Aspects of Title Surveys in Australia

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On returning to Australia in 1973 he joined his brother in forming a consulting surveying practice based in Sydney. In 1974 he gained his Master of Surveying Science Degree from the University of New South Wales.

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Abstract

This paper discusses the role of boundaries within the Torrens Titles enactments in Australia, and in doing so reviews the place of survey within our present fixed boundary system. After defining general boundaries, it is pointed out that in some instances aspects of this type of boundary are in use in Australia at present. It is suggested that the general boundary concept could be used to a greater extent within the present Australian system, especially in connection with the conversion of land held under the old deeds records, to Torrens Titles.

Introduction

In recent years there has been more awareness of the cost and importance of the surveying component within the cadastral, both in Australia and overseas. In this article cadastral is defined in broad terms as "a general systematic and up-to-date register containing information about land parcels including details of their area, value and ownerships." At an academic level, research into the cadastral is still in its infancy, particularly in Australia. This is reflected in the Institutes and Universities which offer courses in surveying, by the amount of time allocated to land law/cadastral surveying; in some courses it is as low as 1% of the total time allocation.

Other professions have been forced to justify their methods and procedures on economic grounds e.g. the legal profession; the surveying profession should be prepared to do the same. Boundary or cadastral surveying in its traditional sense is labour intensive and consequently will not get cheaper. Those who suggest that electronic distance measurement and programmable pocket calculators have reduced the cost of the redefinition of boundaries to the public need only examine increases over the years to the Scales of Fees recommended by State Divisions. This is not to suggest that the consulting surveyors are charging a fee in excess of services rendered, but that the cadastral framework within which they work is labour intensive and in many situations places an unjustified expense on the public. Cadastral surveying is a multi-million dollar business—it is the largest sector within the profession, yet it attracts the least attention at a research level. The importance of cadastral surveying is seen in the results of a recent questionnaire sent to every surveying graduate from the University of New South Wales Preliminary results indicate that over 70% of graduates work in the cadastral area.

Surveyors should concern themselves more with the operations of the cadastral; they should use their influence to make the survey component within the cadastral more flexible and they should give more consideration to the cost of the cadastral framework within which they practise. In order to practise competently and efficiently the cadastral surveyor must work within a set of guidelines established by statute law, case law and common law; many such laws having originated in the last century or earlier. These guidelines have established a practice for cadastral surveys which has not changed, except for the precision of surveys, for nearly one hundred years. These factors contribute to the surveyor becoming inflexible in his attitudes toward cadastral surveying.

It is easily forgotten that the existing system in each State evolved for good reasons; a typical example is New South Wales. Its early history is based around limitless expanses of territory. Once the Blue Mountains were crossed the squatters flowed west and south. Legislation was enacted to enable occupation of land before grant and survey; the cost of the survey of land being far greater than its value. Consequently an isolated system of surveys based on monuments related numerically to one another developed. Any other system, considering the terrain and expanse of land was not possible. Barrie summarises the situation:

"For so sparse a population spread over such a large territory, the introduction of a sophisticated and expensive system could not have been justified—nor would it have been tolerated."

The system of isolated surveys has remained to this day. The only major changes have been the introduction of stringent regulations for survey and the preparation of plans, and an increase in the precision of survey; an increase which has been suggested is "precision for precision's sake".

The last decade has seen a rapid increase in surveying related technology. The consequences are evident in the intensification of the Australian Geodetic Network and the substantial increase in the mapping output at a State and Federal level. In line with this activity has been the move to introduce a system of integrated surveys into many of the States. These advances have made it possible to consider the introduction of new concepts into our system.

Society is continually changing and the operation of the cadastral must keep pace with it; not change for the sake of change, but a system which is flexible enough to accept change if technology demands it.

The Role of Boundary Surveys in Title Registration

In order to examine a cadastral survey system it is necessary to consider why it exists and what purpose it serves. It is suggested that some surveyors carry out property surveys without fully
understanding the consequences of that survey or of its relevance within the framework of the cadastre. In particular, it is suggested that a number of surveyors believe that the boundary survey is an end in itself—its relationship and involvement in the title system in many cases is not fully comprehended. This approach in practice does not create many problems—however, when an attempt is made to examine a survey title system and an attempt is made to determine its 'lowest common denominators', it is important to fully understand the relationship between boundary surveys and the cadastre.

Central to the operation of our cadastre is the system of title registration. It is due to the structure of this system that the majority of property surveys as we know them are generated.

Simpson outlines the three basic sections of a register of titles:

1. The Property or Parcels section, giving the unambiguous definition of the parcel of land affected. This is usually in the form of a map or plan.
2. The proprietorship section which gives the name and address of the owner of the land.
3. The Incumbrances section which gives particulars of any interests affecting the parcel which is enjoyed by someone other than the owner.

It is the property or parcels section which is of major importance to the surveyor. It is the section which describes the title and relates it to the ground. This function of relating the parcel of land, to which the title refers, to the ground is the major function of a title survey.

The extremities of these titles are defined by boundaries, which are described as follows:

"An imaginary line which marks the confines or line of division of two contiguous estates. The term is also used to denote the physical objects by reference to which the line of division is described as well as the line of division itself. In this sense boundaries have been divided into natural and artificial according as such physical objects have or have not been created by the agency of man."

It is important to remember that these boundaries are the limits of the title and it is these limits which the surveyor determines on the ground.

In Australia the title is defined on the ground by a series of monuments and the boundaries of the title are shown on a plan which includes boundary distances (a numerical description) together with other relevant information. Generally it is this numerical description along with the showing of abutments which forms the basis of the parcels section of the Titles Register.

Since the State guarantees title it is only reasonable to expect that it demands certain standards of surveyors who carry out title surveys. Consequently, every State has a system for registering or licensing surveyors and has a set of regulations to control the carrying out of these surveys. The system in Australia whereby titles are defined on the ground by fixed boundaries which have been surveyed by highly precise surveys, is a consequence of the isolated survey system introduced into Australia at the time of colonisation.

It is worth noting that Sir R. Torrens did not require surveys to be carried out to the precision as now required by regulation—in fact, no accuracy specifications are laid down for the Torrens system to operate. The only requirement in the Torrens System regarding the parcels section, is that the subject land is clearly described on the title and may be unambiguously defined on the ground, without an overlap occurring on adjacent titles. Our whole title survey system has developed with this criteria in mind.

It is universally accepted that the State guarantees title in the Torrens Systems—however, there is much controversy as to whether the State guarantees boundaries. Many Australian surveyors and lawyers believe that the standard of precision of surveys as practised in Australia is 'part and parcel' of the Torrens System and is a necessary criteria for its operation. This belief supports the idea that the Torrens system guarantees boundaries and dimensions. While there appears to be no provision in any Torrens statute that guarantees boundaries, there are certainly none that guarantee title dimensions.

The Torrens statutes guarantee title. Adams wrote: "No claim has ever been paid yet because the area or the measurements on a certificate of title has been wrongly shown. The theory is that in an ordinary guaranteed title the land which is guaranteed is the land as originally pegged, and if the claimant is in possession of that land he has got everything which the State has guaranteed. See, for example, the Australian case Dempster v. Richardson (1930) 44 C.L.R. 576, wrong measurements put on a residue title due to error in survey." It would be unwise for the State to guarantee any measurement therefore some add the words 'more or less', or 'thereabouts' when referring to title distances.

As mentioned, a title registration system demands a method whereby the diagram or description of the title can be uniquely and unambiguously related to the ground. It does not demand surveys or descriptions showing boundaries to certain precisions as operating in Australia—precisions which were introduced by necessity due to the nature of Australia's colonisation and topography.

Before suggesting change to a system it is necessary to examine if change is necessary or warranted.

Simpson discusses the seven features which should be combined in a system of registration of title: (1) security, (2) simplicity, (3) accuracy, (4) expedition, (5) cheapness, (6) suitability to circumstances, and (7) completeness of record. It is readily seen that generally the Australian Torrens Statutes meet these criteria—however, discussions in this area are nearly always related to that component of the register which deals with the legal aspects of ownership. These seven criteria are rarely discussed in relation to the methods of describing the title and relating it to the ground. The question should be asked—does our title survey system meet these criteria? This system is an integral component of title registration and cannot be separated from it. We should not modernise or update our title registry without putting the same thought and effort into the structuring of our title survey to meet the above criteria.

The following are some comments on the survey part of title registration in Australia with respect to the seven desirable features of the overall title system.

1. Security. In order to maintain a high standard of consistency and security within the title survey system in Australia, the following have been introduced: registration or licensing of
surveyors; regulations for the carrying out of surveys to a high precision; a system whereby the State checks each plan of survey and has the capability to carry out field checks. Such requirements are particularly necessary when the system of registration of title is based on isolated surveys.

2. Simplicity. Both surveying and the carrying out of title surveys is far from simple. Survey searching is certainly more complex than searching the Torrens Register—in fact it is similar to searching the Deeds Register. In some cases it is necessary to search a chain of surveys within a whole area or block, back to the original Crown Grant, in order to obtain enough information to fix the boundaries. The redefinition of title surveys is also far from simple—especially in older areas, and consequently requires highly trained personnel. It should be noted that an isolated survey system perpetuates this situation.

3. Accuracy. If consistency and security are to be maintained in an isolated survey system, it is highly desirable that the system should rely on precise title surveys; this is the case in Australia. Even though this approach is used it is still not possible to overcome the inherent problems within an isolated system; that is relating the title to ground in an absolute sense. This is evidenced by the importance the legal profession and financiers place on identification surveys or check surveys when a parcel is conveyed.

4. Expedition. It stands to reason that any system of locating title boundaries on the ground which requires technical and precise surveys and a high standard of professional expertise is not the most expeditious method of obtaining such information.

5. Cheapness. Again, such a system as is practiced in Australia as described above, is inherently not going to be inexpensive.

6. Suitability to circumstances. The methods of carrying out a title survey have barely changed over the last century; new methods and techniques have been developed. The present system of title survey is not taking advantage of these advances e.g. photogrammetry and integrated survey networks.

7. Competeness of record. This can be construed to mean a title survey system complete and up-to-date. Under an isolated system where sporadic surveys are carried out, this is very difficult to achieve. For example in order to determine the boundaries of a piece of land it is often necessary to do a complete survey plan search of all plans in the immediate vicinity. The title and the survey aspects of a title registration system are joint partners—neither can do without the other—yet their development has traditionally been very independent. Much research has been and is being carried out for the modernisation of the title aspects within the registration system. It is however noticeable that very little research has ever been done or is being planned in the area of title surveys. All the research into the title area accepts the status quo of title surveying—a status which has not changed for nearly a century.

The major topic of discussion lately regarding changes in the title survey system has been for the introduction of some of the principles of the general boundary concept as practised in England. Unfortunately suggestions to introduce such a system into Australia have met with strong opposition from both the legal and surveying professions. The theory has not been given credibility for two reasons:

1. Its proponents have not carried the concept far enough (for good reason) such that it could readily be incorporated into our present system. The present system cannot be overlooked; it works well and was developed to its present form for good reasons.

2. The introduction of the general boundary concept has been heralded as radical and different. It is however anything but radical and different—our present system incorporates many of the principles of general boundaries. Unfortunately, the concept has been tagged and accepted as 'radical' and consequently there has been little room for the introduction of any of its major principles . . . unless it can be proven beyond doubt that such a system will introduce considerable savings of public money. Also the surveying and legal professions, being conservative bodies are loathe to introduce radical new concepts—change comes slowly. Barrie outlines these feelings aptly:

"Admittedly in Australia this is quite a radical concept as it introduces the idea of graphical description and a less meticulous concern with boundary definition. There is no doubt that such a plan will attract emotional opposition by many in this country, because of inbuilt preconceptions and prejudices relating to 'general boundaries'."

What are General Boundaries?

General boundaries have been called many names in many jurisdictions: boundaries associated with 'limited certificates of title' in New South Wales, 'approximate boundaries' in Kenya, boundaries associated with titles 'limited as to parcels' in New Zealand, and boundaries associated with titles 'limited as to description of land' in South Australia, Victoria and in the Australian Capital Territory. In fact, the terms 'fixed' and 'general' boundaries have no statutory definition in Australia and we must therefore look elsewhere for a definition.

Perhaps the most remarkable feature of general boundaries is that they differ little in principle to that of the Australian fixed boundary. Both depend on monumentation or physical features on or near the boundary to a greater extent than measurements shown on the title diagram. Dale wrote, when comparing the English and Australian title systems, that: "... both forms guarantee title and although this is an apparent difference in the precision with which the boundary information is recorded, both systems are built on the concept of well-known, well-monumented boundaries. If the ownership of the bounding features is excluded from consideration, the difference between the systems is scarcely more than one of precision of survey measurements."

A parcel with general boundaries may be shown on the title diagram drawn to scale but usually without measurements being displayed. Simpson wrote that the diagram will: "... make(s) it quite clear the parcel is situated in relationship to certain clearly visible physical features, though it does not require the precise relationship between those physical features and exact boundary lines to be defined." In other words, you have referred to the fence but not as to whether the boundary is in the centre or on the inner or outer side of that fence. A
note actually printed on the Land Certificate (of Title) in England advises that: "Intending purchasers should inspect the land for the purpose of ascertaining its precise boundaries ...". The purchaser actually buys what was inspected and not the paper description of what was inspected. If the parcel is not defined by boundary fences or substantial posts, then measurements tying the parcel to permanent physical features are shown on the title diagram. In an area devoid of features the actual dimensions of the parcel may be shown for clarity.

Many of the jurisdictions\textsuperscript{13} using general boundaries allow parcels to be fixed in the 'Australian manner' if the title proprietor so desires. In England, because of the costs involved for adjudication and surveying few parcels have been so fixed.\textsuperscript{14}

In a general boundaries system the graphical depiction of the parcel may be the result of an accurate survey as in England and Wales, or it may be the result of an approximate survey as in some jurisdictions in the Caribbean. In England, the description of the parcel to be registered is based on an extract from the Ordnance Survey large scale topographic maps which is based on the National grid. This facilitates accurate mapping of boundaries because of the multitude of longstanding, clearly identifiable occupations. The maps that are used have scales of 1/1250 for city areas, 1/2500 for rural areas and 1/10 000 for barren and mountainous country. All have been compiled by photogrammetric methods along with ground completion. The 1/1250 maps have been shown to have a standard error in position of 0.4m. By contrast with the above practice, in some Caribbean territories\textsuperscript{15} (Antigua, Anquilla and Cayman Island) property boundaries have not been fenced. Here, for the registration of title purposes the parcel corners are monumented after adjudication between all interested parties. The monuments are placed, usually marks in concrete or upon rock, and are located for the title diagram and land record map purposes by theodolite or compass traverses run between marks on an integrated survey network.

Both are general boundary systems and both give with certainty, the location and the bounds of the parcels in their respective Registration of Title systems.

Existing Use of General Boundaries in Australia

General boundaries are actually in limited use in Australia in certain instances within the various Torrens' enactments either by implied legislation or by default in actual practice.

By Implied Legislation

This concept has been revived recently in four Australian jurisdictions as a necessary appendage to compulsory registration of title of old system land. Three of these jurisdictions—South Australia\textsuperscript{18} in 1954, Victoria\textsuperscript{17} in 1954, and the Australian Capital Territory\textsuperscript{18} in 1967, introduced compulsory registration as part of their existing Acts along with the provision that titles could be issued 'limited as to description of land', if the definition of the parcel's boundaries as shown or described on any available records were uncertain. In New South Wales, compulsory registration of title was introduced in 1967.\textsuperscript{19} As in the other three jurisdictions, the N.S.W., Registrar-General could at his discretion force registration, but if a plan of survey was not available or submitted defining the parcel boundaries, the N.S.W. Registrar-General could not act. The 'limited as to description of land' concept has now been adopted in N.S.W.\textsuperscript{20} in a very flexible enactment. Apart from allowing the issuing of a 'limited certificate of title' were boundaries are not sufficiently defined, the Act allows in some cases "occupational boundaries" to be adopted. In both cases a survey will not generally be required until the first transfer for value. These four enactments follow in the traditions of similar acts in England and New Zealand. It is worth examining in more detail how and why the general boundary concepts were introduced in these two jurisdictions. In England, partial compulsory registration was introduced in 1897. General boundaries in that country were reintroduced in 1875 into the then voluntary registration of title system after a 13 year period of fixed boundaries.\textsuperscript{21} The introduction of fixed boundaries contributed to the failure of the English Land Registry Act, 1862 (only a few hundred titles were registered under it) as it brought to light boundary problems that had not been realized. The 1875 Act made the system less concerned with boundaries in an attempt to accelerate the conversion process and ultimately to place most parcels on the register. It was for similar reasons that New Zealand introduced compulsory registration, along with provision for general boundaries in 1924,\textsuperscript{22} into its existing Torrens Title system that had been in operation since 1870. Esterman\textsuperscript{23} and Simpson\textsuperscript{24} wrote about this legislation saying it allowed for the conversion of all Deeds Record titles to the Torrens system within 25 years by adopting the concept of qualified titles or titles 'limited as to title' and titles 'limited as to parcels'. Tens of thousands of titles in New Zealand were issued under the provisions of this Act and to this day many thousands are still 'limited as to parcels' with the proprietors obviously feeling no insecurity as to their title to the land because of the lack of accurately surveyed boundaries. Simpson\textsuperscript{24} wrote:

"Unlike limitations as to title, limitation as to parcels is not automatically extinguished; it continues until a plan of survey is deposited. It is significant that it inconvenienced proprietors so little that, thirty-five years later, 25 per cent of (all) titles in Auckland were still limited as to parcels and 36 000 our of 37 000 proprietors whose lands were compulsorily registered had not bothered to have the survey made which was necessary to fix their boundaries."

It is upon this New Zealand legislation that the South Australia, Victorian and A.C.T., enactments are based.\textsuperscript{25} South Australia has issued, under its legislation, about two thousand titles mostly 'limited as to description of land' and continues to do so. Jessup\textsuperscript{26} wrote that the compulsory conversion process had been undertaken systematically by areas across the whole of South Australia and that only the area within a 20 mile radius of Adelaide remained to be completed. Where the survey information is not directly available for the parcel under consideration a limitation as to description of land is placed upon the title issued. A diagram on the title is still necessary and this is compiled from any surrounding available recorded surveys, and not from surveys of the parcel as occupied on the ground. Victoria and the A.C.T. have used other enactments\textsuperscript{27} to bring land onto the register and have not used the above mentioned available legislation. The New South Wales legislation giving the Registrar General the power to adopt occupational boundaries on some old system land, will come into operation on the 8th December 1978
having allowed for a two year publicity period. A full survey will not usually be required to bring the parcel onto the Register as the boundaries will in many cases be fences enclosing the parcel and will be clear for all interested parties to see. Identification of the parcel must be positive even though there is no survey requirement and this will be achieved by recording of lineal information along with use of the New South Wales Valuer-General’s occupational maps and any available aerial photographs together with any survey information in the hands of the owner. While the title diagram of such a parcel will not usually show measurements, it will indicate the parcel’s location, identity, shape and size. This occupational boundary concept is in many respects similar to the general boundaries system as practised in England.

Another area where general boundaries have been accepted within the Torrens title system is in Strata Titles, The New South Wales Strata Titles enactment 18 which has been introduced in other jurisdictions in Australia, requires the associated Strata plan to show dimensions only for the parcel boundaries (upon which the building is sited) and where any building is within 2 metres of these parcel boundaries.59 Barrie60 said:

“It is interesting to contemplate that in N.S.W. under the Strata Titles Act, the motion of general boundaries is already implicitly accepted since undimensional plans are used to indicate the limits of interest in any particular strata title and registered in the Torrens Office.”

When a strata title is purchased you are advised to inspect the building to insure that the plan accords with what is held on the ground. The boundary is as viewed on the ground and not as measured on the plan. It has been argued that the parcel boundary is the important boundary but rarely will the unimproved value of the land exceed the capital value of one or two strata units, indicating that the strata title is just as important when guaranteeing title as the underlying parcel itself.

General Boundaries by Default

In quite a number of specific circumstances in Australia parcel boundaries of registered land may be said to be general boundaries. The most obvious example of this are natural boundaries such as mean high-water marks of the sea and tidal rivers or the banks of a non-tidal river. They are graphically portrayed on a title usually without dimensions and portray what may be evident on the ground. They are said to be ambulatory. Hallman61 states that such boundaries: “... advance or recede with the natural deposition or erosion of soil on or from the shore or bank by the action of the water ... but only so long as the natural process had taken place gradually and imperceptibly.”

Another most important case arises when the parcel as defined numerically on the title plan bears only a slight resemblance to the parcel as long occupied on the ground. This situation often arises in titles surveyed before 1900. Arter62 said:

“In Victoria, and possibly other States, the early Crown Grants were based on surveys of very doubtful accuracy, and immediately after the introduction of the Transfer of Land Act in 1862, great numbers of holdings were brought under the operation of the new Act without any survey whatever. They were simply based on paper subdivisions of broad acres or on the dimensions shown on the particular conveyance concerned.

Therefore, it will be seen that the actual position of the boundaries on the ground, and their relationship to surrounding properties, were, in the absence of survey monuments, one of pure conjecture.”

Similar observations have been made about early title surveys in New South Wales71 and in New Zealand72. Together with the above, the position has been confused by faulty original monuments, deliberately created excesses and monuments placed by unrecorded retracement surveys. This results in the retracement surveyor placing great weight on the occupational boundaries having due regard to the original title measurements.

Hamer35 drew attention to the relative importance of various evidence when carrying out a title boundary retracement in N.S.W. as being:

1. natural features,
2. original Crown markings of grant boundaries,
3. monuments,
4. original undisturbed markings of private surveys
5. occupations, and
6. measurements.

It is very often the case that in the older settled areas in Australia items (2) and (4) above, will be absent, thus monuments, occupations and measurements will prevail in that order. This is evidenced by the redefinition of old parcels which were originally regular in shape, and now due to the adoption of occupations; irregular boundaries have been created.

In the above instance the title diagram of the parcel will only be a guide to what will be found by inspection on the ground; a situation not unlike general boundaries in nature.

The writers have not entered into this question with the intention to convince that there is a general boundaries system in Australia, but only to put forward the view that we have elements of general boundaries already within our present system. These elements are in some cases used as a convenience and tolerated as a necessary evil. Further it must not be thought that a general boundaries system is not without its faults. White14 and Powell-Smith36 point out that the English system has problems in some areas especially in regard to new building estate development. Another problem arises in that apart from the compilation of the base topographical map, surveyors are generally not involved in the workings of the system. This is unfortunate as it is recognised in some quarters in England that the system would improve if it was legislated that surveyors took a more active role in the cadastre, especially in new developments. Being conscious of these failings in the English system it is suggested that we should adopt more of the principles of general boundaries in order to enhance our existing system.

Further Use of General Boundaries Within the Present System

Australia now has available many survey and cartographic assets which would aid in the further introduction of general boundaries. These assets are the National geodetic framework, the various States continuing breakdown of that framework, the National Mapping Topographic small scale mapping programme and the various State’s well advanced programmes for large scale topographic and land parcel maps. With these control networks and maps available it is now possible to consider the adoption of some elements of general boundaries within the present systems.
There are three areas where general boundaries could be more fully utilized within the present Torrens enactments in Australia. They are as follows:

1. in connection with bringing the estimated 250,000 remaining parcels still held under the old deeds records in Australia, into the various Registration of Title Systems;
2. in connection with some future alienations from the Crown; and
3. to assist in the definition of rural and urban allotments in certain circumstances.

Completion of the Old System Conversion

Progress has been made in this conversion process, but in the three states of New South Wales, Victoria and Tasmania the task of conversion is still enormous. New South Wales has an estimated 150,000 old system titles, with 40,000 of those parcels having existing recorded surveys.37 Victoria has about 60,000 (estimated from dealings) and Tasmania another 60,000.38 South Australia and Queensland have about 1000 parcels each, while Western Australia has virtually no old system land. It is quite clear from the New Zealand and English experiences mentioned above that it is expedient to use general boundaries in this conversion process and that it is obvious that great savings can be made by their use. Adjudication and immediate survey of boundaries is not required and thus the Registrar can concern himself more with title rather than survey problems; however a title diagram and a positive identification of the parcel are still very necessary.

It is suggested that a graphical approach based on photogrammetric mapping be adopted as the means of providing survey information to assist in bringing these ¾ million parcels onto the various Registers. Two physical factors lend support to this general boundary approach. These factors are that the majority of these parcels have old established and accepted fences on the boundaries, and further it appears that many of the parcels are located in the same geographic areas. A systematic and unified approach could therefore be considered with the task being undertaken based upon existing or future State large scale line or orthophoto maps. Private industry could play a role here (as it does in Queensland) if the mapping authority is overloaded in meeting its present mapping programme and could not provide maps in an acceptable area. The old system records would be searched, the parcel identified on the map and if necessary verified by inspection on the ground. The ideal would be to check at the same time the existing Torrens Titles in the map sheet area and rectify any major discrepancy between boundary and fences. By this operation an up-to-date land parcel map would be compiled (like a cadastral overlay, but more reliable) which would reflect the situation on the ground. Few changes in the legislation to allow the task to be undertaken in such a manner would be necessary in two states, N.S.W., and Victoria. An extension of the ‘occupational boundary’ concept for old system land in N.S.W., would be ideally suited to a photogrammetric approach, as the mapped fencelines would be the new legal boundaries. Toms and Lewis38 put forward, in a clear and reasoned paper, when discussing Tasmania: ‘...that since urban and rural areas in Tasmania have, after some 170 years of development, reached a relatively stable state, the possibility of the application of a graphical cadastral should be investigated urgently. It would seem then that the opportunity is still available for a trial of a graphical cadastral in Tasmania for bringing onto the Register many of the old system parcels. In a graphical system a large amount of ground survey is necessary. Along with the providing of ground ground control for the maps, it could be used to locate all structures on unfenced parcels, to aid in surveying small country towns and to provide the future revision information.

It takes little costing ability to calculate the tens of millions of dollars that would be involved in the survey by traditional methods of these ¾ million parcels. It is suggested that providing the title diagrams by the above or similar procedure that great savings would be effected. Add to this the benefits of a multi-purpose up-to-date record map produced in the process and overall the benefits to the community would prove immense.

Use in Future Crown Alienations and Resumptions

The Crown when wanting to effect economies in the alienation of land may well in some instances profit by the adoption of general boundaries. It is interesting to note that in New Zealand after the adoption of general boundaries in primary applications in 1924, many government and semi-government agencies introduced in the years following, elements of general boundaries for various purposes. Esterman39 said in this matter that:

‘...the compromise of 1924 has steadily encroached over the years until we find today that the principle of a limited as to parcels title based on general boundaries has been extended to the sales of State houses under (now) the Housing Act 1955, the scale of Crown Sections for group building under the Land Act 1948, the compilation of a Register of Pastoral Leases and Licenses under the same Act, to the registration of leaseholds under the Greymouth Harbour Board Amendment Act 1945,... to the registration of... title of Maori land (same)... and to the registration of mining interests within the Land Transfer system under the Mining Tenures Registration Act 1962.’

An example of the use of the general boundary concept in Australia, in a specific use context similar to the above quoted N.Z. enactments occurred in Tasmania. Here old system substandard housing40 is able to be brought onto the Register by the particular or government agency concerned, using general boundaries.

Two other areas where such boundaries may be most useful are in connection with the resumption of land for road widening purposes and in the definition of easements for power line purposes.

To Assist in Title Definition

The present cadastral survey system operates reasonably well for isolated surveys and in particular in the case where parcels are recent for many years. On the other hand it does not appear to be operating satisfactorily in long settled urban areas. This is evident from the ever present identification or check survey, particularly in N.S.W.

This situation will not improve with time as the surveyor will continue to be required to redefine even greater numbers of existing parcels that will have even older occupations than at present. That this will be the case is supported by current trends in home ownership where:

1. There is an increase in the number of old dwellings being purchased. Now 75% of all loans for housing purposes are given on existing old dwellings. This means that purchasers are buying what they see—the extent of the property being based on old accepted occupations.
2. There is an increase in the number of cluster titles, strata titles, villa and town house developments. In this case people buy a new property from an as-built situation.

These trends mean that purchasers are buying a parcel with established boundaries and that it will be most likely fenced or walled. This situation seems most suited to a graphical cadastre, and by its adoption would solve the paradox of costly redefinition surveys on long accepted boundary fencelines and the investigation of dwelling positions relative to those fencelines.

Barrie suggested that in highly urbanised regions: "...a gradual change to a graphical description of parcels would be entirely satisfactory...", and further that it would be desirable on economic grounds.

The consideration of an introduction of general boundaries on such a large scale in Australia would require a change in the philosophy behind title surveys. Some of the problems which would have to be considered are:

1. Is the cost of trying to hold boundaries fixed for all time justified, especially when after many decades their position differs from long accepted boundary fences?
2. Should Torrens enactments recognise the gaining of title to part of another title by adverse possession?
3. The user requirements (including government and local government agencies) as they relate to the precision of boundary surveys.
4. A cost-benefit analysis of the existing cadastral survey system and any proposed system.

These problems are the subject of further investigation in the future.

Conclusion

For too long the operation of title surveying has not been considered worthy of academic interest, even though it is the largest of the surveying disciplines and involves most professional surveyors. This may have occurred because the present title survey system has been developed for good reason and operates reasonably well within its present framework; however it has not kept pace with modern technology. Surveyors are obliged to become fully aware of the relationship between title surveying, land registration and the operations of the cadastre. The profession must be prepared to justify the system on economic grounds and if it is found that there are a few cracks it must be prepared to repair them.

It is felt that these cracks are appearing and have been with us for some time. One method of rectifying the situation may be the 'general boundary' concept. Unfortunately, there appears to be a belief that this system is radical and different. This is not the case. For example, 'general boundaries' were introduced into England in the late nineteenth century for the same reason that some of the principles have been recently introduced into Australia—to assist in the bringing of 'old system' land onto the Title Register.

It should be remembered that general boundaries are not indefinite boundaries their precise location is just undetermined numerically at some point in time. It is however always possible to fix such boundaries to the same precision as title surveys in Australia, if the need arises or a precise survey can be justified on economic grounds.

The surveyor plays an important role in the operation of the system of title registration. He must take advantage of his position and become fully involved in the structure, operation and research of this area.

It was generally accepted by the participants of the recent Darwin Congress that the prime determinants of the role of the surveyor should be:
(a) community needs,
(b) community expectations, and
(c) how the surveyor can contribute to the communities' well being.

It is suggested that the surveying profession may not be meeting these ideals in the areas of title surveying and land registration.

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