

PAPER 2: COMPUTERISATION OF THE LAND TRANSFER REGISTRY

by
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INTRODUCTION

First, I would like to thank the Foundation for inviting me here, and for arranging things so well. I would also like to thank my Auckland hosts for being so kind to me. I am delighted to be "home" again, as it were, and embarrassed at being described on T.V. as an Australian lawyer. As you look at my paper you will see that most of my work in this area is some years old.

Advantages of Computerizing the Torrens Register

When I became interested in computers in the early 1960's and saw their advantages and disadvantages, it seemed so obvious to me that the Torrens System was exactly the kind of operation that should be computerized:

There was a relatively limited number of kinds of transactions involved.

There were specialist people using the System.

The time, frequency and character of the uses of the material can be reasonably well predicted.

And it was a System in which immediate access was essential.

Nevertheless, after I had written my article, I was afraid to publish it because I feared that people would shake their heads and say:

"That ivory tower academic! How little he remembers of the things that happened in practice."

But I was in the Research School of Sciences of the Australian National University at the time, and Professor Geoffrey Sawyer twisted my arm and I did publish. In the ensuing years there have been very great advances towards computers.

Progress in Overseas Jurisdictions

In England a computerized system will be in actual operation to carry out the functions of the land charges registration procedure by the middle of 1973. Although the operation of such a system is some distance away from an actual operative system of registration of title of land, it is a very big step along the way. Furthermore, the English Chief Land Registrar, T.B.F. Ruoff, stated in his Annual Report for 1970-71 that he has —

"set in motion a study of the feasibility of the computerization of some facets of the work of the Registration of Title Department, as well as of the processing of our statistics, which provide an essential aid to efficient management. Already certain areas of the work in the field of registration of title, which may be amenable to computerization, and which may thus bring cost benefits to the Land Registry, have been identified, and preliminary studies are now being made."

In New South Wales feasibility studies for the possible computerization of the Torrens registry are very far advanced under the leadership of the New South

Wales Registrar General, J.H. Watson. The hope is that there might be computerization by 1980. A team from the New South Wales registry has recently visited many installations in America and Europe and their report arrived in my hands three days ago. It is a most interesting and comprehensive document.

In Canada in the Maritime Provinces there is also advanced experimental work occurring and this is particularly far advanced in Prince Edward Island.

In Sweden too there are very advanced complete systems under development and also in some parts of Germany.

But perhaps one of the most interesting ones for our purposes may be the far advanced system under consideration in the Canadian Maritime Provinces.

Some Present Difficulties

Robert Richard Torrens suggested that the system of registration of titles that was being introduced would —

“... have four grand characteristics — Certainty, Economy, Simplicity and Facility.”

I feel that all of these have almost disappeared. Not only have there been theoretical abstractions, but there have arisen many practical problems ranging from the purely legal to the highly practical one of delay in registration. I believe that the Torrens System process operates successfully only because of the care of the Registry Office staff and because the New Zealand land owner and his legal advisers are honest and make the system work. I believe the public's complete confidence in Torrens titles is becoming more and more misplaced.

The increase in the number of transactions concerned with land, and the changing and more complicated nature of many of these dealings, are such that in many jurisdictions the delays in the process are becoming intolerable. Delays at the intake point and backlogs in the completion of registration have often been a cause of complaint, and indeed litigation, in recent years. Why should a person's title be dependent upon the fact that he happens to live in a less busy registration centre, or that he puts his instruments in at a slack part of the year? Why should a person face the danger of losing out because a registry office registration officer happens to get the 'flu and thus the registration does not get completed? In some places the delays can almost be equated with those which existed under the Deeds System immediately before the introduction of the Torrens System of registration of titles to land.

Last Sunday I heard of a nice example of delay. One of my law students, who has recently gone into an office, took two hours to lodge a document and got into trouble with a partner when he got back to the office. He assured the partner that he had not been to the local hostelry with his friends but the partner said, “Tomorrow, I'll show you how to do it.” Next day, after two and a half hours at the registry, a very shame-faced partner, who was still waiting, said, “I am sorry fellow, I really must go to that urgent consultation. Will you say in the queue and file this?”

How very much easier if filing took place now on a computer console as it will in a few years time? You will be able to settle a transaction and register very promptly indeed and thus almost eliminate the presently substantial “areas of risk” (as the New South Wales Court of Appeal called them in *Jonray* (Sydney)

Pty. Ltd. v Partridge Bros. Pty. Ltd. (1969), 89 W.N. (Pt. 1) (N.S.W.) 568 at 577) that exist between contract and final registration.

The ultimate aim of my suggestions is that the registered title to land in New Zealand will once again have recorded on it all interests in the land that it is intended to protect against that mythical monster the *bona fide* purchaser for value, and that the system would cover all lands held upon any kind of tenure. That is, there should be a register encompassing the whole mosaic of parcellation of New Zealand lands. Then the delays that create danger areas in the system will be reduced from days, weeks and months at least to minutes and probably to seconds and parts of a second.

In Sweden, in addition to the more conventional rights that could be entered on their record they are investigating the possibility of putting on to the record such information as soil types, fishing rights and tax value.

Although this is the ultimate aim much can be achieved short of this. In the meantime, the suggestion is made that the present system should be investigated for automation.

Problems Envisaged

What bogeys do I see? I think that most come under one or other of the meanings of conversion: conversion of existing records, converting documents at intake point, and converting people to the idea of an automated system.

(1) Costs of converting existing records and running costs.

I leave most of the discussion of this point to my young friend Mr Newhook, who has prepared an excellent paper, and I merely make two points.

First, I think that the costs of running a computerized system will not be a real problem for I believe that the economies of so doing will make up for the seemingly big costs. But the cost of converting existing records is, I believe, a real bugbear and I anticipate substantial problems in that area.

Secondly, on costs generally, I mention one small incident that happened recently. I gave a paper to a computer session at the recent Australian Medical Association Congress in August and an American surgeon who also gave a paper and did not seem to like computer diagnostic systems, put on a beautiful slide of a computer installation and said, "Look at this. This system cost 3½ million dollars and it is not as efficient as the doctors in diagnosing."

My friend the Professor of computer science, who was also taking part in the session, got up and said:

- "(a) Remember that the doctors who were much more accurate than the computer diagnostic system not only had the information that the computers had available to them but also saw the patient; and
- (b) Certainly that outfit you had on your slide cost 3½ million dollars, but it's also doing about 1000 other jobs a day not concerned at all with your computer aided diagnosis.

Your job alone could have been done by a machine costing \$2000."

So I say, let us not be completely bamboozled by horrendous costs.

(2) Conversion at the intake point

As I said in my article, the second kind of conversion that will still cause us problems is the conversion of documents at the intake point. Although advances have been made here, I believe that the crucial breakthrough has not been made as yet. There will certainly be no problems with other registration functions such as searching, but it is the accurate scanning and conversion of typed documents that will prove a problem at the intake point. It is possible to do this job now, but slowly, and I believe that the development of more advanced optical scanning input devices will be a great advance. Of course, big institutions may well be able to present their material in machine readable form and so avoid this problem at intake point.

(3) Converting people

The final kind of conversion that I wish to mention is that of converting people: you, me, and all the people concerned with the operation of the system. I believe that this is a major problem, but I doubt if it will be as difficult as was the problem of converting our great grandfathers-in-the-law to the use of the Torrens System in the 1870's.

Nevertheless, it is a major task because we lawyers tend to resist the introduction of new things. For instance, we did not take kindly to such inventions as the elastic band or typewriters. Mind you, we must be careful not to become mechanism mad. I remember that, after the publication of my original article, I had a very nice exchange of correspondence with a bright young solicitor in New South Wales whose office obviously had everything in it that opened and shut. Suddenly there was a gap at his end of the correspondence and, some time later, a letter arrived which began:

"I am sorry about the delay in replying. I had dictated an earlier reply but it became lost among my tapes."

Or, again, as I say in my paper, I don't want us to get to the stage of the epitaph that I vamped up in footnote 64 of my article:

"Here he lies mouldering
His dying was hard
They shot him for folding
His mortgagee's card."

So perhaps all I am asking is for us to do what others are already doing overseas; namely, investigating now the possibility of computerizing our registry. Already we can get much assistance from those who are already going along the road and, perhaps, they will help us to prevent wasteful duplication of effort.

In the end, of course, those of us who advocate computerization may turn out to be wrong. If this is so then, of course, as the sun sinks slowly over the Waitakeries, those who said "I told you so" will be heard cackling happily to themselves as they sharpen up their quill pens.

When I first started to consider computers in the early nineteen sixties it soon occurred to me that one very suitable candidate for computerization was the Torrens System. Thus I researched and wrote the attached **Australian Law Journal** article "Electronic Computer Technology and the Torrens System."

Since publication of that article very considerable progress has been achieved in computer possibilities for land registration in England and New

South Wales in particular, but in other Commonwealth jurisdictions also to a lesser extent there has been some consideration of computerization.

In England a computerized system will be in actual operation to carry out the functions of the land charges registration procedure by the middle of 1973. Although the operation of such a system is some distance away from an actual operative system of registration of title to land, it is a very big step along the way. Furthermore, the English Chief Land Registrar, T.B.F. Ruoff, stated in his Annual Report for 1970-71 that he has "set in motion a study of the feasibility of the computerization of some facets of the work of the Registration of Title Department, as well as of the processing of our statistics, which provide an essential aid to efficient management. Already certain areas of the work in the field of registration of title, which may be amenable to computerization, and which may thus bring cost benefits to the Land Registry, have been identified, and preliminary studies are now being made."

In New South Wales feasibility studies for the possible computerization of the Torrens registry are very far advanced under the leadership of the New South Wales Registrar General, J.H. Watson. A team from the New South Wales registry has recently visited many installations in America and Europe as part of feasibility study which it is hoped might lead to computerization of the System by 1980.

I believe that these and other efforts that are being made will indicate that computerization of the Land Transfer Office is possible. I also believe that such a step is necessary if our registration system is to continue to provide a satisfactory basis for land dealings for the New Zealand community.

ELECTRONIC COMPUTER TECHNOLOGY AND THE TORRENS SYSTEM

By Douglas Whalan*

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The computer-joke phase has passed in *Punch* and *The New Yorker* (depending upon one's orientation), so perhaps it is reasonable to conclude that computers have become an accepted fact in the life of the community even if their advent has not become quite accepted by the community. Nevertheless, although much experimental work is being done in the field of law in the United States of America, and the United Kingdom, the computer age has yet to make an impact on the everyday practice of our profession.

This paper considers one area of law in which computers could, and it is submitted should, be applied now. Computer technology could be used to cure many of the ills that now afflict the system of registration of titles to land that applies throughout Australasia — the Torrens system. Although the technological changes that are about to be discussed may appear revolutionary, it cannot be emphasized too strongly that they are revolutionary only in the sense that they have not yet been applied in this field; all of the techniques that will be discussed are being operated successfully in other fields and, indeed, many of them are operating in the area of legal research, although at the experimental level.

(a) *Criteria that Justify the Introduction of Computer Technology.*

The development of the electronic data processing system provided capabilities enormously more powerful than those of any previous manual or mechanical device for the handling of information. The possibilities and advantages of a computer system derive from three of the basic characteristics of such a system. First, it has the ability to perform certain simple operations at extremely high speeds; secondly, through its stored programmes it can carry out automatically a specified sequence of those simple operations; and thirdly, there can be stored within the system vast quantities of information which can be dealt with, added to, subtracted from, varied, searched or analysed in any manner specified.

Although these tools with these potentialities exist, something more is needed before their adoption is justified. In considering the possible application of the new technology to new areas, the twin dangers – of automating things that it is an economic waste to automate and of believing that problems will be solved merely by installing equipment – must be avoided.¹ There are several situations which may justify the installation of a computer system². The first is where there is a large volume either of stored information to be handled or of “through-put” which is of a well-defined and repetitive nature. The second is “where [one] must be absolutely sure of control of the information, control of the file, and can tolerate no errors”³. A third is where there is a complex operation that must be done quickly but which, because of its complexity, a human could not do properly in the available time. A fourth potential computer application, and in some ways this may be an extension of the third, “is a situation requiring multiple hands in a file that must be current”⁴.

(b) *Applicability of These Criteria to the Torrens System Process.*

The existence of a situation involving any *one* of the above criteria or problems justifies investigating the possible application of computer technology; it can be seen that all apply in varying degrees to the Torrens system process as it is currently operating in the Australasian jurisdictions. Even if the current process was adequate it would be useful to contemplate bringing it from the mid-nineteenth century into the mid-twentieth century; the present system is not adequate in theory or in practice and it is submitted that the present inadequacies in practice made the possibility of the theoretical inadequacies arising in the future much more likely.

The increase in the number of transactions concerned with land, and the changing and more complicated nature of many of these dealings, are such that in many jurisdictions the delays in the process are becoming intolerable. Delays at the intake point have been a cause for complaint in some offices; backlogs in the completion of registration have been a feature of most offices in recent years⁵. In some places the delays can almost be equated with those which existed under the deeds system immediately before the introduction of the Torrens system of registration of titles to land. It is important that the present very high standards of work within the registry offices should be maintained but present circumstances make this difficult.

These developments appear to fall within the ambit of the criteria which may justify computerization, for computers could handle the qualitative changes as well as the quantitative one. The discriminatory power of the computer could

relate the greater number of closely integrated documents much more quickly, efficiently and certainly than could human agency, however skilled. In short, if an electronic data processing system suitable for a Torrens-type operation can be devised, it could keep all titles up to date and ensure reliability at the intake, search and output levels.

(c) *The Suitability of Computer Technology to the Torrens System Process.*

If computer technology is to come into the Torrens field there are three possibilities. First, it could be introduced to assist in the eradication of the imperfections of the system as it presently operates; secondly, the present system could be wholly organized on computer lines; or thirdly, the present system could be computerized and additional functions added to it.

The first possibility would involve using a computer to carry out the peripheral activities of the registration system; in this way many clerical functions would be eliminated and this would assist the registry staff in keeping the records up to date and the system flowing more smoothly; this in turn would go some way towards removing some of the current areas of doubt. This change would leave untouched the central core of the registration process, and would leave unaltered the present evidentiary structure of the Torrens system. This first possibility would be computerization as an aid to and external of the operation of the system.

The second and third possibilities are similar in nature and indeed the third could grow out of the second. What is envisaged in these cases is that a completely integrated computer system should also envelop the central core of the system; instead of the record of the state of the title being found in the register and associated documents as at present, it would be found in the memory store of the system. If this idea is adopted there will be a complete shift in the current state and status of Torrens instruments. With the introduction of registration of title to land the interposition of the bar of registration rendered deduction of title through the chain of title deeds obsolete; registration of the instrument and the title as entered in the registry office became all-important. Notwithstanding this vital conceptual change, there has been carried forward from the deeds system more than a vestige of the idea of the importance of the possession of the "title deeds"⁶; under a completely computerized system this would largely disappear⁷. Thus, it is submitted that this change involves no conceptual change but merely shears off from the current system something which conceptually does not form part of that system.

If either the second or third alternative is adopted, it is submitted that it is now feasible to store the necessary documents in a computer system in such a way that they will be much more accessible and easier to manage than they are at present⁸; furthermore, the homogeneous nature of the material and the predictable usage made of it render it eminently suitable for computer storage and use even in the present state of computer knowledge and technique.

Registration of title material is of the *kind* which has had much research put into its storage and retrieval; it poses problems that are very much simpler than those being solved in the library field. There are a very limited number of types of instruments to be dealt with and no complicated semantic problems to be overcome in indexing; titles material can be filed, subfiled, labelled and segmented with reasonable certainty that the manner of treatment will match its

later use; and the time, frequency and character of that use could be reasonably well predicted.

An information retrieval system must always be based on its usage. Except in the case of a specialized library, usage and users in a library are much less predictable than in a system of registration of titles. Libraries have to cater for users who approach any given topic from a variety of viewpoints; there will be those who know what they want, those who do not know what they want and, even more difficult to satisfy, those who think they know but do not; furthermore a library must be in a position to offer a fair amount of "browsability". Only very rarely will any of these problems arise in a system of registration of titles; almost all users will come with a clear understanding of what they want, they will nearly always have a specific reference with which to commence their search, they will know the characteristics of the items for which they are searching, and they will know the precise terminology used in the instruments under search. In other words the problems at the search or retrieval level of a registration of titles system are very similar to those which have been faced and solved for usage of computers and computer storage by scientists of all kinds.

(d) *The Automated Torrens System Process*

1. *Technicalities of an Automated Torrens Process*

An attempt will be made to prescribe a system which would be adequate to cover the Torrens system process; in choosing the components for this line-up, no account will be taken of any exotic devices under development which will conceivably or even probably be in operation within the three or four years that would be necessary to plan the conversion suggested here⁹; it is a reasonable expectation that there will be increasing sophistication and appreciable lowering in cost of the units chosen and the dangers of planning tomorrow's system on today's equipment would need to be avoided in practice¹⁰; nevertheless in this paper no break-throughs are anticipated.

(i) *A Typical Computer System and its Operation.*

Before discussing a computerized system of registered titles, a simple digital computer¹¹ system and the way in which it operates is described¹².

Instructions for processing data or the actual data to be processed are recorded on input media such as punched cards, punched paper tape or perhaps magnetic tape; these instructions or data are fed through an input device that is part of the computer complex, converted into electronic impulses and stored in the memory system of the complex¹³. Whether the input is instructions or data for processing it will be stored in the memory system until required.

There are usually different kinds of memory storage in a complex. Invariably there will be memory storage as an integral part of the central processor. This internal, main or primary storage is now almost certain to be magnetic core storage; many early computers used magnetic drum storage for main storage and some use is now being made of magnetic thin-film storage for this purpose¹⁴. Main storage is directly controlled by and is automatically accessible to the other parts of the central processor which are the arithmetic-logical unit or actual computer and the control circuits. All main storage can be reached directly in another sense, too, in that there is no need to

go through a sequential search until the required address with its data is found; storage that can be reached in this manner is known as random access or directly addressable storage. In addition to internal or main storage, which is likely to be used principally for storage of instructions or programmes and storage of data currently being processed¹⁵, there is auxiliary or external storage¹⁶ which usually holds the bulk of the data in the complex and can virtually hold as many millions or billions of characters as desired. Although auxiliary storage is an integral part of the complex and information stored in it is accessible to the central processing unit, it is not directly accessible but must be routed through main storage. Auxiliary storage can be either random access usually in the form of magnetic discs¹⁷ or possibly magnetic cards, or sequential in the form of magnetic tape.

The central processing unit comprises the control circuits or control unit and the arithmetic-logical unit. All operations of the computer complex are guided by the control unit. Operating in accordance with a set of instructions, or programme, it integrates the system by controlling and directing the input and output¹⁸ devices, the entry, removal or transference of information and the functioning of the actual computing unit – the arithmetic-logical unit. The control unit takes instructions one by one from storage and executes them consecutively until the whole programme has been executed. Each instruction will give the address or addresses in storage of data to be operated on, the function to be performed on it, the address where the result is to be stored whether as the final product, until required for further processing perhaps only a few millionths of a second later or pending output by an output device, and the location of the next instruction which is to be taken from storage and executed.

Finally, there are likely to be instructions in a programme for the output devices to print out those results of the operations that have been performed as are wanted and those results will be available in the form of punched cards, typescript¹⁹ or other form depending on the particular output peripheral used.

(ii) *Processing of Torrens System Documentary Intake*

It is at the intake and processing points that the contribution of a computerized system of registration of titles to land will bring greatest benefit in the immediate future, for it is here that the present problems of protection between the time of entry into the contract for sale and purchase and ultimate registration of the dealing can be solved²⁰; it is also at the intake point that the most difficulty will be encountered in finding appropriate equipment. The essence of the present proposals is that delays which create the danger areas in the system should be reduced from days, weeks and months at least to minutes and probably to seconds and parts of a second²¹.

What is needed for most titles registration transactions is a series of components that will read the instrument²² presented at the intake point, check that it is compatible with the current state of the title which it affects, register the instrument by altering the record of the title within the system so as to reflect the change effected by the instrument presented and print out an updated record of the title; if by chance the instrument presented is not in order for registration it will be rejected and a print out of the reason for rejection given. It is submitted that the whole of this process can certainly be effected in less time than it now takes merely to lodge a document for registration; the time could probably be measured in terms of seconds.

In computer terms a registration system requires an "on-line" system operating in "real-time"; that is, the peripheral equipment must be in direct communication with the central processing unit in such a manner that information reflecting current activity is introduced into the data system as soon as it is received and so that the results of the processing are available immediately (in practical terms) to users of the store of data. In this way the possibility of conflicting interests arising between the time of lodgement and registration is eliminated simply because intake is registered within a matter of seconds or parts of seconds; furthermore, anyone searching gets the up-to-date state of the title virtually instantaneously²³.

As has been seen, there are several devices which have been developed to assist in the inoculation of information between man and computer. All of these require the translation of this information into computer language; almost all involve the interposition of processing into machine-readable form which would cause some delay. Although some minor changes in conveyancing practice will be necessary, it is submitted that it would be unsound from the point of view of economics, practicability and possibly law to make a fundamental change in the nature of documents presented for registration. It follows that for most documents the point of change into machine-readable form should be at the point of intake. It may well be that it will be convenient for instrumentalities such as planning authorities or government departments (or some individuals too, for that matter) to present material for registration in processed form²⁴ and the presently more conventional peripherals to manipulate this material will need to be provided²⁵ at the intake point; but to eliminate the period of delay which hampers the development of the registration system at present, what will be needed for most intake will be a peripheral that will accept typed documents without the necessity of interposing an operator to translate the documents into machine-readable form by some form of typewriter-like keystroke.

Optical scanners that will read typed documents are already in existence²⁶ and thus the necessary technical break-through has occurred. However an enormous amount of development work is currently in progress on scanners and it is predicted that within the next two or three years machines will become available which will be far in advance of the present merely satisfactory ones.

Once material has been introduced into the computer system without appreciable delay the problems with the rest of the process can be surmounted with the processing and storage equipment of the kinds already described.

Almost certainly, random access or directly addressable memory storage will be used. For reasons of economy of time, money and tape wear, sequential storage requires that data should be accumulated and processed in "batches"; that is, its efficient usage dictates that several searches and changes should be made on the one run through the tape. The essence of the system advocated here is that it must be up to date to within a part of a second to eliminate the dangers inherent in the current system; hence the need for random access files which do not suffer from these limitations.

The record of the title will be called up from auxiliary storage and, in accordance with the programmed²⁷ instructions, will be compared for compatibility with the data that has been presented for registration; if the instrument presented is not in order it will be rejected and a line printer or

similar device will indicate the reason for rejection; if the instrument is registrable the stored record will be updated to give effect to the instrument presented, a record of the new state of the title will be printed out and the record returned to auxiliary memory storage.

It is submitted that the process that has been outlined will eliminate the practical and legal problems which have arisen or could arise in the Torrens system at, and subsequent to, the point of lodgement of documents for registration.

There remains the very important area of danger which exists between the time of a contract for sale and purchase and the lodging for registration of the memorandum of transfer in pursuance of that contract. It is submitted that one of several major changes which should be made in the Torrens system whether or not automation is adopted is the development of the concept of a notice of priority. Under an automated system the notice of priority concept would operate in this way. Immediately following the search made in the manner about to be described, the purchaser, having satisfied himself that the title is as represented to him by the vendor, will register his notice of priority. The system will be programmed in such a way that it will be possible to enter a notice of priority at once through, or on line with, the search unit; this will eliminate any possibility of a conflicting interest being entered on the title between the time of search and registration of the notice of priority²⁸. When the instrument consummating the transaction which the notice of priority protects has been presented for registration, found to be in order and registered, the notice will then be cancelled; if there is a flaw in the instrument and it is rejected as being unregistrable the notice of priority will remain in force to enable the corrections to be made and the transaction to retain its priority.

(iii) *Searching of Titles*

In addition to dealing with registration and the preparation of output in the form of documents which reflect changes in the state of a title, the system will cater for titles searches and in doing so will provide another form of output from the system.

There are several peripherals which could be used to carry out the searching process but the system which is suggested is a number of keyboard request and cathode ray tube display consoles²⁹ and a line printer for printing out a copy of the search. The system will be programmed in such a way that a searcher using the console will conduct his search in much the same way as at present.

On the assumption that he has a title reference³⁰ he will keystroke this on a keyboard similar to that of an ordinary typewriter; he will check that he is seeking the correct title for, as he strikes the keys, his message will appear on the television type screen on his console; when he has completed the reference he will press the appropriate key and in a fraction of a second³¹ the record of the title will appear on the screen much in the form that a present certificate of title appears in the register³².

If on examination of the certificate of title he is satisfied with his search he will press another key and have a printed copy of the search made; in addition, if the transaction is sufficiently far advanced to warrant it, he will enter his notice of priority as previously suggested³³. However, if as a result of

his search he wishes to look at other documents in detail, then he will use his consol unit to call these up from storage for perusal and will also be able to get a print-out of these if he wishes³⁴. As has been mentioned³⁵, in order to prevent any possibility of conflicting interests arising in the registration process, if a searcher endeavours to search a title already in use his request will be rejected and the reason for its rejection notified on the screen.

It is submitted that the process of searching and indeed the whole registration process can be automated to eliminate all of the danger areas which exist in the system as it presently operates; it is possible to do this without causing any inconvenience to users only because of the immense speeds attained in computer technology.

2. *The Problems of Converting to an Automated System*

(i) *The Difficulties of Conversion*

There is already in existence a very large volume of material associated with Land Registry Offices which will need to be converted for use in the new system. Although the conversion into machine-readable form of the actual documentation will be a large task it will be a relatively straightforward one; unlike the enormous variety of kinds, sizes, shapes and forms of library materials, for example, Torrens material is in standardized form and comparatively limited in its variety. It may well be that the opportunity will be taken on conversion to use the capacity of the computer to eliminate any errors which may have crept into current records; the possible incursion in the future of users of the system who possess different skills may make it advisable to organise the material so that it will be retrievable in a greater variety of ways than at present. The utilization of the computer's speed will render it possible to make those checks, changes and fresh analyses.

One of the major difficulties that will arise is that the mass of material being converted will be in use throughout the period of changeover; this difficulty is likely to be more critical in a system of registration of titles than in other areas. In most libraries, to use that example again, the needs of the person seeking a book or piece of information can often be satisfied by obtaining it from an alternative source; even if this is not possible it would be an extremely rare situation where the person could not wait for the short space of time during which processing was being completed. Although the ratio of registration of title material in use at any given time to the complete mass of such material is very low, an essential feature of a system of registration of titles is that any part of the store must be available immediately if it is sought. This leads to the problem that the conversion to an automated system must be planned very carefully.

(ii) *Planning for Conversion*

Conversion will involve much more than introducing techniques and equipment to do operations which are now mainly done manually. Perhaps it is trite but, in view of the mistakes that have occurred in the computer field³⁶, necessary to say that conversion to a computer system should be thoroughly planned before any steps are taken to set one up; only in this way will the full benefit be gained from the introduction of the new technology.

In planning a registration system there will need to be very close co-operation between the registry office staff who know their material and the

machine men of all kinds who know the various aspects of their jobs³⁷; in addition, a planning committee will contain outside users and potential users of the system such as solicitors, surveyors and government departments and it will also have systems and costing people available to it. Only in this way will full recognition of the difficulties, advantages and ethos of the registration system be discovered, provided for and preserved.

The planners will have many technical problems to overcome. Present operating procedures will need to be considered and perhaps adjusted in preparation for the complete changeover; surveys will be made of rates and patterns of usage – who uses the system, when it is used and how it is used will need to be determined; analyses will be prepared of the variety and volume of transactions that occur and the situation of lands that are dealt with most; predictions will be made of future use; in short, the first task will be to assess the system as it is and as it will be³⁸.

The next task will be to assay the equipment available in preparation for moulding the present system so that it and the equipment can be melded together. This will involve determining equipment requirements, availability and suitability, taking care to ensure that advantage is taken of the advances that will be made in this fast-developing field during the period of planning and conversion, and re-organizing the flow of existing processes so that the presently separate fields can be integrated to make a complementary whole³⁹.

When this feasibility portion of the study has been completed the stage will be reached of estimating costs⁴⁰ and drawing up schedules for achievement of the transition.

(iii) *Effect of Automation on Present Land Registration Practice*

Several aspects of the effect of automation on present practice are implicit in what has gone before but the effect on staff and users of the present system merits quite separate consideration.

In planning an automated system it is important to think of the whole system as an entity and not as a collection of separate functions; equipment components will be chosen so that they will interact satisfactorily in order that the whole process may function smoothly, but most important of all the system must be set up in such a way as to present a satisfactory interface between man and machine as well as an efficient interface at various points within the machine system.

A. Effect on Land Registry Office Staff

Computers have not yet relieved man of intellectual functions; on the contrary, they have increased the need for intellectual effort by performing repetitive routine activities and freeing him to concentrate on the more rewarding but nevertheless more difficult intellectual tasks. The machine is used where it is most productive and superior to man and man works where the

machine does not have the capacity or discrimination to operate. Thus an automated data processing system can be programmed to eliminate most routine clerical functions⁴¹ and man is freed to perform the functions which come within Weiner's ideal of the "human use of human beings"⁴².

There are two principal roles that come under this head. First, there is that of the communication link. Man's role here is to assist at the interface between

man and machine by helping the users of the system if their skills are inadequate and by making certain that the machine is operating properly. The second role, and indeed there is something of this present in some aspects of the first, is the carrying out of those functions which involve the exercise of judgment and critical evaluation, particularly where objective criteria are ill-defined or absent. Some aspects of the first role could perhaps be brought within the machine's area of operation with little loss of efficiency; at present none of the second class can be.

When these ideals are applied to the staff of an automated registry office it can be seen that substantial changes of emphasis and also some changes in function will occur. Most of the purely clerical activities of registry people will disappear, but this will have the effect of increasing rather than diminishing the importance and professional nature of their work; no doubt the working procedures of registry people will change (and a substantial portion of the working life of present registry people will be spent in organizing and supervising this change together with the machine men and the users of the new system) but as a result of the change they will be called upon to exercise intellectual rather than routine functions. Their skills will be used in dealing with matters which require thought processes and the machines will do those things which machines are capable, and indeed more capable than man, of doing. In many way, of course, the tasks of registry office people will be more difficult and onerous because they will be called upon to exercise their many skills consistently and unrelieved by the exercise of purely routine activities; nevertheless the exercise of these functions will be much more satisfying.

B. Effect on the Legal Profession

Conservatism within the legal profession towards modern technology⁴³ has resulted in the profession and one or two other areas being almost enclaves within a world which is aware of present data processing capabilities. Much of this conservatism is due to the professionalism of the legal profession; the best traditions of the profession dictate that the affairs of a client should be a matter of the personal responsibility of his qualified adviser and anything which tends to break this nexus is resisted. This attitude is applauded and not criticized but it must not be used as a shield against the investigation of possibilities which may assist this professionalism. There is a similar relationship between patient and medical practitioner, but the medical researchers were very quick to use computer capacity and, instead of derogating from professionalism, results of the researches help the practitioner in his assistance of his patient⁴⁴ The effect on the profession of the present proposals for change are considered against this background.

The aim has been to suggest a system which will change the current system of dealing and completing transactions as little as possible, and in outlining the scope and procedures of the automated system various matters which directly affect conveyancing practice as it is presently conducted were mentioned. These are now brought together.

A search will be carried out much as at present, although a console and printer will be used. If the transaction has proceeded far enough there will be a substantial change in practice in that the searched title will immediately have registered against it a notice of priority to prevent any adverse interests arising

thenceforward until final settlement, stamping and registration. These constraints will certainly disappear within three years, but equipment that is presently available will require two changes in the preparation of documents. First, the type-face which is compatible with scanner use will need to be used and, secondly, the actual forms used will need to be made out of material suitable for use in the equipment⁴⁵. Settlement and stamping will be carried out precisely as they are now although with the concept of the notice of priority in operation there will not be the same anxiety about the possibility of adverse interests arising. Registration⁴⁶ will of course take place immediately on presentation so there will be some changes, and it is submitted that they will be improvements, in practice at this point. In sum these variations so amount to a substantial change in registration practice but their effect will be to give greater security to clients and will not impinge at all upon the vested rights of the profession.

The advent of registration of titles in the nineteenth century did affect the interests of the profession adversely but, because of the change in the nature of conveyancing business since then, the substitution of an automated registration system will only render such practice more efficient. As compared with 1860 or even 1920 the proportion of a legal practitioner's time that is taken up with the actual mechanics of conveyancing is very small. Not only is this proportion small in relation to the time spent on conveyancing matters *stricto sensu* with their problems of contracts, finance, contracts "subject to finance", town and country planning and subdivision consents and other ramifications, but when placed against the total modern conveyancing practice with its concern for and emphasis on duties and taxation, estate planning, commercial and local body practice, dealings with administrative tribunals of all kinds and its concern with ensuring compliance, or extricating from the effects of non-compliance, with the statutes and regulations of all conceivable kinds that have grown up in association with the modern state, the proportion of time spent on the mechanics of conveyancing is very tiny indeed. However, with the increased complexity, and probably perplexity, the potential dangers to clients⁴⁷ have grown proportionately.

When an extension of compulsory registration of titles was proposed in England in 1951 serious objections were raised by the legal profession on the grounds, *inter alia*, of the extension of bureaucracy⁴⁸; in New Zealand in 1963 when a simplified searching system was suggested, a few members of the profession raised the issue of state conveyancing⁴⁹. The present possible innovations could be stigmatized in the same way, but it is submitted that such suggestions would be as unfounded as the England and New Zealand suggestions were. It is submitted that there should be a proper professional relationship between solicitor and client⁵⁰ and that such a relationship can be developed best where the client's affairs are being managed in a correlated fashion⁵¹; the present changes assist in building up confidence in the professional relationship by rendering the solicitor's services more efficient and by removing areas of doubt and danger in present practice.

3. *Computer Costs*

In 1963 Robert L. Patrick pointed out that computer technology was then only thirteen years old, but that in that time computers had increased in speed

by four orders of magnitude or 10,000 times, prices of computers had been reduced by almost two orders of magnitude in the same period and thus the "cost-per-dollar ratio [was] 10^6 times what it was" at the beginning of the period⁵². Since then micro-circuits have been developed and as these come into use the position will be significantly improved once more⁵³. It has also been predicted that "compared with the 1964 figure file stores [which up until now have seemed likely to be one of the principal costs of an automated system of registration of titles] available in 1968 are expected to have about a tenth of the access time, [and] one-fifth of the cost per character."⁵⁴

Because of the rapidity with which these advances are being made, an estimate of the present cost of an automated registration of titles system would be misleading, and because of the number of variables involved a prediction made now of possible cost at the end of the period required for the planning of such a system would probably be worthless. Therefore no endeavour is made at this juncture even to guess the total cost of the system⁵⁵, but it is submitted that a planning committee will need to consider the cost of equipment needed for the system, the cost of conversion of present records and the cost of running the automated system.

The basis of the present suggestions is that a system should not require equipment that is custom designed because costs would then rise steeply⁵⁶; furthermore, it is axiomatic that the newest developments, which will have been backed by massive research programmes, will be the most expensive⁵⁷. Thus the need might arise for a compromise to be reached between trying to meet the needs of users in the best possible way and endeavouring to stay within reasonable economic limits.

The non-recurrent cost of conversion of current records for computer use may be a significant part of the total cost of the system and, depending on the methods used, can vary enormously. It has already been suggested⁵⁸ that the opportunity might be taken on conversion to use the computer to eliminate any errors in the current records. If this were done it would involve the use of manual conversion and checking techniques; this method is relatively expensive. However, if completely automatic conversion techniques are able to be used it has been estimated in relation in library materials that these would cut conversion to one-tenth of the manual costs⁵⁹.

The third cost estimation that a planning committee will need to make is the cost of running the system when it has been automated. This cost will need to be compared with current costs of carrying out the same tasks and may be the most significant figure in making the decision to automate. In addition to calculating the costs of the present land registry functions from intake to output, full allowance will need to be made for future expansion of the present system. It is submitted that such a comparative calculation will show immediate savings, but, in weighing the cost, not only must the future savings in money terms be estimated but also the social values of title security must not be overlooked.

4. *Possible Extensions in the Future.*

In addition to, or indeed perhaps because of, future developments in technology that will be gradually introduced into the system as they become available, there are extensions which could be made in the operation of the system.

It could well be that before very long every legal office and other office having dealings with the land registry will think it just as natural to have a communication terminal and search console as to have a telephone today⁶⁰.

Either as a co-extensive development or perhaps a later one, a change in settlement procedure will take place. Settlement will continue to take place away from the registry office much as it does now in most jurisdictions, but there will be one vitally important change – registration of the instruments will be concluded in the office as part of the settlement procedure⁶¹. Both of these developments are examples of computer applications which are already being used successfully for much more complicated operations than would be involved in a system of registration of titles⁶². To eliminate the possibility of fraud it may be necessary to provide registered proprietors with adequate means of identifying themselves or their representatives to the registration system; re-entry cards of various kinds already exist⁶³ and a combination re-entry and certificate of title (and similar documents for other registered instruments and interests with which it is possible to deal) may need to be developed⁶⁴.

Perhaps at the same time as the development of remote registration of titles the functions of the duties offices could be integrated into the system; just as it will almost certainly still be necessary to obtain assistance from the registry office staff with the preparation of a tiny minority of very difficult documents, it may be necessary for some complicated parts of the duties field to be processed manually, but certainly more than ninety-nine per centum of all dutiable documents could be processed by carefully written computer programmes.

In dealing with the future possibilities for the automated registration system no view from Pischah has been taken; the possibilities that have been suggested have arisen partly from applications of already existing techniques which it is felt should not be applied immediately an automated system is set up but should be gradually introduced, and partly from extrapolations of the present proposals set alongside the predictions for developments in other fields.

Conclusion

Paradoxically, the changes that have been suggested here are revolutionary in form but reactionary in intent. Since the introduction of registration of titles there have been great changes in attitudes towards, and concepts affecting, fee simple land holding and land use; all of these changes have led to a decrease in the value of the protection given to the proprietor of a registered interest in land; none has been reflected in effective alterations in the Torrens system. It is submitted that the cumulative effect of these changes is to render the Torrens system deficient and perhaps obsolescent.

It is not suggested that the application of electronic data processing and computer technology alone to the Torrens system will be sufficient to rejuvenate it, but the writer must leave until another time other heretical views as to changes that could be introduced either concurrently with, or independently of, the present proposals, the effect of which would, it is submitted, do much to restore the system's integrity.

Earlier in the paper the term conversion was used in one sense, but in the dissemination of these ideas perhaps conversion in the sense of proselytizing is also important. Certainly the substantial changes in current usage and habits

postulated here will meet opposition; probably the sociological and educational problems involved will be as difficult to overcome as the technical ones; possibly these problems will be more easily solved now than were the related problems that were faced by Torrens and his colleagues in the mid-nineteenth century. Most proposals for major change are met by objections; all that is being submitted here is that it is to public advantage and individual interest that such changes should be made and that the changes suggested are now quite feasible. If the suggestions are adopted, all fee simple titles will be current to within a few millionths of a second, and completely accurate and free from many of the doubts, delays and unknowns that are now capable of ruining the unwary or unfortunate; it is submitted that this state has never been achieved in the history of registration of titles and has seldom been approached in the history of land law.

FOOTNOTES

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1 These tendencies have been epitomized as being *reductio ad gadgetum*: Samuel N. Alexander and F. Clay Rose, "The Current Status of Graphic Storage Techniques: Their Potential Application to Library Mechanization," in *Libraries and Automation*, Washington D.C. (1964), pp. 111, 114. The need for careful planning prior to the introduction of a computer system is discussed *infra*.

2 For these points of justification heavy reliance has been placed upon the remarks of Robert L. Patrick when commenting on Richard L. Libby's paper "Automated Storage and Access of Bibliographic Information for Libraries" in *Libraries and Automation*, *sup. cit.*, pp. 67, 102-103.

3 Robert L. Patrick's remarks, *supra*, at p. 102.

4 *Ibid.*, p.103. Patrick instanced the case of a book catalogue published every six months; on the last day of use it was more than 180 days out of currency.

5 The decision in *In re Mrs Jackson's Claim* (1890), 10 N.Z.L.R. 148 (which holds that a person registering is negligent if he omits to inquire if there are any lodged but unregistered instruments that will affect the priority of his instruments), may have been perfectly reasonable at a time when delays and backlogs were minimal; today such a decision although perhaps legally justifiable is quite unreasonable and if practice were carried on to comply with it then the position could well become chaotic in some jurisdictions.

6 It has been pointed out that "a Certificate of Title or of Mortgage is simply a certified copy on the *day of issue* of the entries in the Land Register or of the appropriate extracts therefrom"; E.M. Dowson and V.L.O. Sheppard, *Land Registration*, 2nd ed. London (1959), p.79. Dowson and Sheppard also note that in many jurisdictions no certificate of title of any kind is issued but that in "any of these jurisdictions a registered owner of land or change can, at any time, upon the payment of a small fee, obtain a certified extract of the Register, which in effect is the same as a Certificate of Title or Charge, but makes the true character of these documents clearer": *ibid.*, p. 128. The same thing could be done under a fully computerized system.

7 See pp. 423-424, *infra*, for the suggestion that a "re-entry" document could perhaps be developed.

8 In the Library of Congress a time-study showed that their searchers spend much more of their time walking among the files than at the appropriate file: Rutherford D. Rogers, "Libraries and Automation" in *Libraries and Automation*, *sup. cit.*, pp. 141, 142-143.

9 In the past a computer "generation" has been less than this period and with each new "generation" there have been enormous advances in speed, capacity, reliability, versatility, programming ease, storage facilities and input and output devices. Another computer generation is about to be born with monolithic integrated circuits or micro-circuits replacing transistors just as transistors replaced valves.

10 Probably the most significant advances in the near future that would assist in the area of registration of title will be in three areas:—

(a) the sophistication of the present types of optical scanners: see pp. 417-418, *infra*;
(b) the improvement of random access types of storage media to allow records at a particular address to be more easily updated; and
(c) the extension of the range of “software” or programmes and routines which extend the capabilities of computers. “Software” is to be contrasted with “hardware” which is the term applied to the mechanical, electrical and electronic features of a data processing system.

11 A digital computer operates on representations of numbers or other characters coded numerically and solves problems by comparing, counting, adding, subtracting, multiplying and dividing. It is to be contrasted with an analogue computer which has no memory storage and operates on data in the form of continuously variable physical quantities such as temperature, revolutions or pressure. The digital computer’s memory and capabilities fit it for performance of business applications and an analogue computer’s capacity as an immensely fast device for measuring and comparing quantities fits it for use in controlling production in undertakings such as steel mills or oil refineries.

12 Although it is hoped that this brief description is adequate to make what follows intelligible it is very truncated and does not discuss many of the refinements which would be incorporated in an actual system developed for a particular purpose.

13 In the system which will be suggested for the intake process for registration of titles, an optical scanner will carry out these two steps in relation to the data (in this case a Torrens system instrument) for processing; the instructions for dealing with the data will of course already be available within the system and indeed some instructions will be controlling the taking in of the instrument as one step in the registration process.

14 Magnetic core storage and magnetic thin-film storage operate on the same principle. Each type of storage is composed of tiny magnetic particles (the size of a pin-head in the case of magnetic cores and quite a bit smaller in the other case) strung on fine wires. Data are reduced to machine-language, the binary system, which has a base of 2 (instead of 10 as in the decimal system) and uses only two numbers, 0 and 1; data in such form can be stored in the particles by magnetizing a series of particles either positively or negatively, each state of polarity representing a binary character. To give a very simple, and simplified, example: the decimal number 13 (that is, $10 + 3$) is represented in binary code as 1101 (that is, $8 + 4 + 0 + 1$) and by magnetizing a column of four particles, positive, positive, negative, positive, this can be stored in memory storage.

15 The reason why main storage is not used for permanent storage of data is that it is usually not very extensive when compared with the unlimited amount of auxiliary storage that can be used if necessary; if the main storage of one of the larger computer installations in Australia was completely allocated to information it would hold the equivalent of a book of between 20,000 and 30,000 words.

16 Sometimes storage is classified as internal (directly accessible to the computing unit), auxiliary (indirectly accessible to the unit) and external (in suitable form for use by the computer but not an integral part of the complex).

17 A magnetic disc is not unlike a gramophone record and a single disc can store several million characters. Magnetic discs, which are presently replacing magnetic tape to some extent, will themselves be replaced eventually. Currently in the experimental stage is a device which utilizes a laser beam to change colours at electronic speeds; the experimenters believe that it could lead to the development of colour-coded computer memories which could store a hundred million bits of information on one square inch of photographic film: see “Laser Beam Information Storage” (1966), 28 *Electronics Australia* No. 7, 15.

18 The same device often operates both as an input and output device.

19 Although the speed of outprint devices has not yet even remotely approached the internal operating speeds of the computer, the peripherals already available are very adequate; printers producing 1,000 lines or 120,000 characters per minute are commonplace, others producing 1,000,000 characters of good quality per minute are operating and others producing material of lesser quality are producing many more. These speeds are to be compared with that of a very good typist who will produce 80 words or about 400 characters per minute.

20 The principal problems are: the current interpretation of the "notice" section and current conveyancing practice as to settlement; the physical delays at intake point in many offices; and the dangers inherent in delays in completion of registration after intake. Several of them were considered in *I.A.C. (Finance) Pty. Ltd. v Courtenay* (1963), 110 C.L.R.550.

21 To give some idea of the speeds which are achieved in the computer world it can be mentioned that significant times are milliseconds (thousandths of a second), microseconds (millionths of a second) and nanoseconds (thousandths of a millionth of a second). The latest and tiniest addition to the family is the picosecond.

22 Or series of instruments.

23 In the remote possibility that a searcher endeavours to search during the few seconds that registration is taking place against that title (or tries to search a title while someone else is searching it) he will not get the "old" state of the title on the register (as a searcher would get in registry offices at present during the period from lodgement until registration) but will be informed that registration is taking place (or that someone else is searching the same title); in other words the information that he is seeking will not be at the address to mislead him. The process will be not unlike that of a telephone user getting the "engaged" signal.

24 It is very probable that such instrumentalities will be using computer equipment of their own which will be capable of producing print out material in the form of punched cards or, more useful for this purpose, paper tape or perhaps even magnetic tape. It would clearly be advantageous to be able to feed this material straight into the registration of title system rather than insist that it be reduced to conventional documentary form. The same principle would also apply to any large legal firm which had its own computer system; this will become a reality in the future when information retrieval techniques have been developed further than they have yet in the legal field.

25 It may also be more convenient for such authorities to receive records back in machine-readable form either in addition or in lieu of typed print out.

26 There are others, but the optical scanner with which the writer is most familiar is the Control Data Corporation's 915 Page Reader. It will handle documents of all sizes up to maximum dimensions of 14 inches long and 12 inches wide. It reads at 370 alphabetical or numerical characters per second. This means that a document 8½ inches by 11 inches with six lines to the inch and completely full with no gaps or paragraphing can be read in 14 seconds; as the reader skips this time would usually be reduced by several seconds for each page. A simple memorandum of transfer could be read in less than three seconds while a complicated hotel lease might take a minute to read and register; this is still a significant and vital improvement on the several months' delay which now occurs in registration in some titles offices. Nevertheless in terms of other computer functions these times of "several seconds" or a "minute" are very long periods indeed and strenuous efforts to reduce this input time bottleneck are being made.

27 One of the problems associated with conversion to a computer system is the writing of the programmes necessary to carry out the desired manipulations.

28 This proceeding illustrates once more the advantage of an automated system in that it can be programmed in such a way that the title can only be dealt with by one party at a time and thus any possibility of conflicting rights arising is eliminated; this can be done without any possible inconvenience to anyone because of the immense operating speed of the system.

29 The number of individual consoles provided would be dictated by the size of the particular registry office and the amount of searching to be done.

There are many kinds of units commercially available with a variety of sophisticated uses; the one required for registration of titles purposes could be one of the simple models with keyboard access to the memory store but (except for the processing associated with the entry of a notice of priority) without any of the other functions which such units often have.

30 If he did not have a title reference then he would use his console to search in other ways just as now. He could search the nominal index, which because of computer speeds would differ from such indices in some registry offices today in that in the automated system it would be up to date, or he could search a parcels index or follow up any other clues that he may have.

31 This peripheral is one that can keep up with a computer's ability to operate at microsecond or nanosecond speeds.

32 On the models that the writer has operated the alphabetical characters, numerals and symbols used are quite legible and the light intensity is such that they can be read in normal office conditions.

33 In order to prevent any tampering with the records this will be the only registration function in parallel with the search unit.

34 As with other kinds of input and output it may be convenient for large instrumentalities with their own computer complexes to receive the results of their searches in machine-readable form (see p. 417 and nn. 24 and 25, *supra*), and the peripherals necessary for this may also need to be provided.

35 See n.23. *supra*.

36 It was estimated a few years after computers had been introduced in business in the United States of America that 50 per cent of installations were admitted failures; this was principally because of lack of systems planning and once this was realized performances improved: see the remarks of Mortimer Taube when commenting on Richard L. Libby's paper "Automated Storage and Access of Bibliographic Information for Libraries" in *Libraries and Automation, sup. cit.*, pp. 67, 102.

37 The necessity of having a very carefully integrated planning committee became very evident during the writer's hypothetical enquiries for the purposes of this paper. Most discussion tended to proceed on the basis of the machine men saying "You tell me the task that you have and I shall see if we have the hardware and software to do it" and the writer saying "Tell me what your machines can do, and I shall see if it will do our job". In practice this gap in understanding and knowledge will need to be replaced by co-operative planning and overlapping knowledge of requirements.

38 One thing that the advent of a computer system does is to ensure that the system to be automated is thoroughly analysed and understood, for a computer's only capacity is to do simple operations very quickly and, unless instructed to do so, will not make the compensations that a person may well make during a process to make that process effective. This is typical of the anecdotes computer men tell of the increase in efficiency which the imminence of a computer can achieve: "I know of a company that decides about every four years that they will get a computer. In order to convert their operations, they go through a complete systems study and make necessary revisions, perhaps in their management, or in their reporting structure, or in the processing of materials. When they do this, then they turn around and cancel the computer": John A. Neal when commenting on I. Albert Warheit's paper "File Conversion: Prefatory Comments" in *Libraries and Automation, sup. cit.*, pp. 55, 59.

39 A computer will probably be useful in assisting in this re-organization.

40 Costs of such a system are shortly discussed at pp. 422-423, *infra*.

41 Calvin N. Mooers has said that "[An] ideal human clerk is one who can move objects (paper and pencil), read marks, make marks, and follow certain fixed rules precisely. These fixed rules tell how to move the objects and how to deal with the marks. Innovation, initiative, inconsistency, or imagination are quite as undesirable as is any proneness to error. Intelligence is both unnecessary and undesirable. The set of rules is the complete and exact description of the process. The ideal human clerk must work with mechanical accuracy. In fact, the ideal clerk is a machine": comments at the beginning of R.A. Fairthorne's collection of papers *Towards Information Retrieval*, London (1961), pp. xix-xx. Mooers could have continued and said that the ideal clerk was a computer which was capable of doing a million or, even better, a thousand million operations every second.

42 Norbert Weiner, *The Human Use of Human Beings: Cybernetics and Society*, Boston (1950).

43 The present writer finds the path in Australia in the computer field as it is applied to law almost deserted, but there are several "crusaders" in England working on the application of computers to case law analysis. In common with one of these the writer has found hostility absent but "scepticism and frivolity are . . . common reactions": Colin Tapper, "The Uses of Computers for Lawyers" (1965) S.J.S.P.T.L. 261, at p. 262. However when the writer assumes the role of the Ancient Mariner and outlines some of the possibilities and capabilities of this new world he finds that lawyers are extremely quick to realize the potential applications.

44 A simple illustration is a computer system called the Autotechnicon which is already in use in the United States of America. It carries out 42 routine diagnostic blood tests in a few hours and at a cost of \$13; the same tests carried out by a team of technicians would take longer and cost \$600.

45 The literary content of the forms will not need to be changed at all; although not necessary it may be opportune to move back towards the uniformity in setting out in forms which was much more apparent in the early days of the system.

46 Or rejection of an instrument not in order for registration.

47 And possibly solicitors and those insuring them against negligence.

48 Report on the Advisability of Extending Compulsory Registration of Title on Sale to the Country of Surrey (1951).

49 E.K. Phillips, "Proposed Land Transfer Searching Service", [1963] N.Z.L.J. 303.

50 Anything which would tend to impair the solicitor-client relationship is anathema to the present writer who deploras some of the breakdown that has occurred already.

51 Part of the solution to a client's taxation or estate planning problem by his solicitor may well be to dispose of or re-arrange his interests in land, for example by gift or by settlement of his house as a joint family home to give very simple illustrations; the suggested machinery would assist the efficient carrying out of this decision just as the typewriter replaced less efficient methods of drafting and engrossing documents in the past.

52 Comments on Richard L. Libby's paper "Automated Storage and Access of Bibliographic Information for Libraries" in *Libraries and Automation*, *sup. cit.*, pp. 67, 103.

53 Professor J.M. Bennett of the University of Sydney states that "[the] use of integrated circuitry is expected to bring gains of speed of the order of 16 : 1 by 1970...": "The Dynamic Industry" in a survey "Computers Today" by *Australian Financial Review*, 16th May, 1966. p.3.

54 *Ibid.*

55 There is a modern maxim which states: "People tend to overestimate what can be done in one year and to underestimate what can be done in five or ten years": see J.C.R. Licklider, *Libraries of the Future*, Cambridge, Massachusetts (1965), p.17.

56 An actual example of the cost difference is given by Don R. Swanson: a piece of very involved equipment of which two copies were produced cost \$200,000 (U.S.) each and he estimated that if one hundred or more copies had been produced they could have been sold for \$30,000 (U.S.) each: see "Design Requirement for a Future Library" in *Libraries and Automation*, *sup. cit.*, pp. 11, 20.

57 To give a simple illustration: the writer recalls paying £6 for a ball-point pen in their very early days; three such pens are now available for one shilling and six pence of a currency which has depreciated very considerably in the meantime.

58 See p. 419, *supra*.

59 Robert L. Patrick and Donald V. Black, "Index Files: Their Loading and Organization for Use" in *Libraries and Automation*, *sup. cit.*, pp. 29, 42-43.

60 *Australian Financial Review*, 18th October, 1966, p.27. quotes leaders in the computer field in the United States of America: "If present trends continue, and perhaps much sooner than may be imagined, computer consoles linked to distantly located central computers could become almost as common in American households as telephones are today... [The American survey being quoted] finds that while most experts think the computer-console-in-every-home won't become general for at least ten years, none of them is really sure".

The search console of the registration of titles system would be doing a very simple operation indeed compared with those that the Americans are hoping to carry out with theirs. They would include instant banking and bill-paying, keeping track of appointments of all kinds, storing information on mortgage payments, insurances, and medical records, automatically and instantly preparing income-tax returns, reading any book in a computerized library, designing tools, furniture, boats or other things with a design stylus (these are already in use in Australia for some operations) with the computer responding to the sketch with information about costs and feasibility, ordering merchandise and many other functions.

Another writer who develops the same theme as related to libraries and information has suggested that "in the present century, we may be technically capable of processing the

entire body of knowledge in almost any way we can describe; possibly in ten years and probably within twenty; we shall be able to command machines to 'mull over' separate subfields of the corpus and organise them for our use . . .": J.C.R. Licklider, *Libraries of the Future*, Cambridge, Massachusetts (1965), p.20.

61 The alternative of registering in the registry office itself will of course still be available. Although it is outside the scope of this paper it could be mentioned that it is perceived that this will not be the only registration procedure carried out from the office: company documents, duties and taxation returns, local body returns and registrations, perhaps even some Court documents (no doubt over the "dead bodies" of some judges) will all be able to be dealt with in this way.

62 International air lines are using such systems for instantaneous push-of-the-button booking services in their offices throughout the world; Qantas is presently going through the process of phasing such a complete system into operation.

63 They are being developed quickly in other areas and in the field of banking the forecasters predict that there could be an almost "chequeless society" within twentyfive to thirty years.

64 If this happens it may be necessary to vamp up the old epitaph in this manner:

Here he lies mouldering
His dying was hard
They shot him for folding
His mortgagee's card.