CHAPTER 7

THE CADASTRE AND CADASTRAL SURVEY

1 Prefatory

1.1 So far, in considering registration of deeds and registration of tide, we have been concerned mainly with how to secure the landowner in the holding of his property and make dealing with it simple, cheap, quick and safe. We now come to quite a different sort of record, the record which is devised to serve the requirements of the State for its own purposes, in particular the raising of revenue from those who occupy land. In Chapter 1 we defined *cadastre* as meaning 'a public register of the quantity, value and ownership of the immovable property in a country, compiled to serve as a basis for taxation', and we went on to say that the term cadastral survey has come to be used to denote a survey of the boundaries of the land units of a country, whether or not the survey has any connection with taxation. Thus the Shorter Oxford English Dictionary defines cadastral survey as: "strictly, a survey of lands for the purposes of a cadastre; loosely, a survey on a scale showing accurately the extent and measurement of every field and plot of land; e.g. on the scale of 1:2,500 or 25.344 inches to a mile". The latter definition exactly fits the British Ordnance Survey, which we describe below.

1.2 The *modern cadastre* is discussed later in the chapter. At this point it should suffice to say that, as found in most European countries but not in Great Britain, it consists as a rule of two parts: an illustrative part in the form of a map, and a descriptive part comprising at least two registers, one arranged according to parcels and the other according to proprietors. This sort of cadastre originated at the beginning of the nineteenth century when, in practically all European countries, State revenue was obtained largely by levying a tax on land, in all these countries survey was carried out parcel by parcel, the parcels themselves being surveyed and mapped in separate units of use, which were classified as arable, pasture, orchards, woods, dwellinghouses, factories, workshops, and so on, since different rates of tax applied to the different kinds of use. For the purpose of identification each parcel was individually numbered on the coulastral map and a record was made of the persons shown by local inquiries and relevant documents to exercise land rights in the parcel. Just as a person's name serves to distinguish him from other people, so a parcel's number on the cadastral map serves to indicate and identify one specific portion of the earth's surface (with the advantage that the number can be unique, whereas names are often duplicated). Information regarding the parcel, such as its size, its use, its value, its owner or the person

responsible for paying tax, is to be found in the registers, the parcel numbers constituting the link between the maps and the registers.[1]

1.3 Though this device was originally intended only for the purpose of taxation, its usefulness as a repository for information respecting land is obvious, and the cadastral machinery has been kept up to date even in those countries, such as Luxembourg, where land tax has been abolished. Indeed some European countries, notably Sweden, are endeavouring to create a 'multi-purpose cadastre' or 'land data bank',[2] in which a mass of information concerning each land parcel, including even details of the people who live on it, can be stored and retrieved by electronic devices. The word 'cadastre' is thus losing its specifically fiscal association, just as the term 'cadastral survey' has already lost it. For example, a paper entitled 'Let Us Have a Cadastre' was submitted by the Government of Uganda to a seminar on cadastre in 1970.[3] This paper mentions some of the drawbacks (such as interminable litigation in boundary disputes) "when there is no Cadastre" and then details the advantages of "a system of recording and registering land ownership", not least that it "always brings with it the marketability of land". The 'cadastre' that the author had in mind was clearly a comprehensive definition of proprietary land units throughout the country quite unconnected with land tax or even valuation.

1.4 Indeed, a first essential for efficient administration is mapping on a scale sufficiently large to identify the units of land into which the country is divided, at least in those areas where development is specially important, as it is in towns where replanning is contemplated, or in rural areas where the pattern of agriculture is to be changed. If the identification is to be of maximum effectiveness, the unit should be the unit of use, since units of use can be grouped to make a unit of operation or a unit of ownership,[4] as may be required. This identification can then be used for a variety of purposes, such as valuation (for the purpose of tax), or use (for the purpose of planning), or title (for the purpose of dealing). It is, in fact, 'cadastral survey' which is of prime importance, and 'cadastre' in its original form, i.e. purely a fiscal record without maps, is almost irrelevant to our theme of registration of title.

2 Early cadastral records

2.1 The making of land records for tax purposes is of very ancient origin and is a fascinating study in its own right, but unfortunately we have neither time nor space to discuss it in any detail here. It is certain that a form of land registration existed very early among the Jewish people. Historians of ancient Egypt have shown that as early as 3400 BC measures of length were in regular use there and

[1] See J L G Hensen, Some Remarks on Cadastre in General' *ECA Seminar on Cadastre* E/CN.14/CART/264 (Addis Ababa Nov 1970) 1
[2] See Apendix D
[3] S L Okec, 'Let Us Have a Cadastre' *ECA Seminar on Cadastre* E/CN.14/CART/258 (Addis Ababa Oct 1970)
[4] See 1.3.1 for description of units of use, operation and ownership

that a cadastral record of sorts was in existence by about 3000 BC.[1] Nearer to our own times the Emperor Diocletian ordered a land survey of the Roman Empire late in the third century AD for the purpose of obtaining the information required to enable him to introduce a reformed taxation system.

2.2 We are told that the Chinese possessed sophisticated surveying instruments by the middle of the eighth century AD having understood advanced mathematical techniques from at least the third century. We do not know exactly how early the first complete survey took place in China, but it is probable that, by the end of the seventh century, a taxation system based on crop yields and supported by land survey records was enforced throughout the Chinese Empire. It is a fact that in AD 1069 new land surveys were carried out in China and taxes were based upon them.[2] Indeed this may have been one of the earliest examples of a 'comprehensive cadastre', in that an attempt was made to combine a record of the extent and productivity of the land parcels involved with some details of those who owned them and of the people actually living on them.

3 The Domesday Survey in England

3.1 "With Domesday Book we come to the first, and for long afterwards the only, contemporary copy of a methodically compiled land record of a national territory that we have in anything approaching complete form."[3] (It is preserved in two volumes at the Public Record Office in London.) It was compiled, twenty years after the Normans had defeated the Saxons at the Battle of Hastings in 1066, as an inventory of the resources of the realm that William I had conquered. "So narrowly did he cause the survey to be made," moaned the Saxon chronicler, "that there was not one single hide or rood of land, nor – it is shameful to tell but he thought it no shame to do – was there an ox, cow or swine that was not set down in the writ".[4] The survey included "a land valuation as careful and complete as that drawn up by any modern agent called in to revalue farm rents for some landed proprietor or rating authority".[5]

3.2 Domesday was primarily a 'geld book', that is a collection of facts made for a fiscal purpose, and its compilation was facilitated by the machinery and records that had been in use in Saxon England for the collection of the Danegeld (which was 'protection money' paid to escape the depredations of Danish raiders). The machinery of the Treasury for levying the Danegeld either for buying off the Danes or for enlisting Danish mercenaries, with their ships, to guard the coasts of England was of very great interest to William, "and one of his earliest acts after Hastings was to seize the Royal Treasury, not only for the wealth it contained, but for the records of taxation it preserved. It was the existence of these which alone made possible the preparation of Domesday Book in a remarkably brief period."[6]

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[1] SeeD & S 2-6
[2] Needham *Science and Civilisation in China* I 138
[3] D & S 20
[4] Trevelyan, *A Shortened History of England* 113
[5] Garnier *History of the English Landed Interest* 153
[6] Keeton, *The Norman Conquest and the Common Law*, 23

3.3 The survey covered the whole of England with the exception of the four northern counties and London, Winchester and certain other towns. Ordered in 1085, it was finished in the following year, a very short time when compared, for instance, with the forty years it took to complete the first large-scale 'Ordnance' surveys (as we presently describe). But from our point of view it is the procedure of compilation and the 'unit of record' which are of special interest.

3.4 Dowson and Sheppard drew particular attention to "the similarity of the procedure in the field of the Domesday 'Inquest' to the Inquests for fiscal purposes of today",[1] and pointed out that "the speed and reliability of the results depended upon four governing features in the conduct of the Inquest, namely (a) that it was systematically decentralized; (b) that the information was furnished by local juries – that is sworn committees – who knew the ground and represented both races; (c) was presented to, and recorded by, independent Commissions; and (d) was subject to check by, and appeal to, a further Commission. The basic territorial working unit throughout was the Hundred, for each of which its own local jury was appointed."[2] The hundred (now obsolete) was a division of a county originally supposed to contain a hundred families.[3] The evidence was "taken by the Commissioners from sworn juries consisting of the priest, the reeve, and six villeins of each township".[4] The reeve was an official, the villeins were villagers, and the township was an area of the countryside rather than an urban centre in its modern sense; indeed, the rural areas of Ireland are still divided into 'townlands'.

3.5 The names of proprietors, the area and tenure of their lands, with the quantity of arable, meadow pasture, and woodlands, and the number of tenants and villeins were recorded as well as the number and kind of livestock. The emphasis on the latter is not surprising "if we bear in mind that personal property in those days was far more valuable than real. The intrinsic value of flocks and herds exceeded that of the pastures which contained thorn, almost as much as the value of a banker's bullion exceeds that of the strong room which holds it...But perhaps the chief proof of the low value attached to real property in the mediaeval age may be sought in the inaccuracy of the land measures."[5]

3.6 The measurements originated in agricultural usages, the 'hide', for example, being an area that would maintain a family, or an area ploughable by one man and beast in a working year; thus, it did not represent the same area on hilly or heavy soils as it did on those which were level and light. 'Hide' was a Saxon term which was superseded by the 'carucate' of the Normans (derived from the Latin *caruca* which they took to mean a plough). The 'acre' (originally meaning merely an open piece of land) similarly varied in area, but in 1305 was fixed by law as 40 perches long by 4 wide, or 10 chains by 1, 10 chains being a furlong, the length of a plough furrow in the common field. Areas such as 'bovate' and 'ox-gang', like the Roman *jugum*, were derived from the number of plough

[1] D & S 6
[2] D & S 21
[3] Chambers
[4] Trevelyan, *A Shortened History of England* 114
[5] Garnier *History of thr Egluh Landed Interest* 154

oxen needed for their cultivation, and have long disappeared. It is said that all the old measures will now be finally swept away by metrication and its dreary terminology which will deprive us of the chain (the length of a cricket pitch) and even of the pint, though that, we understand, has been reprieved for such necessities of life as milk and beer.

4 The development of land surveying in England

4.1 The Domesday Survey, however, missed that essential component of the modern cadastre, the map; the lack of accurate surveying instruments prevented efficient land surveying in England until the end of the sixteenth century when the plane-table and theodolite were developed. "Until 1570 and later the word 'surveyor' meant the landlord's steward, a responsible man as skilled in estate business as Chaucer's Reeve, and one who could sign himself 'gent.' below his written survey. The ground-surveyors were lower in the social scale, and were known as 'country land-meters'. They seldom attempted maps, confining themselves to computation of the acreage of fields, a task performed at first with an elementary knowledge of mensuration and a 'corde conteyning v perches in length', later with a plane-table and 'a chain of wyers'. By 1580, however, the new landed gentry of England, a class founded on the estates of the suppressed monasteries, were seeking more expert surveyors who also possessed a knowledge of manorial law and ability to read old Latin deeds. Men from the Universities, such as John Blagrave and John Norden, who were working on mathematics and new surveying instruments, were attracted to the profession, and surveying, much as we now know it, began."[1]

4.2 A simple form of theodolite was in use in Norden's time, but the main instrument favoured for estate surveying was the plane-table.[2] Distances were measured with a chain (or, in the case of roads, with a measuring wheel) but various poles, chains, wood yards and miles were used at different times in different districts. Edmund Gunter (1581-1626) introduced the 22-yard chain which bore his name and which became the most common standard of measurement after about 1680. In London and its neighbourhood the statute perch of five and a half yards was in general use from quite an early date, but elsewhere the rod, pole or perch varied from one locality to another until the adoption of national standards of length in 1760.

4.3 Medieval landlords had 'extents' made of their estates on the same lines as the Domesday Survey, that is a survey of what their property comprised. The record included a detailed account of all the lands within the manor: freehold, copyhold, leasehold and the lord's demesne; the holdings were fully described with bounds and abuttals; and field names, acreages and rents were given. The map, if there was one, was originally only of secondary importance, but under the influence of the new mapping techniques this manorial inventory tended to become subordinate to the map, and it was as estate surveyors that men like

[1] Emmison *Maps in the Essex Records Office, 1566-1855* [v]
[2] See 18.4.4

Saxton and Norden learnt the craft which they put to such valuable use in their celebrated maps of the English counties.

4.4 Estate surveys, however, were commissioned for private purposes, and it is to the 'parish maps' that we must turn for the first examples of 'cadastral mapping' in England. It was in the second half of the sixteenth century (i.e. when the new mapping techniques were developing) that provision for the poor and needy, formerly left to the monasteries and to private charity, was made a duty incumbent on society at large and enforced by the State. The unit of organization was the parish, an ecclesiastical subdivision of the county, and on each parishioner a rate was levied based on the amount of land he held. Maps showing this information became important, just as they were also important for the assessment of 'tithe', one tenth of the produce of the land payable to the rector of the parish for his own maintenance. The parish maps and their accompanying records, indeed, had the elements of the'modern cadastre' as described above, but were organized on a local basis without standardization, and so lacked the uniformity, both of kind and quality, required for a true national record.

5 The Ordnance Surrey

5. 1 It was the Jacobite rebellion in Scotland in 1745 which showed the need for a general map, not merely for military purposes but also for the effective civil administration and development of the Highlands. The story sounds familiar to anybody who has experience of tribal areas. "If civilization was to go forward in the North of the island, it was essential to put down the warlike organization of the tribes and extra-legal allegiance to the chiefs. The King's writ must run in the glens."[1] Good roads were necessary for swift movement of troops, and so were good maps. The work, done by the army as a military operation, was begun in 1747, and the map (now in the British Museum) was, in the words of William Roy, who played a considerable part in the execution of the project, "rather to be considered as a magnificent military sketch than a very accurate map of a country. It would, however, have been completed, and many of its imperfections no doubt remedied; but the breaking out of the war of 1755 prevented both, by furnishing service of other kind for those who had been employed upon it."[2] The scale was 1,000 yards to one inch or 1:36,000, a scale which was never again adopted in official maps. A project to make a general survey of the rest of the country at public cost was held up first by the Seven Years War (1756-63) and then by the American War of Independence; "money was tight and soldiers busy".[3] Thus this project also was regarded as essentially a military exercise.

5.2 Indeed it was not until 1791 that, because of the fear of invasion from France following the French Revolution in 1789, it was decided to make a 'one-inch map'[4] of the threatened area, that is the south-eastern counties of Essex and

[1] Trevelyn *A Shortened History of England* 391
[2] Account by William Roy published in the *Philosophical Transactions* of the Royal Society
[3] D'Agepeyeff and Hadfield *Maps* 154
[4] Although England is in process of adopting metric measures, a knowledge fo English scales will be useful. There are 61,360 inches in a mile, and a 'one-inch map' is therefore at a scale of

Kent. The Honourable Board of Ordnance (the body which had been responsible for army artillery since the fifteenth century) was charged with the responsibility for making the map, and so what became the national survey of Great Britain is called the Ordnance (i.e. Artillery) Survey, a name very puzzling to the uninformed. By 1789 France had been mapped on a scale of 1:86,400, the operation having taken some forty-five years; like the British survey, it also had its origin in military needs for it was begun during campaigns in Flanders and Central Europe between 1745 and 1748.[1] The map "was published in 183 sheets and it is an enduring monument to the scientific ability and technical skill of eighteenth century French cartographers as the first map of a whole country based on triangulation and topographical surveys".[2]

5.3 Survey in England was not discontinued when the threat of invasion disappeared, for its importance for civil purposes had become increasingly evident. It was in Ireland, however, that land problems were particularly pressing, and in 1825 the main survey effort was transferred there to make a six-inch map (1:10,560) for land valuation purposes – in other words to effect a 'cadastral survey'. It was at this time that many of the principles and techniques that have since applied to Ordnance Survey work were formulated.[3]

5.4 The six-inch survey of Ireland was finished in 1840 and the surveyors returned to England and Scotland where it was proposed to carry on work in the areas not previously covered by the one-inch survey, but at the six-inch scale which had proved its feasibility and value in Ireland. In 1841 Parliament passed im Act[4] which began: "Whereas several Counties in that Part of the United Kingdom called England have been surveyed by Officers appointed by the Master General and Board of Ordnance, and it is expedient that general Surveys and Maps of England, Scotland, Berwick upon Tweed, and of the Isle of Man, should be made and completed by Officers in like Manner appointed…" The boundaries of counties, cities, towns and parishes were to be ascertained and marked out, and the surveyors wore given powers of entry (which have hardly ever been invoked), but it is important to note that it was expressly provided that the powers conferred should not extend to the ascertaining or alteration of local or private boundaries and that titles to land should be unaffected.[5] It has thus kept purely topographical a map which, nevertheless, is effectively used for such matters as valuation, rating, agricultural statistics, and the management and transfer of land, and in fact satisfies all cadastral needs.

5.5 The proposal for large-scale comprehensive mapping, however, met with considerable professional opposition, for it seriously threatened the business of

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l:63,360. The 'one-inch map,' will be converted to 1: 50,000 scale and the '6-inc map,' (1: 10,560) to 1:10,000 scale.

for 1785 3 D'

[1] 1 D'Agapeyeff and Hadfield *Maps* 134

[2] The *New Cambridge Modern History* VIII 134

[3] See Ordnance Survey *History*

[4] 4 & 5 Vict. c.30 (named the Ordnance Survey Act 1841 by the Short Titles Act 1896)

[5] See ibid,section xii

the private land surveyors; no longer would it be necessary to call on them whenever there was a proposal to construct a canal, railway or road, or whenever alterations were to be made to an estate. They were indeed very hostile to official intervention in their work. For instance, a high proportion of tithe and enclosure maps were classified as second instead of first class, not because they were inferior but because it wag felt an indignity to submit to the official check which was obligatory if they were to be graded first class. Many of the old surveyors said, "Neither our maps, nor our fathers' nor our grandfathers' were ever called into question qua accuracy, and we do not know why the Tithe Commissioners should now assume the power to test our maps, and we shall advise all parties who have confidence in us to refuse to permit our maps to be so tested."[1] There was quite a long period of 'official vacillation about the scale' – the 'battle of the scales', in fact, lasted for ten years[2] – but in 1853 (very soon after the six-inch survey had been started) it was decided to begin survey at a scale of 1:2,500 (25.34 inches to the mile) which is the scale adopted for closely farmed areas in many parts of the world. This survey is generally known as the 25-inch survey; finished in 1893, it took just over forty years, and by the outbreak of the First World War in 1914 a first revision had been completed, and a second and third started.

5.6 In the meantime registration of title, introduced in 1862, had failed, one of the principal reasons for the failure being the problem of parcel definition (which we discuss at length in the next chapter). The Act of 1875 was no more successful than its predecessor, and it was not until 1889 that a small mapping department was formed at the Land Registry under the control of the Director-General of the Ordnance Survey with a view to setting on a proper footing the maps and plans used for purposes of registration. In 1897 the new Land Transfer Act at last made the ordnance map the basis of all description of registered land,[3] but the Land Registry, which by 1898 had taken control of its Survey and Maps Department, carried out the revision of the ordnance map needed for the registration of title in areas of new development, using its own surveyors. It is scarcely surprising therefore that there was much argument and discussion between the Registry and the Ordnance Survey. For forty years committee after committee attempted to find a workable solution as to how responsibility for mapping could best be divided between the two.

5.7 The Ordnance Survey in fact fell on lean times after 1914; manpower was reduced to such an extent that it became impossible to keep the large-scale maps up to date. Although by 1934 it had been agreed that the Ordnance Survey should carry out all the revision required for land registration in England and Wales (apart from a small number of cases which required investigation), the rapid growth of registration work faced the inadequate force of surveyors with an increasingly difficult task. To consider this unsatisfactory state of affairs a Departmental Committee was set up under Lord Davidson, and this Committee

[1] Mr William, Blamire, Copyhold and Tithe Commissioner, giving evidence in 1854 to the Royal Commission on Registration of Title (*Registration of Title Commitsion Report* (1857)256)
[2] See Ordnance Survey Histroy 1
[3] 8.5.3

reported in 1939. One of its principal recommendations was that the Ordnance Survey should keep the large-scale plans permanently up to date by the system of 'continuous revision'; all changes on the ground should be surveyed as soon as possible after they had occurred.[1]

5.8 The recommendations for the restoration of the Survey were put into effect after the Second World War, and continuous revision was given priority in the Ordnance Survey's large-scale field programme which began in 1945. The programme consisted of the resurvey at the scale of 1:1,250 of the major urban areas of the country and the revision on the national grid of the old 1:2,500 County Series plans of the rural areas, except the mountain and moorland parts which were surveyed at the scale of six inches to the mile (1:10,560).

5.9 "Thanks largely to the Davidson Committee continuous revision is now an established procedure. Once this is extended to cover the rest of the country and adequate staff are available to enable it to function really effectively in all areas, the Ordnance Survey will at last be in a position to deal with Land Registry work in its stride."[2] Continuous revision, however, is not without its critics, even in England, not least on the grounds of cost; for example, they suggest that, in some areas anyway, a cheaper but equally effective process could be devised, and the maps could be brought up to date at longer intervals.

5.10 We are specially interested in the use of the large-scale ordnance map for the registration of title, but of course it is equally useful for parcel definition in 'unregistered' conveyancing. It should also be noted that since the areas of fenced fields (i.e. units of use) are shown on the 25-inch map, it is ideal for making the type of return needed for the agricultural statistics and analysis which are indispensable to policy-making. It could doubtless also be used as the illustrative part of a cadastre, but valuation has no part in the agricultural census which has been made annually in Britain since 1866;[3] indeed, since 1929 agricultural land has not even been rated. It is to continental Europe that we must look for examples of the modern cadastre as described at the beginning of this chapter.

6 The modem European cadastre

6.1 Dowson and Sheppard remarked "that it is impossible to give a definition of a Cadastre which is both terse and comprehensive, but its distinctive character is readily recognized and may be expressed as the marriage of (a) technical record of the parcellation of the land through any given territory, usually represented on plans of suitable scale, with (b) authoritative documentary record, whether of a fiscal or proprietary nature or of the two combined, usually embodied in

[1] *Davidson Committee Report* (1938) 22 para 54

[2] C J Sweeny and J A Simson *'The Ordnance Survey and Land Registration*' Geogaphical Journal (March 1967) 18

[3] This census differs firm the Domesday Survey in two main respects: (a) Enumeration is by holding (units of operation) and not by estates (units of ownership); (b) It is physical enumeration, not a valuation; the £ sign does not occur in the returns, and no individual farmer has anything to gain or lose from making an accurate return. (See *Century of Agricultural Statistics: Great Britain 1866-1966* 1)

appropriate associated registers ".[1] We can, with benefit, take the analogy of marriage further. In monogamous countries marriage to two persons is the heinous crime of bigamy. Where the technical record of parcellation is already married to a fiscal record, its further marriage to a proprietary record is bigamous and leads to complications, particularly when the second wife (the proprietary record) proceeds 'to wear the trousers' and control the record of parcellation, as is inevitable if it is an integral part of the register. If the survey is made specially for the purpose of illustrating a register of title, it must be under the control of the Registrar and the map must not be altered without his authority, any more than the register itself.

6.2 We might suggest, therefore, that there are evident advantages if the technical record of parcellation retains its 'bachelor' status (as the British Ordnance Survey does) while being ready and able efficiently to serve the needs of a number of partners without being bound to, still less under the control of, any particular one of them. There is a very wide range of prospective partners: *fiscal*, for the purpose of central government land tax or local government rating; *proprietary*, not only for recognition of title but also to show responsibility for paying tax or rates; *land use*, actual and potential, for the purpose of planning and control, and the statistics needed for both; *engineering*, for the construction of drains and roads; *land occupancy*, not necessarily revealed by a register of title or a fiscal record, but needing to be known for social and economic reasons; *travel* – airman, motorist, horseman, hiker, each requires a particular sort of map; *archaeology*; *geology*; *history* – there seems no end to the subjects which require maps. Our bachelor has indeed a busy time.

6.3 Dowson and Sheppard went on to suggest (in an important passage which has often been quoted) that the objectives and characteristics of a cadastre we imperfectly understood in Britain because the surveyors are isolated from the associated documentary records which the survey processes are designed to complement and serve, and that the same mistake in the other direction is "no less commonly made by legislators and administrators who, for their part, tend to regard the documentary processes as independent and even to consider cadastral survey as an unwelcome, if unfortunately indispensable, ally". They also said that British surveyors "have so far commonly tended to regard cadastral survey as topographical survey writ large,[2] whereas there are important distinctions in kind between the two which deserve much more critical attention than they have hitherto received."[3]

6.4 However, since Dowson and Sheppard wrote their book, much critical attention has been devoted at least to the interrelation of title and fiscal records, if not specifically to the interrelation of cadastral and topographical mapping. In 1965 the International Office of Cadastre and Land Records circulated a

[1] D&S 47

[2] This is not really surprising since, as we havc explained, the large-scale Ordnance Survey maps, though purely topographical, are 'cadastral maps' within the meaning of the second of the SOED definitions (sea para 1.1 above).

[3] D&S 47

questionnaire to twenty-one countries, and replies were received from seventeen.[1] Based on these replies, 'General principles underlying the relationship between legal land records and the cadastre' were examined in a paper by J. L. G. Henssen, President of the International Office of Cadastre and Land Records.[2]

6.5 "Legal land registers", it was explained in this paper, "aim at providing for those concerned, information on the legal status of immovable property and indicate its origin. For this purpose, it is indispensable that the information published be clear and precise and that there be full search facilities for inspecting these registers. On the basis of this principle, two requirements are of fundamental importance: publicity and technical expertise. The requirement of publicity implies that any change which occurs in the real legal situation of immovable property must be clearly recorded in the legal land registers, so that it may be brought to the notice of any person inspecting the registers. The requirement of technical expertise implies that the piece of immovable property in question, which is subject to real rights, must be simply and unambiguously identified." It should be noted that this description does not discriminate between registration of deeds and registration of title, and also that the system of registration of title as operated in England would not qualify as a 'legal land register', since it is not public nor does it show all 'changes in the legal situation', but only those in respect of parcels which happen to be registered.

6.6 The paper offered a terse definition of the cadastre as meaning "a systematic classification and valuation of land, under the control of the central government, by means of maps of parcels drafted on the basis of topographical surveys and recorded according to parcels in a register". This is consistent with the description of the modern cadastre at the beginning of this chapter, and we will now give a brief historical account of its development.

6.7 Though in the late seventeenth and early eighteenth centuries notable steps were taken, particularly in the Austrian Empire, France, and Sweden, toward recording the information needed for land tax assessment, these early attempts to establish cadastres were submerged in the wave of political unrest which swept across Europe towards the close of the eighteenth century. This very upheaval, however, opened the way to new ideas and enabled them to be incorporated into the improved administrative machinery set up as the French revolutionary conquests turned into the extended military dictatorship of the Emperor Napoleon I. It is true that attempts to create a 'modern cadastre' in continental European states go back farther than the French Revolution, but in the twenty years between 1794 and 1814 most of Europe came under French domination or influence. In 1807 Napoleon instituted his well-known cadastral operations,[3] and the establishment by France herself of a national cadastre within the framework of a

[1] *Austria, Belgium,* Czecheslovakia, *Denmark, Finland, France, Federal Republic of Germany, Hungary, Ireland, Israel,* Italy, Luxemburg, *Morroco, Netherlands, Norway, Poland, Sweden, Switzerland,* United Kingdom, *United States of America and Yugoslavia.* Replies were received from the countries named in itallics.

[2] J L G Hensen 'The Cadastre and Rural Land Redistribution,' *ECA Seminar on Cadastre,* BICNA4/CART/264/Add.1 (Addis Ababa My 1971)

[3] See A.2.2-3

centralized unitary state was an event of extreme importance in the development of land records, not only in Europe but in the extensive French colonies overseas.

6.8 In most European countries there already existed public records of land transactions (i.e. registers of deeds)[1] quite unconnected with taxation and going back far earlier than cadastral mapping (though not, of course, cadastre itself). Some of these states had a tradition of public conveyancing carried out in front of a member of the lower judiciary, examples being the Netherlands, the Grand Duchy of Hesse and the Kingdom of Saxony. The Netherlands now operate a system under which no right in land can be secured until the deed by which it is created has been entered on the 'legal' land register. By means of this stipulation, and the efficient operation of the cadastral record, it is claimed that, in fact, "the registration of title to land has been actually achieved".[2] This is of particular interest because naturally it was the Dutch system which Jan van Riebeeck took to the Cape when he founded the Dutch colony there in 1652, and we suggested in Chapter 6 that the present South African system derived from it is in truth registration of title, though it has always been classified as registration of deeds.[3]

6.9 In Hesse and Saxony, however, it was realized that an efficient cadastre, recording mutations for fiscal purposes, could also serve as a basis for an authoritative, not merely evidentiary, record of transfer. These early experiments were taken up by other German principalities with the result that, while France (and countries like Belgium and Italy which modelled their administrative and judicial institutions closely upon those of France) maintained a deeds registration system alongside a cadastre for fiscal purposes, the German states took the further step of converting their deeds registers into registers of title based on the cadastral survey, which itself was brought up to a higher standard than had been considered adequate for fiscal purposes. In 1872, registration of title was adopted throughout Prussia (the dominant province of the newly created Germany) and it was extended to the whole of Germany in 1900. This system persists, after two world wars, in a slightly modified form in the West Germany of today.[4]

7 The cadastre in relation to registration of deeds and registration of title

7.1 We must now try to make clear how cadastre fits in with registration of deeds and of title. We have already described how cadastre (without cadastral mapping) is of much earlier origin than registration of deeds and was instituted to serve the needs of the State for the purpose of the assessment and collection of revenue, whereas the purpose of registration of deeds was to protect the interests of landholders. Because of this fundamental difference in basic purpose, a cadastre differs in at least three main particulars from registration of deeds:

(1) A cadastre, whether it consists merely of a list of land units or is accompanied by a map, is necessarily all-embracing and complete, for obviously

[1] See 6
[2] Note on Dutch cadastre provided by Dr J L G Henssen, president of the International Office of Cadstre and Land Records.
[3] See 6.6.11
[4] 3 See Appendix B

no one is going to be allowed to escape tax merely because his land is not included in the records. The compilation of a deeds register, on the other hand, is necessarily 'sporadic', since transactions occur here and there and from time to time, and are recorded as they happen under the names of the parties to them and not under the parcels affected.

(2) A cadastre necessitates classification and valuation so that the tax can be assessed, whereas registration of deeds is not concerned with value.

(3) Cadastre is not concerned with any niceties of ownership, but primarily with responsibility for tax payment; deeds registration is intended to bring back publicity to land dealing but does not itself prove ownership; this development had to await the much later arrival of registration of tide, the purpose of which is to assure ownership.

7.2 Cadastre (as a fiscal record without maps) and deeds registration remained distinct and unconnected until the development of survey techniques and the production of accurate large-scale maps made land survey a satisfactory method of indicating and identifying land parcels, whether for the purpose of tax or of title. Systematic land survey then became an integral part of the modern cadastre (as we described it at the beginning of this chapter), and naturally the cadastral maps also began to be used for identifying the land parcels referred to in the deeds recorded in the deeds registers. Thus the cadastral survey which had originated as a device of record for the administrative convenience of the State came to serve the needs of individual proprietors for parcel identification in their land dealing.

7.3 Indeed, though the original and principal propose of the cadastral record is not to prove ownership but to assess the liability for tax and determine the responsibility for payment, it clearly begins to provide evidence of land rights if it is kept up to date by entering changes of ownership in it. The courts will tend to accept it as evidence to an extent depending on the accuracy of its original compilation and the efficiency with which it has been maintained. Thus the land records of the rural areas of the Indian subcontinent, compiled initially purely for fiscal purposes, are evidence of 'presumptive title'; the title is good until positively rebutted. These records are quite separate from the system of deeds registration which is also in operation.

7.4 Registration of title (as distinct from the presumptive titles of a well kept cadastre) came later than the modern cadastre. In the form in which we principally discuss it in this book, it is of mid-nineteenth-century origin; it stemmed from English and Torrens sources and is found mainly in former British territories, where cadastre on continental European lines is unknown.

7.5 We hope that we have said enough to enable any reader to know what to look for if he proposes to investigate the land records of any particular country, but no doubt some readers will now expert to find a detailed account of at least the French cadastre, since it is to the French cadastre that most of the cadastral systems of Western Europe owe, if not their origin, at least their inspiration and development. Then, because the French system has not yet advanced to registration of title (in France itself, though it has in some former French

colonies),[1] the reader might also expect an account of another system, such as the West German, which has taken this important step.

7.6 Detailed accounts of the French and German systems, however, are necessarily a digression since the system of registration of title that we advocate does not really owe anything to Continental cadastral or deeds records, just as those records owe nothing to the English or the Torrens system ofregistration; they have developed quite separately and independently, though naturally there are some very interesting features of contrast or comparison. For example, the German system achieved 'registration of title' at a speed and with a completeness that should be the envy of England and Wales, let alone Scotland (for which it might well still be the model). The register was compiled systematically from the existing records, and in Bavaria, for instance, the list so compiled was exposed in a public place for twelve months during which time objections and complaints were dealt with. Compilation for the whole of Bavaria, comprising an estimated twelve million parcels, took ten years to complete.[2] Two other points of interest in the German system are that there is no provision for indemnity, and certificates of title (or land certificates) are not a feature of the system. But these are matters of detail which we discuss in later chapters and are out of place here.

7.7 We have therefore placed the French and German accounts in an appendix to Book 1 where they will be available for those who are interested, but will not, at this stage, distract the reader from our main theme.

8 Classification of land records

8.1 We are now in a position to attempt a classification of land records, beginning with the distinction between those records which are maintained by the State and those which are maintained by private enterprise. The records kept by the State are divided into those which are maintained for its own purposes and those which are intended primarily to safeguard the interests of landholders. The latter records fall into two groups: 'registration of deeds' (by far the larger) and 'registration of title' which can be divided into English, Torrens, and Germanic. In continental Europe the main distinction is between 'land registers' for fiscal purposes, and 'legal registers' (positive or negative) for title and land transfer.

8.2 The diagram on the following page (fig. 1) illustrates this classification, and also shows the purpose for which the records are intended and the uses to which they we actually put.

[1] See 5.10
[2] See Appendix B

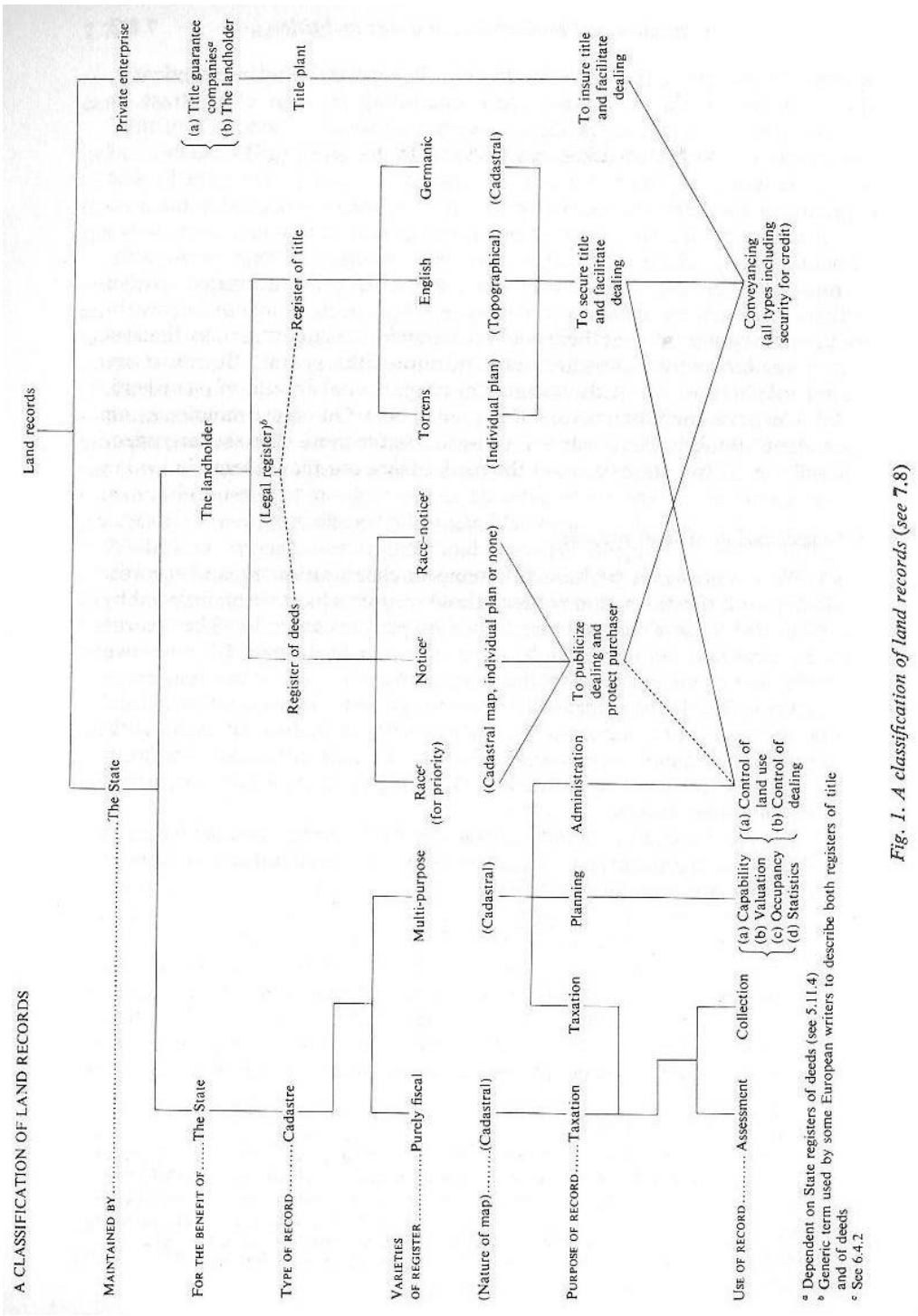

Fig. 1. A classification of land records (see 7.8)