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National Libraries: islands of stability in the informationstorm

I should like to begin, naturally, by thanking the Swiss National Library for having invited me to take part in today's celebration of its centenary. In particular, though, I should like to thank Jean-Frédéric Jauslin for his personal invitation to be here. In Europe, we all consider the Swiss National Library to be one of the major players in the European library world.

Jean-Frédéric is himself an influential figure among European national librarians, and I hope it gives him as much pleasure as it does my colleagues and I today, to be celebrating one hundred years of development and service to readers.

I have referred to Jean-Frédéric Jauslin's place among his fellow European national librarians. This makes it apparent that there is a forum within which the national libraries of Europe meet, to agree how best to work together. Indeed, we meet regularly to ensure that we are pursuing those developments which will help us serve our users best, to ensure that they have as straightforward access as possible to catalogues and collections. What we are pursuing has been widely described, and we are fairly clear that we know which obstacles must be surmounted, who must be persuaded, and what resources must be found. We visualise, in due course, a network – in the technical, library sense – of national libraries and other libraries.

What I thought I would talk about today, however, is an aspect of the context within which we are striving towards that goal. For I believe that national libraries, more than any other type of library within our systems – university libraries, special libraries of various types, corporate libraries and so on – have a distinctive set of responsibilities.

The title of my talk refers to national libraries as islands of stability in the information storm. Now, I accept that there is more than a touch of lecture-title-hyperbole in this title. But let me set out what I have in mind.

First, what do I mean by "information storm"? What I mean is that there is a lot of information being produced, in a variety of formats and publication- or quasi-publication-media. By "a lot" I mean, in fact, a huge amount of information is being generated. It is very difficult to estimate just how much, and this, as I will try to demonstrate, is part of the problem I believe we have to address. But two anecdotal measures are relevant. The first is the suggestion which has been made, that the amount of information and knowledge being produced in the world is now doubling every five years. The second is the estimate that of all the scientists the world has ever known, half of them are alive and working today. Now that means a prodigious amount of output. As for more quantified measures, this year the British Library will acquire by legal deposit, purchase or gift roughly 2,4 million items. We subscribe to over 70 thousand serial titles. Our collection of printed books alone grows by over seven kilometres every year. At the British Library the vast bulk of what we acquire is in traditionally published form – books, journals, newspapers, audio compact discs and so on. There is a huge amount of additional information, the surface of which we barely touch. I refer to the mass of information which is either not published as print on paper, or which appears in a form which we would not necessarily regard as truly "published". Electronic databases may be published off-line, in the form of tapes or CD-ROMs containing current contents of databases which are delivered to customers and regularly updated. This type of publishing is, in principle, relatively easy to handle under existing procedures. But since the 1960's, publishers have also made databases available online, with data being transmitted directly to the customer's own computer. In the UK, by the end of the 1980's, more than 350 online databases

were being produced. How many more were available in the rest of the world? There is now a great variety of material published online. There are cumulating online-services analogous to traditional bibliographic, cataloguing, indexing and abstracting services. There are content and alerting services where greater emphasis is placed on currency, and there are real-time transactional services such as financial databases, which are updated from moment to moment. The United Kingdom's cartographic survey, the *Ordnance Survey*, will soon be available only as an online database which is updated every eight seconds or so.

And as if that is not enough, as well as the commercially produced databases, there are countless informal bulletin boards, discussion lists and other services readily available on the Internet since the expansion of the World Wide Web.

What we face is a plethora of information being published, carried, transmitted or whatever, on a host of new kinds of technology. One result is a destabilising of the traditional academic publishing industry. Print-on-paper serial prices have risen way beyond the retail price index; electronic journals sit uneasily beside their traditionally produced paper versions.

What does all of this mean for national libraries? What is the significance of this "information storm" for our traditional responsibilities?

First, there is the responsibility to acquire and care for the national published archive. The difficulty of maintaining a comprehensive archive when few national systems for the statutory deposit of publications cover new media has been widely discussed, and I do not mean to repeat the issues today. It is worth bearing in mind, however, why it is that national libraries need to nurture a comprehensive archive. One purpose is to produce a national bibliography. But these responsibilities exist for reasons other than to provide employment for librarians, and to keep them out of mischief and off the streets. A record of a nation's intellectual output, and access to the published archive, is a keystone of scientific, technical and academic development. The national published archive serves two

fundamental principles of scientific progress. Broadly speaking, the pursuit of scientific knowledge – and this applies to the humanities just as much as to the so-called *hard sciences* – happens through laboratory research and experiment, that is, control or understanding of variables in a constant and controlled environment. That experimental environment might be a scientific laboratory in a university, or a library reading room. In my own case, as a social anthropologist, the research setting was a small town in East Africa. The researcher eventually publishes his or her findings, in pursuit of a variety of motives. One motive – we like to think the most important one – is to give an account to colleagues of a new contribution to knowledge in the subject area which they share. Other motives, not unnaturally, are career enhancement, prestige, self-satisfaction and money. Findings may also be published in order to protect them from being tampered with, or claimed by someone else – at the most extreme they are published as a patent specification – so that the intellectual rights as well as the commercial rights are protected. And this is what libraries accumulate – this is how the intellectual output of a nation is stored and recorded. I mentioned two fundamental principles of scientific progress. The first is that of replicability. It is fundamental that any experiment can be replicated by others. The way a step forward was achieved – whether this was in the field of thermodynamics or our understanding of sixteenth century verse – is described, so that its legitimacy is confirmed and so that the findings can be tested by others, and subsequently built upon and taken further. So the store of knowledge in a library is the raw material for further progress, and is at the same time our assurance that progress data has been reliable, that it can be depended upon.

The second fundamental principle is a corollary of the first. This is citation. The earlier work which is being built upon, and the evidence that is summoned to support new work – or earlier work which is being revisited for adjustment or refutation – has to be capable of identification, as part of the continuing cycle of experiment and replication. And

here, again, there is a key role for the library.

But why the *national* library? Why not university libraries, the libraries of the oil companies, or even private collections? I would hope the reasons are obvious. We need to ensure comprehensive collection and recording of the national published archive. Hence legal deposit. This does not mean that the national published archive needs to be under one single roof. New technology means that the archive can be a distributed one, with shared bibliographic record creation, and remote access, all of this over networks. But some organisation has to take responsibility for ensuring that all of this is properly organised, that the necessary legislation is in place, and that the system is properly understood, by users and publishers as well as by librarians.

The other issue is that we need to entrust these responsibilities to an organisation with a very long-time perspective – planning for hundreds of years in the future – and we just cannot rely on a commercial organisation; it would be unfair to expect a commercial organisation to give the absolute guarantees which a public body is better placed to deal with.

Where can collections of books be found in over 3 000 languages and dialects, some now extinct? Where can scientific collections be found, covering all languages in which scientific and technical information is published? Where can collections of manuscripts be found, representing almost every known language and almost every material on which writing has been discovered? Where can the earliest dated printed book, the *Diamond Sutra*, be found? And where can examples of printing be found, representing nearly all places in which printing is known to have existed? The answer in each case is "at the British Library". Similar claims may be made by many other national libraries. Such claims illustrate that national libraries are storehouses of the written record providing essential repositories of information for the research scientist. But will national libraries always be able to make such claims? Indeed, will they be needed at all in the emerging world of the digital library?

I should like to start by identifying what makes national libraries sufficiently different from other libraries to warrant their status as national institutions. In the United Kingdom, the British Library is the only library privileged to receive the nation's printed published output through legal deposit without having to claim the publications; moreover, it is the only information provider of last resort, used as a back-up facility to support other libraries; and it is the main information provider of first resort for pre-eminent research scientists who can justify using it as such. Most but not all national libraries can be defined in this way. While they all aim to advance knowledge by acquiring, processing, storing, retrieving and communicating information, some are major international players while others concentrate on the national scene and function both as university libraries and as national libraries. Some offer facilities normally associated with public libraries while others provide research facilities only. I can think of just one national library which operates a remote document supply centre and just one which funds external research to support the national library and information science community. I am of course referring to my own institution. I am sure you can all think of features which make your own national libraries unique.

I should like to concentrate on the similarities rather than the differences between national libraries and think of them as a group of institutions all existing for primarily the same purposes. What makes national libraries different from most other libraries is that they all take a long-term view when it comes to collection development. Their collections are developed and assessed to match the known needs of today's and the predicted needs of tomorrow's research scientists. Active use of the collections of national libraries tends to be more concentrated than it is in other libraries whose collections, generally speaking, do not span the centuries. Most importantly of all, national libraries exist to serve mankind and this, to my mind, distinguishes them from other libraries which exist to support specific local or specialist groups of users. Will the advent of new technology change all this? Will it eliminate the need for centralised collections? Will research scientists be able to identify and view

all the materials they need from screens on their desks? Let us look at what national libraries are doing in this technological era.

Many national libraries have, of their own accord, created digital catalogues, or commissioned commercial organisations to do so for them, and made them available over digital networks. Some of the European national libraries are contributing to an EC-funded project to develop mechanisms to enable participating libraries to search the OPACs of the other participating libraries as if they were searching their own. Digital technology has also come to be used by some national libraries for the digitisation of collections. The Deutsche Bibliothek is to digitise a collection of watermarks, a music archive and various scholarly works. The Bibliothèque Nationale de France is contributing to a large French digitisation project which will convert 100 000 documents and 370 000 images to digital form. The British Library has digitised a small number of documents including a unique one-thousand-year-old manuscript, *Beowulf*, which provides an understanding of the development of the English language. The manuscript was badly damaged by fire 250 years ago. The digitised images enable the damaged portions to be read, and some pages are available for viewing over the Internet. There are also joint projects which are bringing together the results of a number of the digitisation initiatives of the national libraries, such as the G7 digital library project *Bibliotheca Universalis*, led by the Bibliothèque Nationale de France and the National Diet Library.

There are clear advantages to research scientists of such digitisation initiatives. Digital catalogues are demonstrably superior to card and microform catalogues in that they provide speedy access and sophisticated searching facilities which the research scientist may use within the library itself or at the terminal on his desk, if the catalogue has been networked. Digitisation of special collections helps to preserve the originals and increase the availability of, and speed of access to, the content.

Although the library may have difficult operational and financial decisions to make before it can go about digitising catalogues or

out-of-copyright collections, those decisions are at least within its control. However, information has long since ceased to appear exclusively in print, and the forms in which new publications are appearing are not within the library's control. It is in this area where some major changes are likely to affect national libraries in the long term. Falling journal subscriptions and reduced profit margins combined with opportunities offered by new technology have led some publishers to begin to consider transferring from printed output to digital output and, in some cases, to publish on-demand only rather than in sizeable "print" runs. The large-scale *Ordnance Survey maps of Great Britain and Northern Ireland* are a case in point. Traditionally, they were printed but, by the end of this year, they will have been digitised and, from 1997, will only be available in digital form. There are also many publications, such as the *Oxford English Dictionary*, traditionally produced in print, now appearing in print and digital forms, which are likely to appear in digital form only the next time a new edition is produced.

It is not only libraries which have difficult decisions to make in determining what they should provide and make available in digital form. Publishers have similar decisions to make about the most appropriate media for new publications. It is at present far from clear that digital texts will be cheaper to purchase than traditionally published ones. The cautious approach currently being taken by many publishers to digital forms of publishing are understandable and justified. Publishers want the integrity of publications and the rights of copyright holders to be preserved. The financial risks are only too clear. The economic framework of publishing is de-stabilised with the arrival of digital publishing. Does the established framework still apply? Is a new framework required? Should the old be modified? What is the time scale for change? One factor affecting the pace of change is that publishers of journals with most to gain from the digital world do not have sufficient finances to invest in the necessary changes whereas those which have the most money have the least need.

Rapid price increases of printed journal titles have infuriated research scientists to

such an extent that there have been calls for a boycott of certain publishing houses. Some would argue that scholarly publishing should be established as a major university activity. And, as if the situation were not complicated enough, there are also new players entering the publishing market who have hitherto had no links with the publishing business or the academic community.

Despite these new players and the antipathy shown towards some publishers, I believe there is still a key role for traditional publishers who not only print and distribute scholarly works but also edit, filter and perform other gate-keeping functions. It would be naive of us to think the scholarly community was simply buying back its own scholarship when its libraries subscribed to scholarly works.

National libraries tend to be seen as less of a threat to publishers than university libraries. Perhaps it is because of their national status that publishers have a reasonable amount of faith that national libraries will protect commercial interests and not permit unauthorised use of published works. I am aware that there is still a long way to go to establish an acceptable level of understanding and mutual trust between national libraries and publishers, especially in so far as legal deposit and digital transmission of published works are concerned. Nevertheless, in negotiating its latest agreement with the UK Copyright Licensing Agency for the reproduction of printed works subject to copyright, the British Library has paved the way for further discussions with publishers over digital storage and transmission of copyright material by the Library. It is in all our interests that we should work with publishers to encourage them to support the development of the national published heritage in an appropriate form and on reasonable terms to the research scientist.

Today's national published archives are predominantly made up of printed publications. This will not always necessarily be the case. Indeed, I have heard it asked if we should be preparing for the end of print with the advent of digital technology. The answer is most definitely "no". Print on paper will not disappear. It provides the only comfortable means of sustained reading. It facilitates random access, it is portable and it lets the reader go forwards and backwards in the text. It can also be read by the naked eye. I am confident that it will always be in demand for certain kinds of publication like novels, or poetry. However, it is likely that within the next five years, reference works will be published routinely in digital form alongside their printed versions. It is also likely that in, say, ten years from now, many printed versions of journal titles may well have disappeared. However, what libraries cannot assume is that the arrival of digital technology will lead to a drop in the number of printed publications. While certain printed publications may well disappear, the advent of digital technology has encouraged desk top publishing of short-run printed editions which would not have been economically viable in the traditional publishing environment. Many national libraries are already managing print and digital texts in co-existence with one another. This will become an increasingly important function as technology develops and the amount of materials in digital form increases.

As we have seen, the advent of digital technology raises technological and economic issues. It also raises political and cultural issues and, in this respect, the availability of information should be given due prominence. In the traditional print-on-paper setting, libraries have played a key role in the democratic process by ensuring that information was available to all. The use of networks may make information more readily available to society at large if the Internet provides virtually equal access to all sources and types of information anywhere in the world. There would be no need for opinion polls; everyone could communicate their views. However, the Internet is unlikely to remain free of charge at the point of use for ever. If exorbitant prices are imposed, libraries may be tempted to exclude from their collections certain categories of items which they have in the past been able to provide. Materials could well be excluded not because their content was not applicable but simply on the grounds of cost. This could lead to a society divided between those who

could afford to pay for certain classes of information and those who could not. The research scientist would clearly benefit from the enactment of legal deposit legislation to enable national libraries to build up comprehensive collections of digital publications as well as printed publications. Some national libraries are already able to receive digital publications through legal deposit; most are not, but several are taking steps to seek appropriate legislation. It is only through comprehensive legal deposit that a national library is able to build up its national collections to serve current and future generations of research scientists to a level they are accustomed to expect of a national library.

What else should national libraries be doing to support the research scientist? One could say that with the world's information available over the Internet, there is no longer a need for them. But someone, somewhere must store the information to make it available in the first place. And libraries, especially national libraries, are good at amassing and caring for publications. Moreover, economies of scale support the concept of centralised collection management and storage which facilitate interdisciplinary research because everything is stored under one roof (more or less!). It is the richness and variety of national library collections which appeal so much to research scientists and make them return time and time again.

I have already referred to the essential role most national libraries perform in providing a national back-up facility to researchers who are unable to find the information they need from a local source or from a network. National libraries provide access to registers of research, citation tools and databases, some of which are very specialised and not available in other libraries. Most importantly of all, national libraries create and provide access to the national bibliography, an essential tool in that it not only provides a record of the nation's output but also provides a standardised means of providing other libraries with records for local use. Moreover, national libraries often instigate the production of specialised bibliographies and catalogues to support the research scientist. I am thinking here of such initiatives as

the *Eighteenth Century Short Title Catalogue* and the *Incunabula Short Title Catalogue*, both of which could not have been produced without very considerable national library input. These specialist catalogues record publications of all kinds from multi-volume works to single sheet ephemera in every subject, reflecting all aspects of human activity. They are much more than finding lists. They give descriptions besides locations of the material. They are therefore bibliographies as well as union catalogues and provide great time-saving devices for research scientists interested in locating and studying specialised subjects.

The importance of citation tools cannot be overstated. They enable the research scientist to find out if a particular experiment has been done. They lead him to the information he needs to decide whether or not it is worth replicating an experiment. However, national libraries cannot play a passive role here and assume research scientists will always knock on their doors when they need assistance. It has been said that £12m on research is wasted in the United Kingdom every day because the work has already been carried out. Simple literature and patent searches would reveal this. Take for example, the keel of the Australian yacht in the 1983 America's cup race which was of a radically unusual design. The Australian team went to great lengths to keep the details secret. Yet, all the time, the patent specification for the "secret" keel could have been inspected at the British Library and elsewhere. National libraries have an important part to play in working with their users and potential users in ensuring that they are aware of what exists. This has always been the case. Technology will not change the fundamental task to be done but it will improve the speed and quality of information retrieval.

It is not only the identification of relevant publications which is of importance to the research scientist; it is also the ability to cope with the information overload which is becoming an ever increasing problem. I have heard it predicted that the amount of information produced is doubling every five years. I understand that information overload is often a more serious problem in the sciences than in the non-sciences. Many scientific jour-
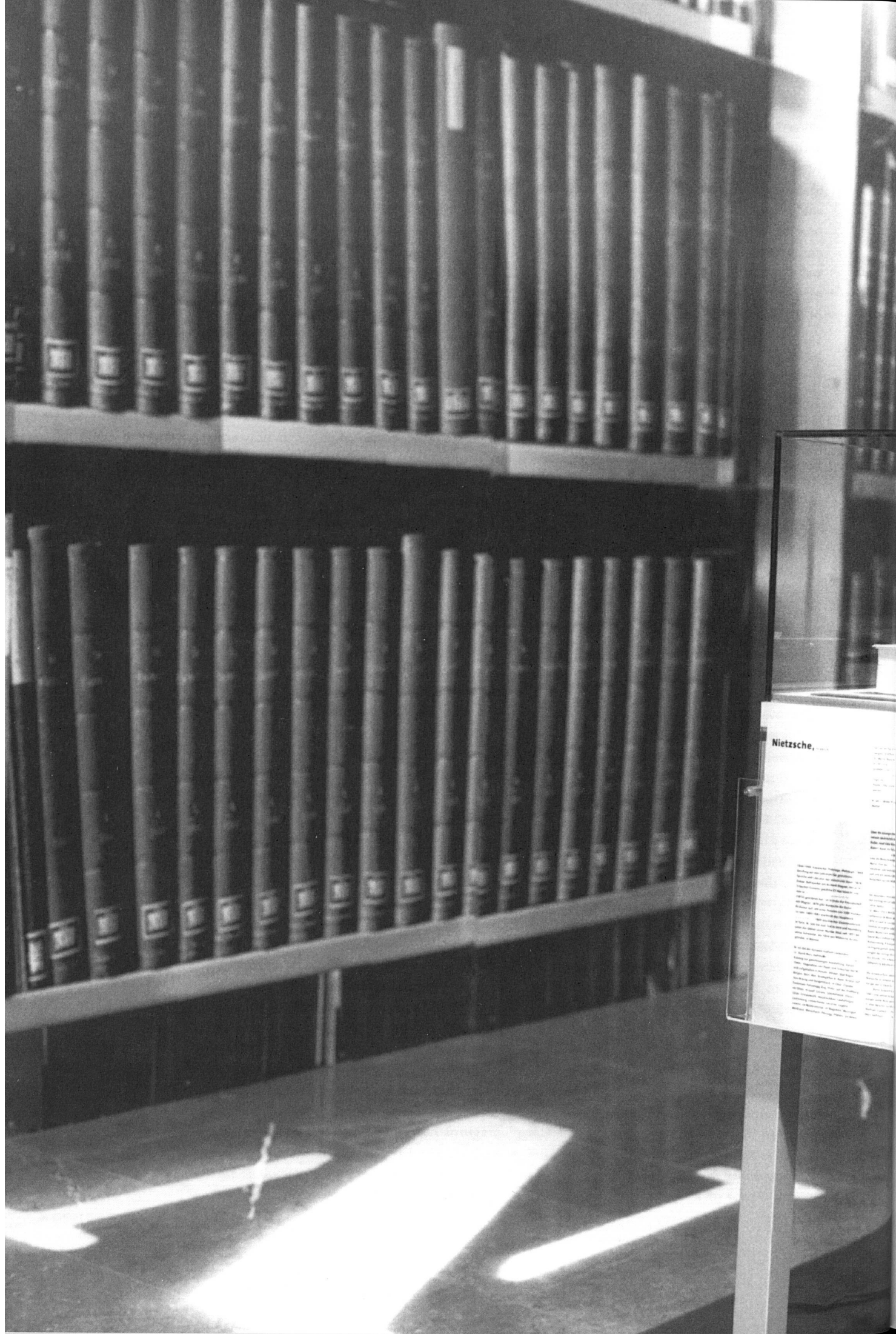
nal articles are of little interest except to the author, but this is not always obvious until after the articles have been read. It is up to libraries to rank their journals in order of use and importance and to weed out the lower-ranking ones. This is, of course, more easily said than done. Libraries need to pursue this task in consultation with research scientists who will be able to assist in the identification of top-ranking journals. Acknowledged experts in particular areas of science are building up invisible colleges, and this provides another means of identifying the authors of articles likely to be respected. The task of producing meaningfully ranked lists of journals is particularly apposite to national libraries whose collections are normally well endowed with journal titles.

I mentioned at the beginning of my talk the *Diamond Sutra*, the oldest printed item in the world, dating from the 8th century, and one of the great treasures of the British Library. It provides me with an excellent example of how national libraries can provide the focus for international activity in support of research scientists. The *Diamond Sutra* was discovered at Dunhuang, in China, and is part of the world's most important collection of manuscripts and printed materials relating to pre-modern Chinese history. Most of the material was dispersed, and a large part was transferred to the British Library. There is also a considerable amount of material in Berlin, Paris and St Petersburg. The British Library has taken the lead in establishing the International Dunhuang Project which promotes the study and preservation of the Dunhuang legacy. It is, of course, the Library's collections which put it in an excellent position to assist the research scientist in this way.

I have sketched out some of what I consider to be the essential roles of national libraries. Some are unaffected by the enormous changes taking place. Others are affected very considerably, not, I would suggest, in terms of their appropriateness to national libraries, but in the ways in which certain activities are undertaken. Change for

the sake of it is pointless, but it is clear that some change will be necessary. The changes affecting national libraries are generally greater in scope and complexity and more costly to put in place than the changes affecting other libraries. Partly because of the high costs involved, national libraries will tend to be slower than other libraries in making widespread changes on a large scale. While they may implement experimental services and systems, they will not put in place sweeping changes until they are confident they have made the right decisions. Smaller libraries, even large university libraries, may move ahead more quickly. National libraries will therefore provide an element of stability and familiarity in this ever-changing information world. That does not mean that we can be complacent. If we do not move with the times, we shall find that there will be serious gaps in our collections of new media publications; we shall have honoured the past but we shall not have created the future, because we shall not have respected all forms in which knowledge is communicated.

Obtaining the right balance between stability and innovation will not be easy. There are activities, such as seeking legal deposit and extending our national bibliographies to cater for digital publications, which we must undertake as a matter of urgency because these are unique to us. No one else will pursue them if we don't. Moreover, we should seek discussions with publishers to convince them that we understand their desires and concerns. We should also seek ways of assisting the research scientist in identifying what is available, coping with the information overload and obtaining information in a form which is convenient. National libraries will increasingly be called upon, nationally and internationally, to cooperate in collaborative acquisitions, retention and preservation policies. Well balanced collections rather than comprehensive collections of the national imprint will become the norm, and digital access to other libraries' collections will be expected.

Nietzsche,