In his textbook *A Preparative to Platting of Landes* (1596), the English surveyor Ralph Agas set out three main advantages of survey by plan rather than by written description alone: to locate land precisely, to provide tools for land management, and to serve as a permanent record.¹ Some twenty years earlier, Valentine Leigh, in *The Moste Profitable and Commendable Science, of Surveying of Landes* (1577), had alluded specifically to the “proffite” to be obtained from accurately surveyed property.² This chapter explores and explains the notion that profit could be gained through the management of properly surveyed, measured, and mapped lands. The large-scale, usually manuscript, maps resulting from surveying and measuring are known in England as estate maps; in France as plans terriers, plans parcellaires, or plans de bornage; in the German-speaking world as Flurpläne; and in Europe’s newly founded colonies as land plats. The chapter considers these maps not as artifacts, nor from the point of view of their survey and construction, nor as records of local topography, but rather as aids in decision making, as agents of rural change, and as exemplars of rural improvement.³

One of the questions that arise from thinking about maps as tools in rural management has to do with the extent to which a map of a single property might have exerted an influence over an area far greater than the few hectares it portrays by providing a model of a contemporary management ideal in the way that town maps may have done.⁴ As John Dee pointed out in his preface to Henry Billingsley’s translation of Euclid’s *Elements of Geometrie*, from a “plat of a Citie, Towne, Forte, or Palace . . . the Architect may furnishe him selfe, with store of what patterns he liketh.” There is considerable relict street plan and building evidence to support Dee’s notion of the “map as model” in an urban context.⁵

Whether the idea can be applied in the rural world and to estate management is less easily documented and must remain largely conjectural. Why did some property owners in the early modern period commission maps to supplement, if not to supplant, written surveys for delineating their properties? For what purpose did a landowner spend not inconsiderable sums of money on having a map made? How might a property map have assisted with the everyday running of an estate or with the making of improvements such as draining and enclosing? Answers to these questions are both tentative and partial. The supporting evidence is mostly circumstantial. Moreover, it comes predominantly from England, where land mapping developed early.⁶ It includes contemporary didactic literature, the maps themselves, and the documentary context in which maps are found. This last is of special importance: only by reintegrating maps and contemporary written documents can the role of maps in decision making be assessed properly. Otherwise, relatively little can usually be deduced from the surface content of an individual map about the purposes for which it was used. That it may record the state of cultivation of fields, for example, does not mean that it was used for land use management.

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4. See the letter from Cressey Dymock to Samuel Harrlib in Cressey Dymock, *A Discoverie for Division or Setting Out of Land, as to the Best Form* (London: Printed for Richard Wodenothe in Leadenhallstreet, 1653), 1–11.


Maps and Property Disputes

A relatively small proportion of extant premodern maps come from the Middle Ages, but they are of interest in highlighting the use of maps in property disputes. An early example is a map copied into the English Kirkstead Psalter (1224–49) depicting nine vaccaria (cow pastures) in Wildmore Fen, Lincolnshire, disputed by the sokels of Bolingbroke, Horncastle, and Scrivelsby. Points in dispute between the bishop of Albi and the seigneur of Puygouzon in the department of Tarn in France concerning the boundary between the two communities were set out in a perspective view of the property about 1314 (fig. 28.1). In 1358, a map was made of lands near Oostburg and IJzendijke, the tithes of which were disputed by the bishop of Courtrai and the abbots of St. Pieter at Ghent.

Around the mid-sixteenth century, the use of maps to marshal evidence relating to disputes about ownership or rights to particular pieces of land increased, and from then it continued to be important throughout the early modern period. In his influential textbook Les quatre livres des institutions forenses, ou autrement[n]l’lsage d’icelle imago Mundi (1550 and editions to 1641), the lawyer Jean Imbert advised judges to enlist the services of a peintre to produce a figure. Then the judge “should enquire of the parties if the picture was well done, and if it is agreed, the judge should question the parties to determine the disputed territory and the respective boundaries claimed.”

Imbert’s advice was still being followed, it would seem, in the seventeenth century, when Jean L’Hoste noted that judges often called for a map of disputed territory to assist them with framing a fair decision.

That some early modern property maps originated in connection with disputes can sometimes be deduced from associated written documents. A drawing of the Étang de Vaccaria, fields, woods, and pastures of this area and bears the names of all but one of the places mentioned in association written documents. A drawing of the Étang de Vaccaria and a plan of the estates of Launay and Fleurigny in the department of Yonne, France. The latter was made in 1530 by “François Dubois, peintre,” on the occasion of a dispute between the commandeur of Launay and François Leclerc, capitaine of Sens. Between 1564 and 1586, there were a series of disputes between the lords of the Buckinghamshire manors of Wotton Underwood and Ludgershall over rights to tithes and common on “Wotton Lawnd” and other parcels of land lying between the two villages. An anonymous, undated map portrays the villages, fields, woods, and pastures of this area and bears the names of all but one of the places mentioned in association written documents.


associated written depositions (plate 21). From such evidence, it seems reasonable to suppose that the map was made at some time during these disputes and that its purpose was to clarify the local geography in question.\(^\text{18}\)

Maps have been invoked as evidence in disputes about a wide variety of pretended and defended rights. Keuning has drawn attention to a map showing the lower course of the Scheldt River from Rupelmonde to the North Sea.\(^\text{19}\)

It was ordered that it be made during a hearing of a dispute in 1468 over the collection of river tolls. By the sixteenth century, water was also important in some local economies as a source of power for driving mills. For these mills to be effective, river banks and weirs had to be kept in repair, and disagreements among landowners about who should pay for this and how the flow of water should be regulated caused much litigation in which maps were sometimes presented.\(^\text{20}\)

For example, Christopher Saxton was commissioned to map part of the Calder River in Yorkshire in 1599 and 1601, as well as mills and watercourses in Harthill, Yorkshire, in 1605.\(^\text{21}\)

![Albi, Département du Tarn, France, Ca. 1314. A perspective view of the surroundings of Albi, from the Verduesse gate and the Sécoux bridge on the right to the church of Saint-Geniès and the Château de Puygouzon on the left. Photograph courtesy of the Archives Départementales du Tarn, Albi (4 Edt 115).](image)


\(^{19}\) Keuning, “Cartography in the Netherlands,” 41.


were used in long-running disputes about the siting of
dams for fulling mills and the right to extract water for
grain mills, respectively. However, in England, and likely
in other European countries as well, most disputes con-
cerned pretended or defended rights of pasture over land
formerly considered common or waste, the boundaries of
which were ill defined.

It might be expected that, as the demand for land in-
creased, so did the number of maps generated by disputes.
Contemporary textbook writers were aware of this rela-
tionship between litigation and the call for maps. English
authors considered the matter from two viewpoints. First,
as the surveyor Edward Worsop contended, bad maps
constructed by a surveyor “not well instructed, studied
and exercised in the sciences of geometry and arith-
metike” would themselves be a cause of more litigation.22
Second, an accurately surveyed estate map might act as a
prophylactic to ward off attempts to pretend rights at
some future date. There is some evidence that, by the end
of the sixteenth century, in England at least, careful man-
agement required that maps of estates be compiled. As
Eden put it, “Prudence dictated that it was preferable to
map estates comprehensively in advance rather than wait
until an emergency compelled hasty action.”23 It may be
noteworthy in such a context that Christopher Saxton
spent several years surveying the Kent and Essex estates of
Saint Thomas’s Hospital; in 1588 it was ordered that
“Saxton the surveyor shall goe forward to Survey or
manner in Kente as his leysure will serve him.”24 Eden has
suggested that All Souls College, Oxford, may have em-
barked on a similar program of surveying after problems
with a lease, a consequence of the fact that the property
had not been properly surveyed at the time it was let.25

**Property Maps and Colonial Settlement**

Didactic treatises published in Europe and later in the
colonies adapted Old World techniques to colonial needs,
advocating in particular the compass traverse method for
surveying new lands.26 In 1610, the English surveyor
William Folkingham dedicated his *Feudigraphia* to “all
Vnder-takers in the Plantation of Ireland or Virginia.”27

One of the reasons John Love gave for writing his *Geo-
dæsia* (1688) was that he had earlier seen “Young men,
in *America*, often nonplus’d so, that their Books would
not help them forward, particularly in *Carolina*, about
Laying out Lands, when a certain quantity of Acres has
been given to be laid out five or six times as broad as
long.”28 Whether textbooks such as his or Folkingham’s
were actually read is another matter. If they were read,
their advice on instruments and techniques must have
been ignored, for early seventeenth-century colonial sur-
veyors commonly estimated angles by eye and distances
by pacing or using a slow-moving boat.29 Furthermore,

the actual mapping accomplished during the period and
reviewed in this chapter was but a fraction of that to
come in eighteenth- and nineteenth-century North and
South America, South Africa, Australia, and New Zea-
land. The experimental use of surveys and maps in the in-
fant colonial world is reviewed briefly in this section by
reference to English colonial surveys of confiscated lands
in Elizabethan Ireland and to the use of surveys in the in-
ternal colonization of Germany and the colony of Vir-
ginia in North America.

Andrews notes that even at the end of the seventeenth
century, “the making of large-scale property maps could
not yet be described as a regular concomitant of Irish
landownership.”29 The turbulent political and social his-
tory of Ireland in the seventeenth century cut that coun-
try off from the mainstream of estate mapping develop-
ments in England. But at the end of the sixteenth century,
some of the earliest experiments in the use of maps as
models of the spatial organization of rural settlement
were made in connection with the Munster plantation.30

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24. Evans and Lawrence, *Christopher Saxton*, 82.
Each Munster seignory (large estate) was initially intended to contain twelve thousand acres, and a plan was drawn to illustrate its division into a range of different-sized holdings for a balanced rural society (fig. 28.2). In 1585, a tiny band of surveyors set about making the surveys that were to be used to allocate confiscated lands to English settlers. The terrain was difficult, the countryside overgrown, the local population generally hostile: all characteristics, in fact, encountered later by colonial surveyors across the Atlantic. But in Ireland, as in North America, the advantage of a map, in the words of Arthur Robins, one of the surveyors, was to show how the land might “most aptest be laid out into seignories,” which helped prevent estates from becoming excessively intermixed.32 In the implementation of this ideal, there were temptations for surveyors to take shortcuts, to substitute estimates for measurements, while colonizers thought they were being cheated out of what they perceived to be precious acres. In fact, there was no shortage of land at that time in Ireland. Little was achieved in Elizabethan Munster, but the method of plotting the results of a survey on maps was used again when almost half the country was confiscated after the 1641 rebellion. This resulted in the parish-based Down Survey (1655–57), directed by Sir William Petty.33 The large-scale maps of the Down Survey record the boundaries of forfeited town lands and the numbers on the map indicate acreages.

contain an inventory of land classified as cultivable, bog, mountain, or wood.

Property maps were also associated with early programs of internal colonization in Europe. In Germany, the Reformation brought changes in landownership and displaced groups of refugees, and these changes encouraged colonization schemes. For example, Wilhelm IV, landgrave of Hesse-Kassel, acquired the lands of a Cistercian monastery that had been dissolved in 1527. In 1580, he commissioned a map of the land that was used to organize the foundation and settlement of the new village of Wilhelmshausen.34

In the North American colony of Virginia, it was a legal requirement from 1642 that all surveyors “deliver an exact plot of each parcel surveyed and measured.”35 This enactment coincided with a period of disputes over boundaries; from the 1640s a series of government measures was designed to tighten up surveying and land title procedures. Once land was cleared and settled and became valued as a resource in the true sense of that word, careless surveying could no longer be tolerated. When land was thought of as limitless, there was little incentive for accurate surveying. Social and economic changes in the seventeenth century enhanced the value of surveying and established a critical role for property maps in the process of land settlement. By the mid-seventeenth century, some Virginia land plats, complete with ornamentation, color coding, and use of conventional signs, seem also to have acquired the same symbolic meaning as English estate maps of this period.

Cadastral Maps in Taxation Reform and the Evaluation of State Land Resources

During the seventeenth century, a number of European governments adopted maps as a means of assessing and recording the tax liability of land. These cadastral maps can be distinguished from estate maps by their inclusion of all the properties in a particular administrative unit, such as a parish, canton, or province, rather than only the land of an individual manor or estate. Some of the earliest state-sponsored, mapped cadastres are from the Netherlands, where maps were used in the sixteenth century in association with polder making. The proposed cadastral patterns that they displayed were used to persuade potential shareholders to invest in the projects and to allot newly formed land plots, and then they served as visual displays for those who had invested in the new land.36

Rudimentary taxation cadastres are known in Hainaut from as early as 1604. In 1633, the surveyors Ange Stoedt and Jacques Michiels were commissioned to revise the cadastre of the Seignurie de Flandre.37 Large-scale maps of state and peasant holdings in central and south Sweden were made from the 1630s onward (fig. 28.3).38 Between 1639 and 1641, in what is now Denmark, Johannes Mejer mapped sixty-three townships in the province of Åbenrå for the Duchies of Schleswig and Holstein.39 Such initiatives can be counted as part of the prehistory of the eighteenth-century European cadastral “take-off,” which will be examined in volume 4 of The History of Cartography. They can be related to the fact that, by the seventeenth century, taxes in some provinces were being more closely identified with the land that generated wealth than with the individuals who farmed the land or the communities that inhabited it. For example, a 1585 decree in the Franc de Bruges discontinued the tax on individual wealth and work and replaced this with a land tax, with the result that the arpent (equivalent to 1.5 statute acres) became the base unit of the levy.40 Cadastral maps provided a parsimonious and accurate means of both fairly assessing, and permanently recording, the tax liabilities of particular pieces of land.

By the seventeenth century, the deforestation of much of western and southern Europe by agriculture and demands for fuel, building, and constructional timber was a matter of growing government concern. Even in Sweden, with her seemingly limitless softwoods, the charcoal burner had made considerable inroads.41 In England, John Evelyn lectured to the Royal Society on what he

termed “this im-politick diminution of our Timber.” Governments commissioned surveys of their dwindling forest resources, and some of these employed a cartographic base. In Russia, the forests around Bolkhov were measured and mapped in 1647, and the program had been extended to other areas of Russia by the 1670s. In France, a number of royal forests had been mapped by the second half of the sixteenth century; a map of the forêt of Chantilly dated to the end of the fifteenth century is one of the earliest produced. Many of these forest maps distinguish timber from coppice trees, and old trees from young plantations, by means of color or symbol to provide an inventory of the forest resource. During the seventeenth century, French woodland reserves were further diminished and their precise extent rendered uncertain by fires, military destruction, and illicit felling. After Jean-Baptiste Colbert was given charge of Louis XIV's royal forests, he instituted a wide-ranging program of forest reform in 1662–63. One element of this program was the

42. John Evelyn, Sylva; or, A Discourse of Forest-Trees, and the Propagation of Timber in His Majesties Dominions (London: Printed by Jo. Martyn, and Ja. Allestry, printers to the Royal Society, 1664), 1.
45. Broc, La géographie de la Renaissance, 135.
compilation of a complete cartographic inventory of the royal forests. The resulting maps were said to be “an exact description of the complete extent of forests, specifying their area in arpents, and detailing their lines of subdivision, the nature of the trees with which each is planted—whether with timber or coppice—and noting their age and whether of strong or weak, stunted growth.” The maps were used to regulate the felling and sale of timber; their continued use into the eighteenth century is attested by the many hundreds of tracings, reductions, copies, and recopies that were made.

Experimentation with map-based taxation cadastres and these French maps of forest reserves indicate that in the seventeenth century European governments and provincial rulers not only were adopting maps for plotting national strategy and organizing fortification and warfare, but also were using large-scale maps as land inventories. But a cartographic approach was not yet an inevitable concomitant of government-sponsored rural land surveys. The parliamentary surveys of sequestered estates in map-conscious seventeenth-century England were conducted by means of written descriptions and valuations alone.

**Property Maps and Agrarian Improvement**

Samuel Hartlib wrote of Elizabethan England that “Ingenuities, Curiosities, and Good Husbandry, began to take place, and then Salt-Marshes began to be fenced from the Seas.” On the European continent, about forty thousand hectares were reclaimed on the German coast of the North Sea in the sixteenth and early seventeenth centuries. In 1545, the Venetian government instituted the Officio dei Beni Inculti to supervise reclamations and drainage works in the valleys of the Veneto. Maps were important aids in the planning and execution of their schemes. For example, in 1570 the cartographer Panfilo Piazzola was commissioned to compile a map of the Menago River lowlands. His map, drawn at a scale of 1:15,000, distinguishes land liable to flood from existing tilled lands, and records the pattern of land ownership (fig. 28.4). In England, administrators were also conscious of the value of maps in land drainage schemes. Skelton cites a number of references in sixteenth-century documents to items such as “a platt of the country” or a plot of “the drayne.”

In the seventeenth century, in much the same way as maps proved useful for planning the alignment of new drainage channels and associated works, they were used, albeit in more limited contexts, for planning irrigation projects. Managing water meadows to promote early grass growth for overwintered stock is one of the six “improvements” discussed by Walter Blith in his English Improver (1649). Blith counseled his would-be improver to “Plot out thy Land, into such a Modell or Platforme as thou mayst be sure that all thy Land thou designest to this Improvement, may not faile therein” and “Take a most exact Survey of thy Water, not by the Eye onely.”

If the use of maps in water management programs was a general phenomenon throughout Europe, the employment of maps by sixteenth- and seventeenth-century enclosers of formerly open-field arable and meadow land was effectively restricted to England and Wales. It might seem obvious that maps should have been used to assist with the reorganization and reallocation of thousands of land parcels and then to record the postenclosure cadastre. In practice, however, most land was satisfactorily enclosed with only a written terrier to place a particular strip in the context of its furlong and field. The extent of English land affected by enclosures in the sixteenth century and the early seventeenth, and thus the scale of the mapmaking opportunity, should also not be overestimated; enclosures may have affected only about 3 percent of agricultural land. However, the message promulgated by sixteenth- and seventeenth-century English surveying textbooks is a clear one: enclosure was a distinct agricultural improvement and could be done better with accu-

46. Louis de Froidour, Instruction pour les ventes des bois du roy, 2d ed. (Paris: Chez Brunet, 1759).
52. R. A. Skelton and John Newenham Summerson, A Description of Maps and Architectural Drawings in the Collection Made by William Cecil, First Baron Burghley, Now at Hatfield House (Oxford: Roxburghe Club, 1971), 53.
rate measurement and maps. In Darby’s words, land surveyors were the “great panegyrist of enclosing.”

One of the most potent contributions that surveyors made to agricultural improvement in the early modern period stemmed not so much from the maps that they made as from the dissemination of wisdom distilled from their practical experience in different rural economies. In this sense, the surveyor was much more than a mechanical measurer and mapper of landed property. Circumstantial evidence of the relationship between surveying and agricultural improvement appears in figure 28.5, which records the intensity of surveying activity in English counties between 1470 and 1640. The contrast between the grass growing in the west and northwest parts

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of England and the mixed farming in the south and east parts of the country is mirrored in this map of surveying activity.\textsuperscript{58} It can be argued that it was market opportunity that encouraged agricultural improvement and that agricultural improvement, in turn, generated commissions for estate maps. It is for such reasons that Adams explains the lack of Scottish estate surveys in this period: “There was little agricultural improvement to require plans [because] the traditional infield-outfield system remained wholly unchanged until the eighteenth century.”\textsuperscript{59} Despite the presence of vast landed estates, Buisseret says that “it seems virtually certain that no estate maps were drawn in Spain before the eighteenth century.”\textsuperscript{60} The explanation given is the absence of a sense of capitalist production until this late date.

Although English writers on surveying discuss agricultural improvement, the three principal seventeenth-century English farming textbooks do not include mapping in their agenda for agricultural improvement. They focus instead on matters such as the cultivation of new fallow crops, marling and manuring, convertible husbandry, and stockbreeding.\textsuperscript{61} The only explicitly agricultural textbook to include surveying instructions was Richard Surflet’s translation (1600) of Charles Estienne’s and Jean Liébault’s \textit{L’agriculture et maison rustique}.\textsuperscript{62} The authors accepted that land surveying belonged more properly to the “Geometrician” than to the husbandman, but, so that the master of “this our Countrie Farme should not be ignorant of anything which may serue for the enriching his house,” they provided “certaine rules of Measuring, [which are] very common with vs here in France, and wherewith the Farmer, in case of necessitie, and for his commoditie, may helpe himselfe.” Survey by chain and “Squire” is described, the instruments are illustrated, and a surveyor and his assistants are shown at work in the field. For work requiring a greater degree of accuracy than their simple methods could provide, the authors said the farmer “must haue recourse vnto the professed skillfull in measuring.”\textsuperscript{63}

From what has been said, it might be thought possible to point to a causal relationship between surveying and mapping and agricultural improvement. It is more difficult, however, to document instances of maps’ actually being used in the everyday running of an agricultural estate. That some maps were used frequently in estate offices can be substantiated by the nature of the wear and damage that they have suffered. Harvey deduces that an Elizabethan map of manors in north Dorset was probably drawn for the use of the occupants of Sherborne Castle, “for the map is rubbed at this point, as though from frequent handling.”\textsuperscript{64} In 1593, William Cecil (Lord Burghley) added notes about land use and tenure to an estate map of Cliffe Park, Northamptonshire.\textsuperscript{65} Christo-
pher Saxton’s map of Saint Thomas’s Hospital manor of Aveley in Essex has “suffered the effects of use possibly in the field, as indicated by the heavy folding.” The fact that a new copy of Saxton’s map was needed in 1782 indicates that the original map was still in use some two centuries later. Similarly, Thomas Langdon’s map of Salford in Bedfordshire (1596) was still being used in the All Souls College estate office in 1769. Sometimes the old maps provided a base on which to plan later changes. When the manor of Wotton Underwood in Buckinghamshire was about to be landscaped in 1649, the park and avenues leading to a new house were set out on a map superimposed over the soon-to-be-changed landscape. Perhaps one of the clearest instances of the use of a map for management in the early seventeenth century comes from the estates of the earl of Northumberland. Christopher Saxton’s map of the property at Spoofforth, Yorkshire, names the tenants and records the use of most of the fields either by name or by means of an initial letter code. Saxton also used symbols on the map, probably to indicate relative soil quality field by field (fig. 28.6).

66. Tyacke and Huddy, Christopher Saxton, 48.
68. Elvey, Buckinghamshire Estate Maps, 56.
made by his estate surveyor Robert Norton in the early seventeenth century, were an integral part of the program of estate management and were not inconsiderable in terms of annual estate expenditure.\textsuperscript{70} In 1609, Henry Percy, ninth earl of Northumberland, wrote to advise his son on estate management, setting out as a first principle the necessity to “understand your estate generally better than any one of your officers. . . . I have so explained and laboured by books of surveys, plots of manors, and records, that the fault will be your own, if you understand them not in a very short time better than any servant you have.”\textsuperscript{71}

**Property Maps: A Response to the Increasing Fiscal and Symbolic Value of Land**

A number of instances of the use of large-scale property maps have been identified in this chapter, albeit from a possibly unrepresentative sample of countries. In no case, though, was the employment of a map absolutely indispensable. Land title could be granted without a map, and in North America it was. Property taxes could be collected without a cadastral map base, and in Europe it had been for centuries; in some countries, they continued to be so levied well into the modern period. The buying and selling of land; its drainage and improvement for tillage or pasture; and its enclosure, valuation, and day-to-day management had been, and continued to be, carried on successfully without maps. The stewards of medieval estates had done all these things without maps, and many of their successors worked without maps throughout the early modern period. As has been shown, maps may be aids for decision making and may serve as records, but why their use became so widespread and commonplace in many regions they survive in vast numbers, despite their fragility and heavy use, is a question that still has to be answered.

Part of the explanation for the making of maps of rural property surely lies in the rising monetary and symbolic value of land itself in the sixteenth and seventeenth centuries. Demand for land as a factor in production and as symbolic space may well have been the motor that drove the early modern European property mapping revolution as feudalism gave way to capitalism and the associated commodification of land. Several factors of production were involved. Throughout western Europe, the sixteenth century was characterized by agricultural expansion. In most places, this had halted by about the middle of the seventeenth century, from which point some sectors experienced crisis, recession, and an actual contraction.\textsuperscript{72} The early modern period was also a time of price inflation brought about by the interaction of increases in money supply and population growth and the concomitant demand for more food and goods. Land was a profitable investment, and rent tended to increase faster than production or prices. Investment in land was also a means of social advancement, a way by which an urban merchant or manufacturer could approach, if perhaps not attain, the noble status to which he aspired. In England’s Tudor and Stuart age of mansion building, the possession of land was a prime indication of social status as the nonpecuniary aspects of land owning became more highly valued.\textsuperscript{73} There was plenty of land in Europe for aspiring social climbers to buy, not the least from aristocrats whose extravagances at the royal court of France had proved too much for their estate revenues.\textsuperscript{74} In Saxony, “mine-owners, merchants, cloth manufacturers, even university professors and upper civil servants were buying farms or sometimes knight’s estates.”\textsuperscript{75}

Increasing rents made imperative a clearer and more accurate delineation of property boundaries. Containing the measured acreage of each field, perhaps an indication of land use, and the name of each tenant either on the face of the map or written in an attached table of explanation, estate maps were probably not sufficiently sophisticated to be of great use in the context of making detailed husbandry decisions related to planning crop rotations or even which fields to make arable or pasture, but they could be used to assess and fix a rent per acre on a particular parcel of land.\textsuperscript{76} A map might also reveal tenants’ concealing or infringements, matters that in the past might have been overlooked but that, with the rising value of land, could no longer be afforded. The quest for survey and map accuracy brought about by increasing land values was a spur that improved instruments and the technical execution of surveys. Where land was plentiful and its monetary value insignificant, as in colonial Virginia, there was at first no inducement to sharpen accuracy or to discontinue the use of what were, by European standards, outdated methods and obsolete equipment. But in England, as Thompson has said, “to be in possession of a factual record which could be used to halt any stealthy reneging on their obligations on the part of tenants, became a burning issue to sixteenth-century land-


\textsuperscript{71} Quoted in Batho, “Manuscript Maps,” 72.


\textsuperscript{75} Abel, *Agricultural Fluctuations*, 132.

lords because they wished to screw up their money incomes in order to keep pace with a soaring cost of living and an even more soaring standard of living that social pressures enforced on those with aspirations to gentility.” 77 The tools for calculating and recording such rent increases included surveyors and the property maps they produced. If either or both were expensive, the cost could be expected to be quickly amortized by the higher rent that would result from a landowner’s full knowledge of his property. It is likely that William Fowler’s maps of the Bridgwater estates in Shropshire, made in 1650–51, were used in this way as part of a concerted effort to find money from the estate to pay off debts. 78 The “true plott” of the Luttrell property at Kilton Park in Somerset by surveyor George Withiell from the west of England led to the recovery of over seven statute acres, worth £98, which had been concealed by the old “false plott being drawne with dark lines” (fig. 28.7). 79

In the final analysis, property maps were constructed, to use Valentine Leigh’s phrase, for the “profite” they might bring. There can be no doubt that one element of that profit was reckoned in money, but a property map, in the manner of landed property itself, represented symbolic values as well. A landed estate with its fields, woods, mansion, farms, and cottages was the entrée to landed society. An estate map was a touchstone to the rights and privileges that came with the possession of land. It could be considered, as Harley said, “a seigneurial emblem, asserting the lord of the manor’s legal power within the rural society. For him, the map was one badge of his local authority.” 80

At a further level of abstraction, some of these maps were regarded as minor works of art. Maps had a role to play in decoration, even if not produced for that purpose alone or used solely to that end. “Your plot,” William Leybourn wrote, “will be a neat Ornament for the Lord of the Mannor to hang in his study, or other private place, so that at pleasure he may see his land before him.”

The key to understanding the property mapping revolution in the early modern period is the word “land.” None of the maps referred to would have been needed had land still meant in the Renaissance what it had meant in the Middle Ages. Because in the new capitalist economy land was counted as individual pieces of specific acreage with monetary value instead of as the source of rights or produce as in a feudal society, it is easy to understand why landowners came to desire a map of their property and how, as society became more commercially and cash orientated, socially ambitious, and litigious, surveyors improved their skills and techniques to keep up with the new demand for maps, whatever the underlying motive (fiscal or symbolic). In the final decades of the fifteenth century and at the start of the sixteenth, such maps, although not unknown, had been a rarity and surveying had been a self-conscious, nascent profession. By 1678, however, the English surveyor John Holwell was sufficiently confident of the standing of his profession that he could begin his Sure Guide to the Practical Surveyor with the declaration “I shall not trouble my self to Write any thing in Commendation of the Art, its use being sufficiently known.”


See the preface in John Holwell, A Sure Guide to the Practical Surveyor, in Two Parts (London: Printed by W. Godbid, for Christopher Hussey, 1678), A3 verso.
After a PhD about the public land registries from the rural spaces of medieval and early modern Southern France, I am beginning new researches about the role of the surveyors in the same region. I am very interested in improving our knowledge of this underestimated microcosme, which inserts between the masses and the notables of the countryside, whether these last ones were noble persons or commoners. I am focusing mainly on the hydrogeological debate in the early modern period, and rural survey was a deeply connected topic (especially when it came to floods, droughts, and to the social, political, scientific, and economic effects these phenomena involved). The documents are mainly in Italian, and perhaps some of them are a bit off-topic with your research. The Country Profile on Housing and Land Management intends to reach a broad audience of national policy-makers and experts. I also believe that the study will be of great interest for other countries in transition, to learn and benefit from Uzbekistan’s experience in housing and land management. Stefan Priesner UNDP Resident Representative. This work was initiated by the United Nations Economic Commission for Europe (UNECE) Committee on Housing and Land Management in the early 1990s in response to requests from UNECE Member States. The studies are carried out by international teams of experts in cooperation with government bodies, other international organizations, non-government organizations (NGOs), local authorities, and the private sector. Although the land that now constitutes the United States was occupied and much affected by diverse Indian cultures over many millennia, these pre-European settlement patterns have had virtually no impact upon the contemporary nation except locally, as in parts of New Mexico. A benign habitat permitted a huge contiguous tract of settled land to materialize across nearly all the eastern half of the United States and within substantial patches of the West. The vastness of the land, the scarcity of labour, and the abundance of migratory opportunities in a land replete with raw physical resources c