

Cadastral Surveys Within The Commonwealth

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One result of the Conference of Commonwealth Survey Officers in 1971 was a resolution that called for a publication "setting out techniques used for, and costs and efficiency of, marking, surveying and recording land parcels in the Commonwealth". Emerging from the research project that was initiated in response to this recommendation is a book which attempts "to unravel some of the philosophical, methodological and technical problems of cadastral surveys" that form a "multi-million dollar industry in which great sums of money are wasted and much that should be done remains undone". Mr. Dale, who was appointed senior research fellow in October 1972, finished his labours in the remarkably short time of three years. He has produced what is inadequately described as a report, though to most readers it will appear as a complete, authoritative and forceful textbook on what has hitherto been a neglected and frequently misunderstood field of study.

From the outset, the author insists that cadastral surveys are an aspect of land administration, and this is a central theme to which he returns on several occasions. With few exceptions, Mr. Dale tells us, the modern land surveyor remains outside the realm of land management and its associated areas of land use, planning and development. Instead, the surveyor offers a service which extends little beyond the measurement of boundaries and the portrayal of topographic features. Too often his concern is with the techniques of survey measurement and not with the identification and solution of problems for which his particular expertise is relevant, nor does he usually consider the environmental consequences of what he is doing. Three fundamental questions are posed by the author, who then tries to answer them in successive chapters. First, what are the minimum requirements of a cadastral survey system as defined by law (other than those laws, such as survey regulations, which have been written by surveyors) and by environmental and cost considerations? Second, what are the best technical methods for achieving the basic requirements of a cadastral system? Third, would an expansion of the cadastral activity and a marginal increase in expenditure produce any significant increase in the overall benefits? Mr. Dale starts by

examining the nature of boundaries and the factors influencing the choice of one standard of survey rather than another. Next, he takes a detailed look at the methods of acquiring, processing and presenting cadastral information and identifies a number of costs and benefits. He then considers problems relating to the integration of survey information. The remaining chapters deal with general aspects of cadastral survey methods, survey administration and education and, finally, a summary of the cadastral systems now in use in a number of Commonwealth countries.

In pointing out that the Torrens system of registration guarantees title to land and not its boundaries, Mr. Dale offers a valuable corrective to the widespread but mistaken notion that boundaries can always be guaranteed in an absolute sense. Thus, the adoption of a "general", as opposed to a "fixed", boundary does not necessarily mean that the former is vague and uncertain, or that the latter is beyond dispute and not susceptible to subsequent alteration. Indeed, the selection of ideal boundary criteria arises from an assessment of legal requirements and economic factors, and is not used solely on survey regulations or on methods of monumentation. A cadastral system should be designed to be socially and politically acceptable, and to inspire the confidence of those whom it serves. Instead of attempting to cover all eventualities, the aim of such a system is to be "more like an insurance policy giving the maximum cover at the minimum expense." The occasional need for boundary surveys of high precision does not imply that all citizens should be subjected to unnecessary cost, and a point must be found beyond which any further expenditure will produce no commensurate benefit. Insistence on such high standard of survey measurement as will completely prevent future boundary disputes, the author argues, is to overlook the needs of the majority. In this connection, there must be some justifiable relationship between the cost of survey and the value of the land, but the land surveyor, though trained to be a practical man, may be obsessed with apparent mathematical precision that often obscures considerations of common sense. As an example, one might point to reference plans in Ontario where the common appearance of several sets of measurements along the same line, all differing only slightly from each other, presents a jumble of figures that are confusing, if not incomprehensible, even to an intelligent administrator or layman. Title plans should be kept as simple as possible and purged of all extraneous

information which, as necessary, can be separately recorded for those who need to understand and use it. Frequently, in his search for the nearest millimetre, the surveyor is "baffled by the magic of measurement" into thinking that the precision of his surveys is greater than is actually possible or socially useful. This is no mere matter of a surveyor's pride in his technical ability, for a cadastral record depends upon certainty for its success and it cannot work effectively if different values continue to appear for any one point or measurement.

Monumentation is stated to be the single most important aspect of cadastral survey for title purposes. Unfortunately, after drawing a somewhat artificial distinction between a monument and a beacon, Mr. Dale uses both expressions almost indiscriminately throughout the text, and especially in his description of monumentation by beacons where the inclusion of the word markstone adds a further and unnecessary complication. Canadian land surveyors, well accustomed to making ties from monuments to the corners of walls or buildings, may find it puzzling to be told that such physical features are rarely used in urban areas as a reference from which the actual boundary line may be fixed. In his less than satisfactory treatment of boundary descriptions the author differentiates between a metes description and a metes and bounds description, by giving what purports to be a Canadian example of the former in which the location of the boundaries is clearly governed by iron posts. In fact, this is a metes and bounds description, the bounds of which are the posts themselves whose actual position, if proved to be in situ, qualifies the given measurements by making them more or less, even if this is not so stated in the actual wording of the description. It is simply not true to say that this description is entirely dependent on measurement for the identification of the parcel. On the other hand, Mr. Dale surely goes too far in suggesting that the definition of boundaries in terms of coordinates, rather than monuments, is "contrary to common law". Although the courts will probably always prefer to be shown the existence of original monuments as proof of the true position of a boundary, coordinates, like other kinds of measurement, are a type of evidence which is nowhere declared to be inadmissible but whose weight and cogency depend upon the circumstances of the particular case.

Examination of the multi-purpose cadastre is subsumed under the heading of integrated surveys, a phrase to which the author ascribes various meanings, including the introduction of a coordin-

ate referencing system, the aggregation by specialists from different disciplines of their particular information and findings into a common result, and the collection, collation and presentation of all information which refers to attributes of land. It is in this latter approach that the land surveyor is eminently suited to play a vital role, by ensuring that all relevant land data can be given a correct geographical identity. The growing pressure for all types of improved land information for the benefit of human activities, almost all of which take place within individual parcels, compels the need for the cadastral map as the framework within which the required knowledge can be stored. Yet land surveyors have traditionally shown little interest in the problems of mapping features other than boundaries and the physical objects depicted on topographical maps, and this has tended toward the creation by different organizations of their own data banks for such specific information requirements as land use and ownership, population densities, housing conditions, underground municipal services, and so on. Excessive concentration on the mathematical aspects of his work may inhibit the surveyor from realizing his full potential as the logical coordinator and supplier of basic information without which no orderly use and development of land can exist in modern society. While there will always be a requirement to mark property boundaries with monuments, the increasingly high cost of this activity indicates that with little additional effort and expense it can produce land information to satisfy the widest group of users. It is this tremendous challenge that beckons the land surveyor in the direction of greater professional fulfillment and responsibility.

An irritating air of apology permeates the preface, where it is said that the completion of the project on time was more important than the acceptance of minor deficiencies. Statements to the effect that the draft of the text had to be ready "for better or worse" by a specified date, together with the implication that any publication is better than none at all, are scarcely helpful. Nor is it necessary to emphasize that the book contains views to which some readers may take exception. What is needed are reliable information and thoughtful conclusions, and Mr. Dale has presented a wealth of fact and informed opinion in a vigorous and provocative manner. This having been said, attention must be directed to some of the more obvious imperfections of the work, such as the inexcusable lack of an index, and the rather curious inclusion of a glossary containing definitions, some too elementary and others poorly explained, of expressions whose

meaning is also given in the appropriate page of the text. Do words like map and data really need explanation in a work of this kind? Although typographical errors are commendably few, the author's unhappy venture into the French language includes two misspellings and the absence of four accents in the title of the organization which might better have been abbreviated to F.I.G., and the lack of two letters and an accent in the name of the cylindrical projection known as Plate Carrée. Mr. Dale should also have stayed away from awkward and inapt terminology such as *de facto* and *de jure* in his comparison of occupational and recorded boundaries.

More serious from a Canadian point of view is the statement that the pattern of surveys in Canada has resulted in a patchwork of uncontrolled parcels whose location is uncertain, since this ignores, for example, the valuable contribution made by the D.L.S. Township System towards the development of the western provinces. Although, with the benefit of hindsight, one can agree that Canada is now paying the price for not investing in control surveys in the past, it is very questionable whether large sums of money could have been realistically diverted for this purpose in the early days when the major object of establishing boundaries was to facilitate rapid settlement on the land. Also somewhat misleading is the suggestion that surveys in most of Canada need not be connected to control, since in nearly all areas a mathematical tie must be made to the corner of the nearest lot or legal parcel, and the rectangular township fabric itself, though primitive in many respects, lends a locational stability that has proved to be useful for the compilation of cadastral maps in such a large country. Although only a Dominion Land Surveyor may practise in the Northwest Territories (not North West Territory), it is incorrect to say that a federal government employee holding this commission must serve a period of two years under articles in Newfoundland before he may undertake surveys in that province, since he is expressly exempted by statute from the local licensing requirements. The author's assertion that there appears to have been little change in the Newfoundland deeds registry "since the 18th century" cannot be supported, for the land registration system was introduced there as a result of imperial legislation passed in 1824, and its principal, if regrettable, alteration since that time has been the movement from compulsory to voluntary registration. In characterizing Canada as a rigid and bureaucratic country, Mr. Dale neglects to mention that the introduction and implementation of the innovative Land Registration and Infor-

mation Service in the three Maritime Provinces, which he regards with approval as a dynamic system, is supported and made possible mainly by financial aid from the federal government amounting to 75% of the total costs involved. As an example of duplication of effort in property surveys in Ontario, the author contrasts the respective situations in Ottawa and Toronto. In the former city, he finds that voluntary cooperation by private land surveyors has resulted in the establishment of a repository of information which enables them to ascertain without delay what surveys have already been performed in any particular area. This useful arrangement is said to be absent in Toronto where it is argued that there is no similar organization with the mandate to prevent duplication or overlap. In fact, the Association of Ontario Land Surveyors requires its members in the Toronto region to make regular submissions to its survey notes and records index which is designed to keep them aware of the existence of the very information that the author claims to be lacking. One might also conclude from his remarks that Mr. Dale has a low opinion of practising surveyors and their professional associations whereas, in Canada at least, the efforts of the private sector to raise educational standards and improve the quality of service to the public have been particularly noteworthy in recent years.

Cadastral Surveys Within the Commonwealth is a brave and, on the whole, successful attempt to grapple with the many difficult problems that have long beset and continue to plague the land surveyor. Mr. Dale brings to his subject a fresh and imaginative approach, combined with a precision and lucidity of style, and his findings are based on personal observations arising from a variety of practical experience. The author is to be congratulated on producing a work which seems destined to become required reading for those who are in any way interested in cadastral surveys. He recognizes that a cadastral system is not to be confined to the narrow requirements of title registration but must provide the framework for the acquisition, availability and manipulation of multipurpose land information. This represents the greatest challenge now facing the land surveyor, the measure of whose professional ability and fortitude will be tested by response to the new and exciting opportunities that lie within his grasp. Mr. Dale's arguments for a new and critical analysis of traditional ideas and methods, which are certain to provoke discussion and controversy within the profession, should ensure that his book will deserve and find a valued place in the library of every surveyor.