Patents on videodisc a future system almost with us

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**PATENTS ON VIDEODISC**

**A FUTURE SYSTEM ALMOST WITH US**

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**Introduction**

Alas librarian whose too fearful wit
Seeks bliss in refs, and never reads the lit,
Whose products are no more than reading lists
Instead of knowledge or worthwhile digests.

Now interlending's had its weary day
And information handling's come to stay
We'll say farewell to literature grey
And seek a patent from a disc today.

(With apologies to Crabbe)

Forecasting the future, notoriously a difficult task, is a question usually of spotting which of the current developments will prove of major importance. In 1945 we were so overwhelmed with the novelty of atomic power that we failed to notice the tiny transistor. Yet the latter has in the end affected our lives far more than the former. I would suggest, however, with all the confidence of one who will have retired before it happens, that as far as libraries and documentation practice (or information management, if you prefer that term) are concerned all the signs are pointing the same way.

During the 1970s perhaps the most significant development was that the company information unit ceased to be a sub-section of the library. Instead the library became a section of the information department. In library or information department there arrived the on-line intermediary, a person at least doing real reference work in a way that had in many large libraries fallen into disuse. More recently still we have encountered instances of book-less libraries, armed with only terminals, a bus pass to the nearest major national or university library and a sheaf of BLLD loan forms. Will this spread as a fashion? There have been closures of libraries and in-house information services and reliance on external services, often under contract. There has been the development of interactive TV sets enabling people to communicate with shops and their local public library which, in some instances, has developed into a communications centre. One has seen good library services become good information services and then become good advice services. Good service always breeds a greater and more demanding use.

To me all this leads towards the library of the future becoming a centre for information and advice. The task of supplying documents will, in our field, become of less and less significance and the possibilities of supplying needed documents electronically is another step in this direction.

A conference devoted to a theme such as the future of information resources for science and technology and the role of libraries and held at this time would be incomplete without considering happenings in the world of patents. The importance of patent documents as a primary source of technological information has long been known to those wise enough to exploit them and indeed seems to be quite widely recognised nowadays. Of course, there are still those with doubts, especially in the
academic community but large industrial firms have no doubt whatever and I was interested to learn only last week from a patent searcher in a very large industrial concern that the demand in her firm for patent searches for information purposes has recently grown rapidly and she has heard that the same is happening in other firms.

So, a collection of published patent specifications is an information resource. It is a resource for technology, indispensable for technology transfer and, sometimes, for science as well (for example, some of the major biotechnology patents are almost textbooks of their subject). Access to collections of patent documents is normally a function of libraries. Obviously the main library for industrial property in each country is the patent office library or, as in the UK, the national library (in our case the British Library's Science Reference Library which incorporates the former Patent Office Library). But in several countries there are other libraries which hold collections of patent documents and included among them are academic libraries. But even libraries which do not hold such collections need, at the very least, to be aware of how to get hold of a copy of a patent for any member of the staff who finds a reference to one and preferably also how to assist a research worker include patents in literature searches.

So, it behoves all science and technology libraries to keep aware of the experimental studies on changing the storage and distribution of patent specifications which are currently underway, to speculate on their probable outcome and to consider how their library service will be affected if those changes come to pass. It is because the change to the electronically stored patent specification is at the pilot stage and because it has wider implications that such consideration needs to be undertaken now.

Current publishing and storage practice

Industrial property literature is produced in great profusion each year. For several years nearly one million patent documents (applications, examined specifications, granted specifications, petty patents, amended specifications etc) have been published world-wide each year. Most are produced in paper format, printed or offset litho from typescript. Some, however, are published, or at least disseminated, only in microform. Many are available in both paper or microform, the latter being in some cases re-publication by commercial ventures of patent office products. Microfiche, aperture cards and roll film are all used but for the most part paper copies still predominate - microform remains unpopular with a large category of users even if librarians, especially those with storage problems, prefer it.

Publishing is, of course, undertaken by the patent offices as part of their statutory duties, though the actual production may be sub-contracted to the Government printing office (HMSO in the UK) and printing is often done by commercial firms. There are variations in publishing practice - some Offices merely lay typescripts open to public inspection (OPI) for example - which are listed in the standard treatises. Offices which do produce printed copies or microform copies exchange these among themselves and, in general, this is how copies of foreign documents find their way into the libraries. Organisations such as Inpadoc in Vienna or RPI in the US, which republish sets as microfilm, have to acquire paper copies from the patent offices and film them. In general the distribution of official sets of printed copies to designated libraries is done free of charge to those libraries: if they prefer sets of the commercially produced microforms they must pay for them.

Few libraries, other than the central industrial property library, attempt to retain complete sets even of national patents because of the bulk and the relatively low frequency with which material more than 50 years old is consulted - but there are notable exceptions. In some ways this is a pity and may reflect the fact that only
a few of those studying industrial archaeology seem to have realised the wealth of historical information that can be gleaned from patents.

Special libraries, in industry and in research institutions, often maintain collections of patent documents relevant to their fields and can often prove an efficient source of a copy of one.

Electronic documents

Patent specifications, being produced in bulk, with a remarkably standard and standardised format, with well and clearly established bibliographic details (they are the outstanding example of international harmonisation and great credit for this is due to the World Intellectual Property Organisation, WIPO, in Geneva) are an obvious candidate for conversion to or production in electronic format. The US has been putting the text of its documents onto magnetic tape since 1970 but, of course, one of the drawbacks to that format has been the absence of diagrams and these are very important indeed in understanding many patents. Incidentally, for those not familiar with patent specifications, the diagrams contain no textual explanations. Numbers relate parts of the diagrams to the main body of text and it is normally necessary to see both diagram and related text simultaneously, a fact which has generally militated against reading microforms, as distinct from using them for storage and printing out copies.

Bibliographic details of patents have been available electronically for some time. Best known are the Derwent and the Inpadoc services but a number of others also of major importance are nowadays available notably from Pergamon-Infoline and Télésystèmes-Questel. There can be little doubt that future electronic storage systems for the documents themselves will be linked to these which are becoming both easier to use and more and more advanced in the search strategies possible.

An early attempt to exploit this possibility was the Video-Patsearch system devised by Pergamon. On it, a juke-box videodisc system which stored the abstracts and a diagram of US patents was searchable via the Patsearch database. Unfortunately, the electronics of the system proved inadequately robust but the concept was exciting.

Now we have arrived at the stage that videodisc storage of patent documents is being experimentally undertaken and the three major patent offices of the world are planning jointly to convert their files to that system.

Patent Office Plans

The US Patent and Trade Mark Office (USPTMO) has already announced its plans to install an automated system for processing applications. The Office has contracted with Planning Research Corporation to design, engineer and integrate the computer system and with the Chemical Abstracts Service for much of the software. In the new system paper files will be replaced by an electronic full-text database using high density storage. This will contain all active trademark registrations and all post-1971 US patents. Pre-1971 US patents will be converted to digital form on a selective basis and recorded on the electronic database. An image database will contain all US patent drawings, design marks, the entire backfile of text of US documents which cannot be cost-justified for incorporation into the electronic text database, foreign patents and patent-associated technical literature.

New applications will be accepted either in machine readable form on floppy discs, directly via land or satellite telecommunications, or on paper which will be processed by an optical character reader (OCR). The contents of the application will be entered into the electronic text and image databases, updating occuring at
every stage of the examination process. Pre-examination steps (formalities checks, classification, fee verification) will be computer assisted.

The entire examination will be conducted at an electronic work station but examiners who so prefer will have facilities for printing out paper copies. The work stations will have multiple display screens, so that examiners can view simultaneously the text and drawings of any document. Search of US patents back to 1971 (earlier in a few selected subject-matter areas) on the electronic database will be possible by any combination of classification codes, keywords, applicant or inventor names etc but only limited search facilities will exist for most pre-1971 US patents, foreign patents and patent-associated literature.

The present timetable envisages that by the end of 1984 automation of the trademark examining operation and one of the 15 patent examining groups should be completed. All internal operations are to be automated by the end of 1987, including providing a paperless public search room. By 1990 the system will have the capacity to be accessed world-wide through the international telecommunications channels.

Meanwhile the three major patenting offices, the USPTMO, the European Patent Office (EPO) and Japanese Patent Office (JPO) have announced that they will collaborate on a project which will result in new patents being available in electronic format by feeding in the text from word-processors and the diagrams from paper. They are also planning to create on videodisc an electronic backfile of all the documents used for searching (the original plan to store the backfile on ultrafiche seems to have been abandoned). If targets are met, by 1990 - only five years away - whole text searching of new patents may be feasible and certainly for the backfile, a search through bibliographic data can be accompanied by access to the pages of text viewed on a screen or printed out on or off line.

As far as the backfile is concerned, paper copies will still exist - they are the input to the videodisc system. But for newly issued patent documents it is possible that the only paper copies will be those printed out on request and this will make searchers and librarians think hard about how they work and what facilities are provided.

Some current work

In Europe two important experiments are underway. The first, at FIZ 4 in Karlsruhe, Germany, is endeavouring to store diagrams on magnetic disc at very high density.

The second, at CNDST in Paris, France, is comparing the merits of storing and retrieving documents, including patents, on ultrafiche or on videodisc. This is the Transdoc experiment. Both experiments are part of the CEC's Dodec programme.

I have seen the Transdoc experiment and the system is indeed very impressive. Paper copies of patent documents are fed into the system and, once in and stored, coded so that they are related to the INPI bibliographic databases. These are very sophisticated on-line databases which, for example, enable one to search for all the patents valid in France on a particular subject, as defined by the International Patent Classification, which have been taken out by a particular company over a certain period. Now, the Transdoc system enables one to look at the patents themselves on the screen and either read them or at least verify that they are what is wanted.

The French intention is that eventually the Transdoc equipment will be linked to the Télésystèmes network. Then users of that network, which is already used by several other countries especially for the INPI databases, will be able to access
patents in full and print out those required.

Patents in libraries

Drs Wehefritz and Fellmann in their paper, "Library services for industry in Aachen and Dortmund", described the important part patents play in such libraries, far from the patent examiners of Munich. What changes will occur when patents are available on-line or on disc?

Much may depend on the options for access. There appear to be three possibilities if, for the moment, we ignore that of continuing to acquire and store paper copies. Essentially the three options are:

(i) on-line access to a national or international host
(ii) acquiring the discs and mounting in-house
(iii) setting up a cooperative with other libraries to acquire and mount the discs

The library which acquires copies of patent specifications only when requested to do so by a customer and has only a few customers for these documents will not acquire the discs. If haste is not important it will probably do as now, namely order a printed copy to be sent by post - but the order may be sent on-line. On the other hand, the option for on-line access to both bibliographic database and to full-text on-line will probably tempt or encourage libraries which scarcely touch patents at present to offer a fuller service to local industry and to their own departments of engineering. So there is the possibility that many more libraries will offer a service of patent information, with all the consequences that has for staff training.

On the other hand, many companies which nowadays use external libraries may decide to use an in-house terminal to search and read and a printer to acquire document copies. This would result in a fall in demand on libraries, particularly from the large companies. It will be up to the librarians, if they wish to continue to provide a service in the field either to concentrate on the smaller companies which would not wish to do their own searching or to provide repackaged information services which will interest the larger companies. Either way, a greater degree of information work, or reference skill to use the traditional term, will be required on the part of the library staff.

Modes of usage

At present patents libraries are used for three broad categories of work:-

(a) for current awareness searches
(b) for in-depth validity searches
(c) for copies of a few documents found in an information search

Current awareness searching usually involves a rapid scan each week of the latest patents to be published. Since they are usually available before the search tools are published, it means scanning 600-1000 documents per week. It may well prove that this is much more easily done at a screen than by handling paper copies, particularly if ordering a paper copy of each interesting one involves only a simple key stroke or if down-loading the front page of each interesting one is feasible and simple.

The same would apply to in-depth searches but the time taken to study each
document on the screen may be longer, although the number of documents may be fewer. Even so, it can commonly involve a hundred or more. In both these cases much is going to depend on whether the hosts are hospitable to extended searching. If not, local mounting of the discs is likely to be essential.

At the other end of the scale there is the search which is quite satisfied by retrieving a few references and printing out copies of selected ones.

Other searches, and there are many others ranging from a thorough study made before a major new development project is launched, to maintaining a watch on competitors' activities and even looking for a potential new market for a product, are but variants of the three main types. Nor are searches confined to patents. When information is sought other sources (journal articles, reports etc) may also contribute to the result required.

In considering the facilities to be provided, librarians will have to consider the type of service they are going to offer and the extent of client usage. Will they take the traditional approach still of offering only the search and read facilities? Even if only this, an intermediary will be needed who will have to be as well versed in patents as he now has to be in other fields when using current on-line facilities. Or will the library go further and provide an information service which includes patents in its coverage? In either case there will be costs to cover in a way normal for using on-line services but not normal in providing access to printed literature. The paper by our American colleagues, Mrs Richards and Mr Widdicombe, "Fee-based information services to industry", becomes highly relevant but what about the service to academic clients from one's own university? The scale of cost of on-line searching as at present carried out may multiply many times when full-text searching becomes the norm. Can the library still absorb this on its budget?

Dr Michalak has described the development of the library work station. Patents may create problems which, however, are not unique to patents. The principal one is that text and diagrams must be viewed simultaneously. This is because there is no explanatory text on the diagrams. Since reading scientific papers is also easier if one can see simultaneously the relevant diagrams, multi-screen work stations, each screen separately controlled, may become normal: they are not common at present.

Concluding remarks

So, looking ahead to the era when patent documents will be accessible from videotapes involves asking ourselves many questions about the needs of our local clientele, including forecasting whether that clientele will change as a result of the new technologies. It involves asking ourselves questions about how the facility is likely to be used, whether there will be new patterns of search practice and, if so, how do we adapt our libraries to them. It also involves asking searching questions about the economic structure of the library and its relationship with its clients.

The fact that we may be reasonably confident that patents will develop in this way is valuable in that it will concentrate our minds. The prospect of the electronic journal may have receded for the time being but the plans for patents are advancing. And if the system works for patent specifications, surely it will work equally well for standards and for reports. Directories are increasingly going on-line. Dr Koskiśala indicated the extent to which electronic publishing of non-bibliographic material is increasing. Is each of us yet clear how in our own library we will not merely respond to these new developments but seize each one and exploit it to increase the value of our library as an information resource?