, is the primary route through which the profession can improve its clientele's knowledge base and information literacy level. In other words, teaching end-users how to fish (for information) rather than giving them fish (information).

The misconceptions about the role of the librarian in the enterprise of information literacy create problems not only for the librarians but for the users as well. The sources of this state of affairs are manifold. Cowley (1977:63) argues that the fullest use of libraries in the educational setting is hampered not only by the lack of resources, but also by the inability to define and understand their true functions. Indeed, how can one understand fully his or her role as an educating librarian when the majority of stakeholders in the field do not support the role that librarians should be playing?

On the other hand, librarians themselves are not entirely without blame for the misconceptions surrounding their role. The librarians need to be familiar with educational theories and current developments in their field, in order to be of great value to the end-users. They need to be aware of the broader objectives of the institutions they work in and the way in which the library can contribute towards the attainment of such.

Librarians, in conjunction with educators, must develop programs and mechanisms that will help students to acquire information literacy skills. This will help to remove or alleviate the barriers towards information literacy. The said programs would be required for purposes of identifying the nature of their information need, as well as locating, analysing and synthesizing the information. The librarian would need to spend more time working directly with faculty in the design, implementation and evaluation of educational programs. This co-operation should extend to the determination of faculty and student needs. Helping users to be self-sufficient requires that both academics and librarians share information about the way libraries organize the world of knowledge and information.

The above-outlined co-operation is necessary because information literacy is greatly enhanced when located within the discourse of institutionalised knowledge acquisition. This is to say the

project of information literacy delivers rapid results when incorporated into the courses that students are already studying. This helps to minimize the chances of compartmentalizing knowledge and conversely to make it context specific.

In order for it to be effective, the acquisition of information literacy skills must be tied directly to learning and expected learning outcomes. These skills must therefore be integrated into the curriculum of schools and institutions of higher learning. Most importantly, the teaching of information literacy in all disciplines must accompany the teaching of critical thinking, problem-solving, and oral and written communication.

Without information literacy and a joint venture between faculty, administrators, librarians and students, there will always be insurmountable barriers to information access. Information technology is changing the learning environment at an ever-increasing rate. While such technology provides improved opportunities for locating and accessing information, realizing these opportunities requires knowledge and skills that are not easy to acquire.

University of Cape Town

CHAPTER 6
ACCESS AND AVAILABILITY

6.1 AVAILABILITY OF RESOURCE MATERIAL

The most obvious barrier is the unavailability of books and other resource material in the library and resource centre. This barrier will not be removed by the accuracy of the cataloguing system nor the information literacy levels of the users. No matter how well the librarian conducts the reference interview and speaks in the language most understood by the user; no matter how accurately indexed and catalogued the books are; irrespective of how well-trained the users and the librarians are in retrieving information using high technology - if the books and sources of information are not available in the library this will constitute a huge barrier to information access, retrieval and utilization. There are several factors that contribute to the unavailability of information at Cape Technikon Library. The most prominent reasons will be examined fully hereunder.

Notable amongst the numerous difficulties that frustrate the goal of making information available at the Cape Technikon Library are: the processing of the library material (which includes, amongst others, cataloguing, binding and ordering of books); loan periods; copyright laws; miss-shelving of books; and gaps in the collection. The gaps are caused by, amongst other things theft, hiding of material by users, lack of co-operation from the academic staff in the ordering of books and, lastly, the lack of subject knowledge by the librarian.

It is evident that some of the barriers highlighted above are necessary processes that must take place in the (normal) running of the library. The purpose here is therefore not to advocate the elimination of these processes. The aim is to identify them and point out how they impact on the process of information availability and retrieval.

It is believed - and this belief is backed by empirical studies - that user behaviour can be explained to a large extent, and is governed by availability of books and other information sources. Indeed,

in the perspective of the viewer, as pointed out by Bing (1997:266), the decisive quality of libraries is the availability of their collection. What a user cannot find by stretching out his or her hand will not be easily available. Consequently, it will not be used as frequently as may be justified by the user's task.

6.2 LOAN POLICY

Every library has a loan policy of some kind, even if it can be that no books may be removed from the library. Academic libraries commonly have several policies. For example, some materials may be confined to the library, and some may be borrowed from a reserved collection for a few hours or a day (overnight), whilst the rest can be borrowed for a longer period. Needless to say, these loan policies impact on the availability of the library material in one way or another.

For instance, books that are confined to the library, that is, reference books, video material, etc. cannot be taken out of libraries in most cases. This arrangement is designed to control the stock so that all users can have access to it. On the other hand, this control mechanism restricts users, especially because not all of them have time to spend in the library. As a result of this arrangement, the user will end up only utilizing certain sources and overlooking some, which may have been crucial to his or her pursuit.

Furthermore, the issuing of books for a longer period also impacts negatively on the users. This is mainly due to the fact that the only person who benefits from this system is the one who has the book in his/her possession. Those who cannot find the book when looking for it are disadvantaged at the moment of their search. Buckland (1975:75) confirms the above view by pointing out that it is the loan period (or the retention time) that is important in determining the immediate availability of books.

Unfortunately, the retention time is not directly under the control of the librarian. As earlier argued by Buckland (1975), the librarian can only control the following regulations (which together constitute a loan period): viz. the official loan period for a given category of users. This refers to

the time by the end of which a borrower is required to return or renew a book; secondly, the librarian can control the number of renewals permitted, and lastly, the number of books that the borrower may have out on loan.

As for the retention time, the library relies on the discipline and the respect that the user has for the library. In this regard, the librarian might consider shortening the official loan periods for popular books so as to increase the immediate availability of such books in the library. For this to make sense, it should be borne in mind that the popularity of the book and the length of the loan period are related. The greater the popularity of the book, the shorter the loan period, and vice versa. Indeed, this is an area where the librarian needs to be shrewd enough to know which books are used more often. This arrangement often has fairly direct effects on the retention time, and thereby immediate availability. Surprisingly, the research done by Buckland (1975) revealed that shorter loan periods did not affect the retention times. The users kept the books longer anyway, and, as a result, fewer renewals were made.

The fact that the library cannot always control the retention time for the long period loan books has necessitated the short loan system to be developed as a solution for controlling access to heavily used books. This section of the library also has advantages and disadvantages. Yet it is the most important section for the students as most of the stock in this department is chosen by lecturers. The fact that there are often fewer resources for the subject taught in the class, contributes to the struggle by some students to get hold of the material from this section of the library.

The biggest barrier at the Cape Technikon Library is experienced when lecturers send students to the library before placing the relevant books on short loan. This then means that limited resources for the assignment gets issued out on a long period loan without the librarians knowing about it. The result is unhappy students and who then fail to complete assignments on time. This situation can be pre-empted by lecturers timeously placing required books for assignments in the short loan section. Furthermore, the scholar's expectation that the library should be the complete repository of the record of scholarship will be fulfilled.

As a way of dealing with the problem of access to heavily used books, librarians could introduce some of the ideas from the University of Lancaster. According to Richardson and Bamber (1985), research conducted at the Library of the University of Lancaster led to the introduction of its variable loan policy. The policy differentiates between those books in heavy and lower demand. The way in which the library decided on the different loan policies is interesting. The subject librarians and the library assistant at the short-term loan section played a huge role in deciding whether an item should be issued for short or long periods depending on the demand for the book. Such a system is appropriate if there is no point in issuing a book for a short period when it has not been borrowed for years or to issue a book for a longer period whilst it is in high demand.

According to the University of Lancaster system, the loan policy is not contained within the short author/ title computer record, but within the item record (Richardson and Bamber, 1985:176). The computer produces "monitoring printouts" at term ends. The printouts show the details of all copies and the number of times each has been issued, whether for long or short loan. Subject librarians, with their intimate knowledge of their collections and of changes in courses, mark up the loan status to be changed on the printouts. The library assistant then makes the necessary changes on the item record. Furthermore, for items that have not been issued for a year, the library assistant is able to change their status at the point of issue by pasting a "long loan" label on the item (Richardson and Bamber, 1985).

The interesting lesson from the University of Lancaster is the pro-activity of the subject librarians in deciding on the loan status of the book. Instead of waiting for the lecturers to place books on the short loan section, they make use of the "monitoring printouts" produced at every end of a term to decide. In this way the problem of access to heavily used books is ameliorated.

Needless to say, users want to rely on the library, and they are particularly disappointed when their expectations cannot be met. Whatever is not available in the library's collection or charged out to someone else, is generally recognized by a user to be a library's worst short-coming.

6.3 COPYRIGHT LEGISLATION

One would imagine that, as a solution to the availability problem, the library could produce duplicate copies of scarce resources. Unfortunately, that is not always possible because there is an element of copyright that must be borne in mind when duplicating copies for accessibility. One needs to consider the copyright legislation when considering availability factors. This grants the copyright holder an exclusive right to exercise certain acts with respect to the copyrighted material. For instance, though it might be considered desirable that information for research purposes be accessible to all who need it, the owner of the information must impose a barrier to ensure the monopolistic retention of such information. Nevertheless, there needs to be a copyright balance, as will be shown shortly.

The emerging trend in academic libraries is that access to other libraries' catalogues and collection is often taking the place of direct provision of documents held locally. In this way, customer awareness is raised, in the sense that users expect services to be accessible over campus networks. Although technology brings us the advantage of getting wider access to information, copyright law presents a barrier to the free flow of information. However, there are guidelines from the Adamastor Trust Publishing Liaison Officer on copyright regulations. The Publishing Liaison Office operates a copyright clearance centre on behalf of the three Universities and the two Technikons in the Western Cape, providing services relating to copyright clearance and related matters for teaching/learning materials used by students and staff (Adamastor Trust, 2001).

According to the Publishing Liaison Officer, most publishers will give permission for only one chapter or 10% from any book (whichever is lesser) and only one article from any journal. All requests for copyright permission are done online and routed through the publishing liaison office at Adamastor Trust.

Despite the guidelines given by the Publishing Liaison Officer, the Cape Technikon Library is still hesitant about the regulations. The Library has, for example, removed all copied articles from the short loan section and replaced them with original copies of books or journals. Every copy that is

available at short loan at the moment is either still in a process of receiving clearance from the publishers or it already has copyright clearance permission attached to it. The decision to remove all copied articles caused a lot of unhappiness and confusion for the lecturers. This is because some of them are reluctant to go through the copyright clearance process.

The point made is that unfavourable responses to the Copyright Act affect information accessibility as well. It is important to note that money has not been seen as a problem or deterrent from applying the Copyright Act regulations and guidelines. Some lecturers however do not use the Cape Technikon budget for the copyright license each year. The reason for not using the budget could be that they find it cumbersome to follow the procedure set when applying for the copyright clearance license.

It is worth noting that, traditionally, libraries have been granted a license by copyright legislation that enables them to copy material for research purposes without the prior consent of the copyright holder. Such purposes would include conservation of the original copy where such is in danger of destruction. Secondly, where circumstances make it the only practical option to give the user a copy rather than the original: for example, an article from an encyclopaedia or newspaper. These traditional exceptions as noted by Bing (1997), have been developed before the advent of information technology. Currently, it is difficult to find satisfactory solutions to extend these traditional exceptions to the new digital environment. One may deduce from this line of arguing that the increased availability enhanced by computerized information systems may harm the economic exploitation of the copyrighted material.

However, the existence of the World Intellectual Property Organization (WIPO) treaties encourages countries to follow legislative recommendations in dealing with information use and provision. WIPO is an intergovernmental organization with headquarters in Geneva, Switzerland, and is responsible for the promotion of the protection of intellectual property throughout the world through cooperation among states and for administration of various multilateral treaties dealing with legal administrative aspects of intellectual property (World Intellectual Property Organization, 2000). According to the Adamastor Trust Publish Liaison Officer, the Copyright Act No. 98 of 1978

(Republic of South Africa, 1978) as amended, governs copyright in South Africa. South Africa is also a signatory of the International Berne Convention of 1886, which obliges the country to give recognition and protection to copyright works from the signatory countries. For countries to be part of the WIPO agreement, they have to possess information property regulations that are aligned to the WIPO agreement Treaty conventions.

At the WIPO Treaty workshop held on December 6, 1999, it was agreed that South Africa would have to amend its Copyright Act before it could accede to the Treaty. In the same meeting it was also agreed that the Department of Trade and Industry would appoint a standing committee on intellectual property right and would call for nominations for appointees to a working group to address the issue of digital technology and the Copyright Act. The WIPO Treaty on Intellectual Property would oblige the parties to adopt, in accordance with local legal frameworks, the measures necessary to ensure the application of the Treaty. In particular, the contracting party must ensure that enforcement procedures are available under its law so as to permit effective action against any infringements. However, even the most well drafted treaty is powerless without the member states to bring its provision to life. Thus, WIPO encourages states to sign its Treaty and to enforce its regulations. Widespread accession and consistent enforcement help maintain a stable international environment and inspire confidence that intellectual property rights will be respected around the world (World Intellectual Property Organization, 2000).

On the other hand, it is in the interest of society to have access to the copyrighted ideas so that these may be communicated widely and freely. This argument might be seen as a conflict between the ideals of availability and the author's copyright ownership. Most authors (Bing, 1997) appropriately call for a legal framework for copyright and technology to co-exist. This framework should however make it easy to comply with copyright requirements without frustrating the needs of researchers and society as a whole. The academic libraries thus have a vital role in voicing the argument on behalf of the users.

The following are some of the concerns with regard to the current South African Copyright Law and the draft regulations that were published and criticized by libraries and other information stakeholders (Republic of South Africa, 1978): (South African Copyright Forum, 2001):

- a) Current awareness service is seen as infringement in the draft. Pressure of work is such that lecturers can only visit the library periodicals department after perusal of the content pages.
- b) Putting photocopies from journals on the reserve section is an infringement of the Act. It is also an infringement to send journal articles to other libraries. Sending a copy of a journal would not be a violation but is not considered viable, as the journals are so expensive. Similarly, it is not feasible for all students to buy all of their own course materials or to subscribe to journals.
- c) Artistic works: The regulations deny students the right to make copies of images for their assignments and discussions (Van der Merwe, 2001)

Financially, the draft regulation is not viable in these trying economic times. Libraries have seen reduced subsidies and have severe financial constraints that have motivated rationalization, cooperation and sharing of resources. However, sharing resources would be seen as an infringement of copyright law. The Act may be seen as hampering development through education as there will not be enough free flow of information and access (Van der Merwe, 1998). It is also cumbersome for librarians to get clearance for copyright material. Publishers locally and internationally may take up to a month to respond to the clearance application.

It is not the purpose of this section to argue against copyright law per se. It merely points out the barriers presented by the law. It is clear however that copyright means different things to different people. From the perspective of the rights holders, copyright is an instrument that reward authors for their creative effort and investors for the risks they take by publishing their works. However,

from the point of view of the user, it is often viewed as an obstacle to the free flow and dissemination of information.

What this means is that copyright clearance mechanisms should be simple rather than imposing a burden on libraries. Copyright issues do impede access and availability of information, as can be seen from academic libraries.

6.4 THE COLLECTION GAP

There are several factors that contribute towards the gap in the collection of material in the library. The lack of participation by lecturers in collection development invariably leads to inadequate library stock. Consequently, librarians are expected to request the required information via inter-library loans. Moreover, students' ability to complete their assignments is affected by this lack of sufficient stock.

The ideal situation is to meet the researcher's immediate and frequent need for information from his or her own library without striving for self-sufficiency. The economic reality faced by most libraries is that they cannot afford to buy everything required by researchers. Unused books on the shelves of a library are a waste of financial and maintenance resources. It is therefore worth paying for the inter-library loan services to meet the needs of the users. Be as it may, the users are still expected to pay for the service costs. The fact that some users cannot afford to meet these costs presents a barrier to information acquisition.

Even though there is a cost involved in accessing material through inter-library loans, the focus should be on striking a balance between access to information and stock accumulation. This will help to alleviate the financial difficulties that go with stock accumulation. Currently, academic librarians are organized to be good collection builders instead of access providers (Friend, 1993:105). The structural and staffing arrangements in most libraries bear testimony to this fact. For instance, the accession and cataloguing departments are larger and have more personnel than their inter-library loans counterparts.

A possible resolution of the challenge presented by the collection gap is for academic libraries to promote the idea that access to information is more strategic and cost-effective than stock-piling of library material.

6.5 LIBRARY PROCESSES

There are many reasons why it is not always possible to find items on the shelves - if not on loan - using the library classification system. For instance, the item may be in the cataloguing department; it may still be on order; it may have gone for binding, or it may be miss-shelved. Inadvertently, this delay in the information chain constitutes a barrier to accessing information, in the sense that the information is not available when required.

Cataloguing of books often presents a barrier when there is a backlog in the cataloguing department. The fact that the ordered material is available in the cataloguing "warehouse" but not yet accessible to the general users, presents a barrier. Librarians have over the years developed a number of interventions to deal with the backlog situation. Miller and Ford (1988) have coined the "*ask at the reference*" phrase to be used in lieu of a call or accession number. This was done in an attempt to provide access to material that has not yet been catalogued. The patron is required to complete a form in order to access such material. The patron would then be advised to collect the ordered material at a given time. This system sounds effective as it enables all users to gain access to material that is not yet catalogued. It also gives the library enough time to keep track of material that is in the backlog.

It should be noted that the system outlined above does not apply to periodicals that have been taken for binding, as well as those that are still on order. The user cannot access journals that have been taken for binding, and hence the material contained therein. Buckland (1975) suggests that one of the ways of alleviating the binding barrier is to pay extra for faster binding. This will lessen the time spent at the bindery and consequently increase the availability of material.

The shelving of materials forms yet another critical phase in the information provision process. Books must be quickly and accurately re-shelved in the stacks for optimal usage. Inaccurately shelved materials are virtually lost to the patron, in addition to the valuable time lost in the process. The shelving crew in most academic libraries is composed of students whose understanding of the classification system is questionable. This undoubtedly increases the level of inaccuracy in the shelving process.

In-depth proper training is vital for shelvers to understand the routines and intricacies of the library. This will also enhance their understanding of the call number system used. Libraries need to set up shelving production standards that will serve as guidelines for trainees, provide criteria for evaluation and encourage constant production (Sharp, 1992).

The down side of Sharp's (1992) suggestion is the high turnover rate of sorters and shelvers in academic libraries. Every year, and sometimes every semester, new shelvers are hired. This lack of continuity implies that at any given time, new shelvers are being trained. The quality of the service provided by the "perpetual trainees" suffers accordingly, and the unavailability factor is consequently increased.

In contrast to the above argument, the study conducted by Sharp (1992) revealed that there is no statistical relationship between the level of experience of the shelver and the level of shelving accuracy. What came out of this study, though, is the importance of having a performance management system with standards and indicators as part of any job. The study done by Sharp found that there was an apparent improvement that resulted from drawing the attention of shelvers to expected performance standards. It can indeed be inferred from this study that a library might benefit from having clearly defined performance standards, acceptable minimum performance levels, shelving speed requirements and specified accuracy percentages.

The availability of books and other source material is clearly very central to effective library provision of information, and serves as a measure of library performance and efficacy. This is reason enough, as suggested by Buckland (1975: 40), to take the enterprise of information availability very seriously.

CHAPTER 7

ADEQUACY OF FUNDING

Of all the barriers confronting information access, the obstacles presented by funding are the most formidable. Cuts in education subsidies are creating an economic crisis in tertiary institutions. The tightening of the screws on funding at these institutions is taking place at a time when an increasing number of students require access to these places of higher learning. As part of this "structural adjustment," academic libraries are also required to increase their student population at a certain rate. Yet, the government is not providing correlative increases in funding. This threat diminishes the librarian's capacity to assist students (Coetzee, 1995:35), more of whom require improved and even remedial information support services and learning experiences in which the true potential of information is utilized.

This situation is made considerably worse not only by the relentless increase in periodical prices which happen faster than the rate of the general inflation, but also the regular introduction of new journal titles. Consequently, "book purchasing" suffers as more money has to be used on buying periodicals. Coetzee (1995) sums the situation up by observing that the net effect in this regard is conservatism in collection development and on library services generally. The more selective academic libraries are obliged to be in their acquisition of material, due to limitations of funds, the more difficult it is to offer a satisfactory service to the user.

The harder financial times are forcing academic librarians and academic colleagues to consider needs and priorities in relation to institutional objectives. Furthermore, academic institutions are increasingly called upon to forge closer links between themselves, as will be shown later. Cowley (1977:68) made an interesting observation that libraries are traditionally in a weak position within the context of competing educational interests. Books are seen to be more expendable than staff and class materials and requirements. It thus becomes difficult for the librarian to defend the more sophisticated aspects of service. Moore (1976) presents an argument similar to that of Cowley. In his paper, Moore considers the problem of the allocation of library resources when book prices are rising more rapidly than staff costs. He outlines an economic theory of production, according to

which it is possible to adjust inputs to produce a required output by the use of Isoquant and Isocost plotted on a graph. The theory is applicable to library operations. Inputs are books and staff (for the exercise building costs were ignored) and output is library service. Books and staff can be adjusted according to variations in budgets and/or prices, to ensure a favourable service. Out of necessity, a number of constraints must be imposed. The core of Moore's argument is that if resources are scarce, it is better to spend money on staff in order to make better use of a limited range of information sources that can be purchased. By extension, the argument of the present day is similar: electronic resources paradoxically need greater staff involvement to make best use of them.

The period of financial stringency can have disastrous consequences for the academic library, unless there is a degree of co-operation and understanding between lecturers and librarians. This reinforces Cowley's (1977) view that the selection of materials should be a joint venture between librarians and their academic colleagues within a policy of educational objectives and priorities. In contrast to Cowley, Leonard (1991:163) observes that many faculties and students appear to be successful in fulfilling their academic needs without significant library utilization. Hence, he argues that it is doubtful that support from these two constituencies is forthcoming. Instead, academic librarians and lecturers are competitors in the budget arena.

There are various strategies that can be adapted by academic libraries to circumvent the funding crisis. For instance, the joint listing of holdings amongst libraries can be put in place. This means that libraries may be sharing resources whilst using the budget in an economic way, and in so doing fulfil the needs of users.

The Cape Libraries Co-operative (CALICO) presents an appropriate example of the inter-institutional co-operation proposed herein. In the Western Cape, academic libraries have initiated a co-operative journal project in order to avoid purchasing journals that are not in great demand in any particular institution of the CALICO group. The idea is to create a single collection housed at different locations, with a common user card for system wide benefits to members. Access to a

common shared database of holdings has to be facilitated through a system that will directly deliver documents whenever technically possible (Coetzee, 1995:36).

The project is still ongoing as the Cape Technikon Library is clearing its database to be able to determine what journals are being used heavily. The status of this core project is at the point where the CALICO directors will evaluate it. The aim of the evaluation is to determine whether the project should continue in the same way as envisaged and to also evaluate the financial aspects that it entails. Currently, it is costing CALICO a lot of money per year to work on the project. If the outcome of the evaluation by the CALICO directors is in favour of its continuance, the subject librarians will manage it.

This system was found to be working well in the state of Illinois where there is also a network of academic libraries with a computerized catalogue system. Downes (1990:53) concurs that, as a result of the network system, information vital to research and instruction has become more widely accessible to both students and faculty. Co-operation does indeed seem to be one of the best solutions for the funding problem. Libraries that compete for resources in their own campuses are however not in a position to re-allocate funds to support such a venture.

Furthermore, it is also argued in the literature that acquiring electronic media and network licenses will help in dealing with the constraints in funding. Jones (1992:129) and Widdicombe (1993:10), amongst others, argue that network publishing could provide a way out of this downward spiral. This means that instead of continual journal and book buying, funds can be shifted to acquire more electronic media that can be network accessible.

Both Jones (1992) and Widdicombe (1993) argue that a paperless delivery of information direct to the desktop of the user can offer more effective and targeted information. Realistically users do not seem to want journals anymore, but are rather interested in the articles contained therein.

Moreover, though networks can go a long way towards alleviating funding problems, it should be noted that the database market is quite volatile and products change frequently. This implies that

students and faculty need to be educated more often just to keep up to date with developments in the information industry. Network publishing offers considerable potential for libraries to decrease costs and improve services to end-users.

Fund raising presents another viable solution to alleviate the funding problem. The difficulty with this idea is that generally speaking, librarians do not view fund raising as their responsibility. They believe that somebody else should do this (Eaton, 1979:130). The fact cannot be emphasized enough that librarians need to ensure that the institution is informed about the library's needs and the various options available to fulfil them. For instance, the faculty can be helpful in both drafting proposals and identifying prospective donors, once it is brought on board.

University of Cape Town

CHAPTER 8

RECOMMENDATIONS

8.1 INTRODUCTION

The literature on barriers to information access highlights a number of barriers that relate directly to the Cape Technikon Library. The principal problems for the Cape Technikon Library have to do with the nature of the changing educational environment in South Africa at the moment. The diversity of the student population at the Technikon suggests that librarians need to focus more on reference interviewing skills in order to meet the diverse needs of the students. Most of the differences have to do with language and the cultural backgrounds of the students and the librarians. The intake of students in general has dropped, but there is a definite increase in the proportion of black students at the Technikon.

The information literacy barrier is linked partly to the lack of consistent enskilling that most first year black students coming from disadvantaged backgrounds experience at tertiary institutions. However, the first year student information literacy gap is not only restricted to the black students, but transcends all levels of study. Cape Technikon does not have a consistent information literacy program offered to students. Students are given training on information finding skills on an ad hoc basis, whenever there is a request for it when doing research or assignments. Weekly slots for the information literacy training were used to be set aside, whereby students would book themselves for a session. This endeavour failed as students stopped coming for the sessions, and, to a larger extent, due to the lack of marketing of the information literacy sessions by the librarians.

The lack of training on the new Aleph system further compounds the information retrieval barrier. Students have not received structural training on the new system as yet. The weekly slots were done when the old ITS (Integrated Information Software) OPAC was in use. This has been replaced by the ALEPH system. Cape Technikon Library still has to investigate the use of the new OPAC by users in order to understand their attitudes towards it.

The information retrieval barrier occurs in many ways at Cape Technikon. As a subject librarian, the researcher experienced problems with the cataloguing of books and the ability of users to retrieve them. The cataloguer tended to maintain the prescribed cataloguing standards irrespective of the needs of the users. In terms of following the cataloguing and indexing rules, she was correct. However, one needs to adjust and use certain terminology that lecturers and students use in class for easy access. Subject librarians added their own subject entries in the library manual subject-heading index as a way of addressing retrieval problems in their respective subject areas.

The fact that pamphlets were not catalogued presented a barrier to the information contained in them. Most students and staff do not know about the existence of the pamphlets. Subject librarians keep the list of the contents of the pamphlet file. Users are referred to it for current information and only if they have contact with the subject librarians.

Another difficulty experienced by both staff and students in accessing information is the problem of overdue material. The overdue material problem creates unhappiness amongst users who need to take out such material. This problem could be resolved by the intervention of the subject librarians in proactively determining the loan period for books. Lecturers, except for normal reference material, determine the decision for the different loan policies.

Lecturers who ordered books complain about the acquisition process as being slow and therefore as a barrier to information. After materials arrive in the library, there is a delay in getting them ready for the shelves. Staff shortage in the cataloguing department has been cited as the reason for the slow processing of library material. In dealing with the problem, subject librarians request the prioritisation of urgent material. However, the users who are not aware of material on the backlog are deprived of access to such material.

When the books finally reach the shelves, users experience problems finding them because of the disorganized state of the shelves. Cape Technikon Library has two shelf packers. Frequently, one of them is not available and that leaves a lot of books lying on the book trolleys, instead of on the

shelves. When books are not on the shelves, they are not accessible to users. There are numerous complaints from both students and staff with regards to the bad state of the shelves. Shelf reading of material is supposed to alleviate the problem mentioned above. However, there is a problem with staff being reluctant to do shelf reading. Teams were formed to do shelf reading but there is still no commitment to do it. Lack of shelf reading makes accessibility to information difficult.

The purpose of the dissertation was to identify barriers that affect information access and use in academic libraries and to come up with possible recommendations. In the light of the above background, the following recommendations, which are applicable to Cape Technikon Library and also those applicable to academic libraries in general, are therefore presented:

RECOMMENDATIONS SPECIFIC TO CAPE TECHNIKON

8.1 TRAINING IN REFERENCE INTERVIEWING AND COMMUNICATION SKILLS MUST BE OFFERED TO BOTH LIBRARIANS AND PARAPROFESSIONAL STAFF

The reference librarian should seek clarity and understanding from the patron so as to determine the patron's actual information need and to avoid ambiguities in the questions put to them. A productive reference interview represents a successful collaboration between the professional searcher and the end-user. The interaction itself adds considerable value to the user's perception of an information solution. The reference librarian must therefore remain aware of verbal and non-verbal cues from the user that might indicate the level of understanding of the issues being communicated. In this way, he or she will be able to identify and address the problems presented by "indirect or faulty questions".

Librarians need to have a good understanding of the information searching strategies embedded in information literacy so that they can educate users on various ways of finding information besides using the author and title entry points.

The use of paraprofessional staff at the reference desk must be used following the recommendations by Halldorsson and Murfin (1977:394).

Orientation and training in handling difficult questions must be given, including training techniques for gaining information in the reference interview.

In-service training must be provided and encouraged so as to increase subject knowledge and knowledge of reference sources.

Selection of non-professional staff for reference should be made both on the basis of high educational level and professional courses.

A policy should be established to refer all questions for which answers cannot be found or where no approach to the problem is discovered.

Frequent referrals should be encouraged and rewarded as resulting from concern for good service, thus discouraging the attitude that referrals reflect a lack of competency or failure.

Professional personnel should be available in the immediate area during service periods.

8.2 CATALOGUERS MUST ENSURE THAT INFORMATION CATALOGUED IS ACCESSIBLE TO USERS

- Cataloguers must work closely with the reference librarians so that they can use terms that would be suitable for the user group they serve. They should not concentrate only on cataloguing codes while ignoring readers' needs.
- Subject indexing should go beyond overall description to encompass micro themes in each information source when cataloguing books. Description of books must be taken from books, using the terminology of the book. This will increase the value of subject description.

- Pamphlets must be assigned subject headings and a full and descriptive catalogue entry. Due to the topical diversity and subject specificity of information published in the pamphlet form, effective access to pamphlets is essential. A lot of information in pamphlets is under-utilised due to inaccessibility.

8.3 THE LIBRARY PROFESSION WILL HAVE TO BROADEN ITS VISION TO DEAL WITH THE CHALLENGES OF PROMOTING ACCESS AND USE OF INTERNET SOURCES

- Libraries must join hands in building Internet resource catalogues cooperatively. In this way, librarians will be moving towards a good direction to organize the Internet. It is important for librarians to get involved with the organization of the Internet because they are the most experienced group in the cataloguing and classification of data.
- As can be seen from the literature on Internet sources, a lot of useful information that is important for scholarly communication also exists in electronic format on the Internet. Thus, librarians need to work with Internet developers to help improve access to such sources.

8.4 LIBRARIES MUST ENDEAVOUR TO SUBSCRIBE TO ONLINE SOURCES THAT ADDRESS THE NEEDS OF THE USERS (USER FRIENDLY), E.G. DATABASES THAT ARE ALSO SEARCHABLE BY USING NATURAL LANGUAGE SEARCH TERMS.

- Markey (1986), suggests in his study that online databases must have the following features in order to be user friendly:
 - a) they must have cross reference online to increase the searcher's chances of matching his or her own entry access points to the correct database access points;
 - b) an online related word-list in order to guide selection of more general subject headings must be available.

- Training of users in in-depth search methods is recommended. Online searching skills are not easily acquired; they develop through training and experience. Therefore, there is a need for librarians to provide online search education to reduce the difficulties that the search tools can create for library users.

8.5 THERE IS A NEED TO PROMOTE INVESTIGATIONS IN THE USE OF OPAC SYSTEMS IN ORDER TO UNDERSTAND THE USER ATTITUDES TOWARDS THEM

- The attitude of users towards computer technology is important as it has far-reaching implications for library managers and practitioners. Based on a user's reaction to the system, managers would be able to provide the necessary assistance to the users in order to promote usage.
- There must be collaboration between suppliers of information systems and libraries. The systems developers should come to the library to have a feel and understanding of how a library works. In this way, they will understand the logic employed by patrons in their search for information.
- An effort needs to be made to modify computer programs so that they are more readily accessible and therefore acceptable to users. They must be simplified and easy to use.
- The librarians need to acquire a variety of expertise ranging from teaching skills to knowledge of computers in order to facilitate information accession.

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8.7 WAYS OF CONTROLLING USER RETENTION OF OVERDUE BOOKS MUST BE INVESTIGATED

- The loan period for popular books should be shortened to increase access. However, users might still keep the books longer as the library does not have control over the retention time. Therefore, investigation of another way of controlling loan periods should be investigated.
- Lecturers need to be educated on the importance of putting books on the reserve shelf in advance before giving students a research project. If this is not done, the reserve shelf will not be of help to students as the books would be issued for longer periods without knowledge of the need to make them more available to all students. This situation demands that librarians and academics work together.

8.8 LIBRARIES MUST FOCUS MORE ON ACCESSIBILITY TO INFORMATION THAN ON COLLECTION DEVELOPMENT

- Buying lots of books is not the most effective way of closing the collection gap; the answer lies with the facilitation of access to remote sources.
- There should be more emphasis on the use of inter-library loans services. This would mean that more staff would have to be deployed to the section in order to meet user needs.

8.9 LIBRARIANS SHOULD ENSURE THAT LIBRARY PROCESSING ACTIVITIES ENHANCE ACCESS TO INFORMATION, AND NOT HINDER THE FREE-FLOW OF INFORMATION

- New books should be made available as soon as they arrive in the Library. A list of new books should be made available in the catalogue with the label "ask the librarian" next to it. In this way, the user will have to complete a form requesting such a book to be prioritised by the cataloguer, instead of cataloguing according to arrival dates of books.
- The institution should pay a little extra for faster binding service to reduce time spent at journals bindery.
- Books must be speedily and accurately shelved. Appointment of full time shelvers would be a good idea as this part of library work is very important in meeting user needs. Thus, performance standards for shelvers will have to be developed to draw their attention to the level of performance expected.

8.10 LIBRARIES SHOULD FOCUS MORE ON MANAGING SCARCE RESOURCES IN ORDER TO BE MORE COST EFFECTIVE

- Sharing of resources through the joint listing of holdings and access to a common shared database between libraries that are in close proximity with each other should be promoted.
- The Infrastructure of Information and Communication Technology (ICT) make the academic library and the academic workspace natural extensions of each other. This “new learning space” offers opportunities for a new approach to information provision which needs to be planned in an integrated way, rather than seeing the needs of academic departments and libraries as being in competition.
- Libraries need to acquire more electronic media and network licenses, so that they can lessen dependence on purchase of paper sources.
- Libraries should involve themselves more in fundraising endeavours.

Finally, one can underscore the central theme of this dissertation: Academic libraries are the embodiment of published information for researchers. They have an obligation, therefore, to support researchers by ensuring that the barriers to information provision identified in this paper are adequately addressed. In so doing, librarians should be wary of the fact that the generation, processing, storing, accessing and utilization of information is a continuously changing phenomenon, which can result in new barriers.

The process of barrier identification and elimination can never be exhaustive. Libraries should therefore periodically identify, monitor and attend to those recurring obstacles experienced by researchers and end-users in an endeavour to retain maximum efficiency. It is to be hoped that this dissertation will contribute towards a framework for identifying and minimizing barriers to life-long learning, and to information provision as a major tool in that life-long project.

GENERAL RECOMMENDATIONS

8.11 LIBRARIES SHOULD PAY ATTENTION TO THE LANGUAGE BARRIER CAUSED BY SOURCES WRITTEN IN LANGUAGES OTHER THAN ENGLISH

- Translations, either published or unpublished, are still the only way through which many people can keep abreast of new developments in languages other than their own.
- Librarians should publicize the online databases that already provide translation services, and make sure that such databases are accessible to all searchers. If this is not done, researchers will continue to be disadvantaged by the language barrier and will not realize the full potential of the resources available to them.
- Cooperation, both national and internationally, in addressing the language barrier is a necessity as this is a laborious task to be dealt with by one institute (Van Bergeijk and Risseeuw, 1980).

The solution to the problem is not entirely within the library's ability to enforce; however, librarians need to be aware of the barrier and what they can do to facilitate access.

8.12 AUTHORS AND EDITORS OF INFORMATION SOURCES SHOULD ASSUME RESPONSIBILITY FOR THE RETRIEVABILITY OF THE INFORMATION SOURCES THEY PRODUCE

- Authors and editors must produce better indexes and abstracts that truly reflect the contents of their sources. Most importantly, they must apply international standards for presenting publications. For example: periodicals are sometimes inconsistent in their use of titles in that

they do not use unique names; the numbering of pages does not always start with each volume but with each issue; volume year and calendar year do not always coincide, etc. The standards of indexing should be seen as the means to ensure that the indexes allow the reader to find the most precise and effective access to a book's content.

- Correct and complete bibliographic details are important for the librarians as well as the researcher and the research activity. Even though this barrier does not prevent access to information, it certainly makes it difficult to locate and handle information.

8.13 LIBRARIANS, IN CONJUNCTION WITH EDUCATORS, MUST DEVELOP PROGRAMS AND MECHANISMS THAT WILL HELP STUDENTS TO ACQUIRE INFORMATION LITERACY SKILLS

- Information literacy programs must be incorporated into the course context. This will help to avoid compartmentalization of knowledge and will ensure context-specific programs.
- Librarians need to be up-to-date with educational theories and current developments in their field in order to be of great value to users.
- They need to understand that educating users on information literacy skills is the only way through which they can increase the user's knowledge base.

CONCLUDING REMARKS

On the surface, the enterprise of information provision seems like a straightforward process. In the every-day reality of the interface between the user and the librarian on the one hand, and the user and the institution harbouring the information on the other hand, as well as between the user and the information itself, the process of information provision is dynamic, complicated and multi-faceted.

This process is comprised of numerous inter-related, and sometimes seemingly opposing activities that need to run smoothly in order to fulfil the principal objective of the library as an information institution: that is, the sourcing, organization, storage and accession of information for research, teaching and learning purposes.

The main object of this dissertation was to identify issues that present barriers to the process of information provision, access and utilization. This was done by examining milestones in the said process. These includes the reference interview, subject indexing and information retrieval, information technology, information literacy, availability of the information, and, finally, funding.

In other words, the idea was to examine two seemingly parallel but intricately linked processes: At one level the dissertation examined difficulties experienced by users from the moment they enter the library to look for information, up to the point where they achieve the objective of their search. This entailed the interface between the librarian and the user, the mechanism or medium of accessing the information as well as the ability to use the information sought.

At another level, the dissertation explored the processes that happen "behind the scenes," so to speak, before the sought information can be located and utilized. This covered issues relating to the requisite funding to get the information, ordering, acquiring and cataloguing, and finally shelving the material in an accessible manner.

The two processes were discussed as a composite whole and, indeed, that is what they are. It is purely for purposes of convenience and of maximizing explanatory impact that they are presented above as separate. In reality, they flow into each other in a cyclical fashion.

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University of Cape Town