Chapter 3

Methods of reconstruction of open field plans

Dating of ridge and furrow

It has been assumed, so far, that all the surviving ridge and furrow is of pre-enclosure date, and medieval in origin. The validity of this assumption must be considered, because it was much debated in the recent past, with little agreement being reached as to whether the ridges did or did not have a close relation to the open-field strips.

Recent historians took it for granted that ridge and furrow was to be equated with medieval cultivation. Tate identified Sir John Lubbock, in 1892, as the first (post enclosure) author to equate ridge and furrow with former open-field husbandry, and Maitland, in 1897, referred to 'the practice of ploughing the land into "beds" or ridges, which has but recently fallen out of use... Anyone who has walked through English grass fields will know what they look like, for they triumph over time and change.'

Trevelyan wrote in 1944:

'the outline of many of these strips ploughed by farmers of Saxon, mediaeval and Tudor-Stuart times can still be clearly seen. The 'ridge and furrow' of pasture fields that once were arable is one of the common features of the English landscape today... Often, though not always, the 'ridge' or 'land'... reproduced a 'strip' that was ploughed and worked long ago by a peasant farmer.'

This accurate statement was followed by the work of Beresford, who, in 1948, again drew attention to ridge and furrow, linking ground observations with the evidence of maps and written records. Beresford was convinced of the pre-enclosure origins of much ridge and furrow, and made detailed comparisons of surviving examples with large scale open-field maps in eight parishes. These were mostly in Warwickshire, but included Braybrooke in Northamptonshire, and in all cases the correspondence seemed to be exact. He pointed out that the extent of open fields could be studied using ridge and furrow evidence, and that therefore such open-field studies need not be limited to the lucky survival of a contemporary map. He quoted historical sources to show that early authors equated ridges with land that had previously been arable, like the surveyor of Watborough, Leics., in 1583, who observed ridges in pastures and noted 'these grounds doe appear to have been arable'. In Northamptonshire at Moreton Pinkney in c. 1250 a territor described the parcels in several furlongs as ruggis. Lands at Muscott were ridged in by 1433, proved by reference to 'iii butts... called fowr rygges'.

3 G. M. Trevelyan, English Social History 1944, p. 4.
5 BL Harl. Ch. 84 I 25.
6 NRO Th 183 m. 7.
Kerridge replied scathingly to Beresford's work. He used various historical sources to disprove some of Beresford's peripheral statements (such as that lands did not always lie across the contours for drainage purposes). He cited a range of agricultural authors and sources to show that in some areas land was gathered into ridges after enclosure, but completely ignored the main tenets and purpose of Beresford's studies, that in the cases examined ridge and furrow does correspond to the open-field maps.

Mead (1954) also took the sceptical view and studied Buckinghamshire for detailed evidence. He plotted ridge and furrow visible on RAF vertical photographs for the whole county. It was apparent that none was visible on the chalk and nearly all ridge and furrow survived on the northern claylands. A detailed study was made of the parish of Soulbury which has a pre-enclosure map of 1769. Mead re-drew this and published it side by side with ridge and furrow in Soulbury plotted from aerial photographs. The agreement between the furlong boundaries and the map is good, although Mead would only allow himself the cautious comment that groups of 'ridge and furrow complexes' corresponded to the furlongs of the eighteenth century. He stressed that within the furlongs of the map the details of strips did not fit very well with the ridge and furrow, there often being many more actual ridges than strips on the map. He tried to explain this by suggesting that 'strips' were split up after 1769 before the final hedges of the enclosure were set, even though the parish was enclosed in the same year. Hooke has recently noted that number of ridges on the ground does not correspond exactly with 'strips' in Kinwarton, Warwickshire. The explanation is that these maps, like most other similar ones of that date, are not plans of ridge and furrow, but maps of land ownership, and if a particular owner held several adjacent lands then a wide 'strip' would be marked on the plan. Beresford made this observation in a reply to Mead in 1955. The debate of the 1950s was much confused by the pernicious use of the word 'strip', which had been artificially applied to describe plots on pre-enclosure plans. It was never used in the days of open fields, when individual parcels were called 'lands'. There was discussion as to how many ridges or lands there were in a 'strip', to which the answer is that it varies, and as will be shown, in most cases was originally one, before there was ownership of two or more adjacent yardlands and before exchange of lands had taken place.

Kerridge assumed Mead had proved that the ridge and furrow did not relate to pre-enclosure maps, and was of post enclosure origin. He disputed Beresford's observation that most ridge and furrow was obviously older than present-day hedges, even though the photograph published by Mead clearly showed that the hedges were later. As late as 1973 Baker and Butlin wrote 'too few areas have been mapped and studied in detail, and substantial evidence to support Beresford's theory about the pre-enclosure origins of much ridge-and-furrow has not yet been forthcoming'. They agreed, however, that the evidence was satisfactory where it had been studied.

Some of the confusion has arisen because of failure to distinguish between open-field ridge and furrow, and that produced after enclosure, when ridged strips were ploughed in the nineteenth century. These later ridges are very clearly different from the older

11 Baker and Butlin 1973, p. 35.
ones in that they are straight, parallel to at least one modern field hedge and are usually wider (about 15 yards across) than the earlier, slightly curved lands. Furrows of this type of ploughing are picked up by a headland furrow that goes all the way around a modern field. There is very little of such nineteenth-century ridging in Northamptonshire; an example at Naseby (enclosed in 1820) has been illustrated. More straight-ridged lands can be seen at King's Cliffe (TL 014 993), and again a mid-nineteenth century date is clear because the ground was once a wooded part of Rockingham Forest.

Another kind of nineteenth-century ploughing occurred leaving very narrow ridges only a few feet wide. These are very rare in Northamptonshire and the best known examples are those that lie on top of part of the village earthworks at the deserted villages of Onley (in Barby) and Sulby. Other examples occur at Maidford in demesne closes that were once assarted pastures and never part of the open fields (at SP 615 533). In none of these cases is there any record dating the 'narrow rig', but Murray, writing for Warwickshire in 1813, noted that 'old ridges' vary in width but that new small ridges were 2 yards wide. Andrews (1853) and Stephens (1851) refer to then contemporary husbandry using narrow ridges. In all the following, this kind of post-enclosure ridging is excluded from the discussion and has not been surveyed.

Detailed comparisons with maps and ground evidence shows that in many cases lands can be shown to have been in existence in the sixteenth century. The earlier existence of ridge and furrow can be demonstrated where there is coincidence of physical survival and particular events recorded in documents.

Comparisons of ground surveys and aerial photographs were made for 17 parishes that have open-field maps in Bedfordshire, Cambridgeshire and Northamptonshire in 1981. In all cases there was exact agreement of furlong patterns with the maps, which ranged in date from 1583 to 1846. More comparisons can be made using the information in the Gazetteer below, where there are references to original open-field maps and published reconstructed plans. Where no reconstructed maps are available much ridge and furrow can be seen on RAF vertical photographs taken in the 1940s; one set for 1947 is locally accessible. Two of the most significant cases are Strixton and Wollaston which were both surveyed and published before their respective maps were rediscovered. The Wollaston reconstruction had only one furlong boundary missing from it, which was in a field that had accidently been missed out of the survey. Since the list of 17 parishes was published the number of cases checked is too great to list; it would now only be of interest if a map could be found that did not agree with the ground evidence.

A precise correlation has been studied at Little Houghton, which has furlong boundaries mapped and the furlongs named on a draft enclosure map of 1829. A field book of 1782 records that Little Furlong had 16 lands in it. This and the neighbouring

12 Hall Medieval Fields 1982, Figure 7.
13 It was the Lodge Sale of the Crown Coppice near Westhay in the 17th century, Pettit, Forests NRS, Map 1.
15 A. Murray, A General View of the Agriculture of the County of Warwick p. 130.
18 RAF/G107/UK, at RCHME Air Photograph Unit, Swindon; copies at NRO in Box X80.
19 NRO, NRS transcript of 1782 field book.
furlongs survive as earthwork and an accurate plot of them made at the 1:2,500 scale in 1970, shows that there are the same number of lands on the ground. A similar large-scale mapping of four furlongs at Strixton compared exactly to lands marked on a map of 158320. The Strixton map is unusual in that although there were only four owners, all the individual lands are mapped.

For other counties the 1948 examples studied by Beresford have been mentioned, and further map and aerial-photograph comparisons have been published by Beresford and St Joseph in 197921.

An example of early dated ridge-and-furrow occurs at Titchmarsh, where a manorial site was enlarged to include part of a furlong. The manor-house site has prominent earthworks (at TL 0245 7950) and the furlong involved laid partly as an ‘old enclosure’ called Little Park, and partly as open fields in 177922. The enlarged boundary is likely to have been formed when John Lovell had licence to crenelate his manor (house) in 130423; by 1348 the manor house was said to be enclosed ‘like a castle with water and a stone wall’24. This description applies to the manor-house itself, but the park was probably formed at the same time. The manorial precincts were called Great and Little Park in 1604 and 169125. On the inner side of the park boundary, the ridges have a low profile, but on the outside there are steeply ridged lands with a new series of heads abutting the line of the park pale (Plate 5)26. The ridges in these furlongs align under the park boundary and demonstrate that the original single furlong was ploughed before the year 1304.

The demesne of Hall manor at Wollaston was enclosed in 1583, but an earlier intake of ploughlands had occurred. A dispute between the lord, William de Wolaston, and his brother, over the boundary of the manor-house close in 1231 stated that the boundary stretched as far as a ditch dug ‘anciendy’ through ploughlands. The area remains earthwork and the ditch can be seen curving through low-profile ridges27.

From the above evidence it is clear that ridge and furrow surviving in modern pasture fields is of pre-enclosure origin, excepting the examples of post-enclosure ridges, which have a different character and are rare in Northamptonshire.

Field survey

It is still possible to survey the remains of medieval fields from the slight earthworks that survive in modern fields. The formation of these earthworks and methods of mapping them, using archaeological techniques, are explained below.

21 Beresford and St Joseph, Medieval England, 2nd edn. 1979, pp. 25–37, where there is also a discussion and answer of the criticisms made by Kerridge and others who doubted the pre-enclosure origin of ridge and furrow.
22 NRO Maps 2852 and 4564.
24 Cat. Inq. Post Mortem IX (1916) no. 44.
25 NRO Powys deeds, Box 5005, inquisition and proof of title respectively.
26 D. Hall in H. Belgion 1979 Titchmarsh Past and Present p. 10; the enclosed part numbered 138, and the part remaining ploughed until 1779 numbered 121.
27 Hall, Wollaston, 1977, Plate 4b.
The formation of ridges and furlong boundaries

Ridges were formed by the technique of ploughing, going round and round the land in a clockwise motion beginning at the middle, and finishing at the outside with a furrow, a strip of ground being turned over (towards the right) with each passing of the plough (Plate 6). Repetition of this process a few times lead to permanent ridges being formed in the centre and furrows at the edge. Lands were not, of course, ploughed in the same direction indefinitely, or they would have become very ridged and the furrows would be wide, cutting deeply into infertile subsoil. An anticlockwise motion was adopted in the fallow season to take some of the soil back and maintain a low ridge. The purpose of a ridging was to obtain a well drained seed bed; the furrow acted as a drain as well as providing a clear demarcation between lands.

Steepness of the ridges varies according to the soil type (being well developed on clay ground) and other factors, but the main influence is the date of enclosure, there being a general trend that ridging gets steeper with time. In old enclosure ridge and furrow is low profile compared to the sharp profile of ridges ploughed until the eighteenth and nineteenth centuries. Examples of varying types of low-profile furrows occur at Wollaston, already referred to. The demesne was enclosed in two stages in 1231 and 1583, contrasting with pronounced ridging of lands ploughed until 1788. Extremely steep examples of ridges occur in parts of Yelvertoft where there was prodigious soil movement, caused by ploughing until enclosure in 1772.

The ends of most lands are curved, so that the whole land took the shape of a very elongated, mirror-image of an 'S'. This seems to have developed over the years, resulting from a tendency first to draw out to the left when performing a turning circle to the right. Maitland drew attention to curved lands and they have been further discussed by Eyre. He concluded that the ploughland shape was formed as a result of using a right-handed mould board.

As well as moving soil towards the centre of the land the action of the plough moved small quantities in the direction of motion, towards the ends. This soil was left at the ends when the plough was lifted out of the ground to turn. Over the years small heaps formed at each end, lying on the left hand side as viewed from the centre. They were called heads and are first noted in the records in the thirteenth century (called chevesca in medieval Latin).

These well developed movements of soil 'fossilized' the physical pattern of the open fields into the landscape, leaving earthwork remains that allow furlongs to be reconstructed using archaeological fieldwork techniques. A modern field of grass ridge and furrow can be measured and mapped easily enough, and where sufficient survives the whole pattern of furlongs and lands can be recorded.

When a ridged grassy field is ploughed flat, not all traces disappear; the positions of ridges are visible for some time as light and dark soil marks. Lines of light colour derive from subsoil exposed in the old ridges and the dark lines are caused by humus lying buried in the furrows. The soil piled up at the end of the lands, the head, does not become much flattened by modern ploughing, but gets merged with the heads of the neighbouring lands, the whole series forming a long smooth bank lying along the edge of the furlong. So wherever a group of lands, a furlong, merged with another one, either

28 Id. Plates 4b, 5.
29 Maitland, Domesday Book and Beyond, 1897; Collins Fontana edn 1969, p. 440.
orientated in the same direction, or at right angles (that is, at the headlands or joints), a bank of soil will survive.

The identification of the linear banks of soil in modern arable fields as furlong boundaries was developed at Wollaston in 1961 with many applications being made thereafter. Workers at Maxey in 1960 had observed soil banks running over prehistoric features, and realised that they must date from after the Roman period, but there was failure to understand the mechanism of their formation or their potential as a research tool. Pocock, working in Oxfordshire also observed and recorded furlong boundaries in 1963.

The observation that such soil banks were remnants of the open fields was actually made long before, being described by Crawford in 1937. He was studying the chalk ridge near Hitchin in the early days of aerial photography to search for hillforts and other prehistoric cropmarks. In this region the furlong boundaries are very large (partly because of the late enclosure dates) and, unusually, show as cropmarks and soilmarks, there being considerable depths of topsoil on the banks contrasting with the shallow soil of the chalk slopes. The whole furlong pattern is easily visible from the air and Crawford took the trouble to identify it. Proof of the true nature of the linear banks came from the Cambridgeshire parish of Lidington, where a draft enclosure map of 1804 has all the furlongs mapped, and their boundaries corresponded exactly with the cropmarks on Crawford’s photographs.

This very thorough and pioneering piece of work was published in an obscure Ordnance Survey report and never seems to have been followed up by historians and historical geographers (although Beresford refers to it in 1948). The lack of further work is much to be regretted, because surveys could have been made in the 1940s before so much was lost to house-building, quarrying and intensive agriculture.

Survey of furlong boundary soil-banks in an entire township allows a map of the furlongs to be made, even if there are no old grass fields of ridge and furrow left at all.

**Techniques in the field**

Surveys have to be made during the autumn through to early spring, when grass is closely grazed and arable crops are unplanted or low. Furlong boundaries are often easiest to see in rows of young corn. The results can be supplemented by reference to aerial photographs, especially those taken in the late 1940s by the RAF. A particularly fine set taken on 15th April 1947 covers the centre and west of the county and the east is covered by a series taken on 16–17th January 1947.

Care must be taken not to confuse the results of open-field ploughing with banks produced by modern agriculture. Generally furlong boundaries are more massive than modern ploughing remains, and where they are extensive and run under modern field boundaries there is no difficulty. On some soils the banks can be as much as 30 yards wide and about 2 feet high. Problems will be encountered in a township with undulating

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31 Hall ‘Modern Surveys’ 1972.
35 Beresford, _Ridge and Furrow_ p. 40.
37 See f.n. 19.
38 RAF/CPE/UK/1925 and CPE/UK/1932 at RCHME.
topography that had an early enclosure. In such cases furlongs were small and their boundaries slight; difficulties are further created where modern agriculture is intensive and the soil light. There has been much deterioration of the soilbanks over the last 30 years and there is great urgency, in regions that have not been surveyed, to make records before all the evidence is completely lost.

In a modern arable region where no grass survives it can be difficult to determine the lay of the lands. Light and dark lines can be seen if the ground is bare, but frequently the orientations have to be deduced. Generally furrows were aligned down the steepest gradient for drainage. In the case of long furlongs there is no problem because the lands would obviously lie across their width and not the length. With nearly square furlongs it is often possible to work from one boundary to another.

All plans reproduced in this volume have had a field survey made irrespective of whether an open-field map is extant. The furlong boundaries are accurately reproduced using a modern background, but the lands are marked schematically. They have the correct orientation but only about a quarter of the actual number of lands is reproduced to ensure clarity. The working maps were prepared at a scale of 1:10,560, before reduction for publication.

Furlong identification

It is essential to identify the names of furlongs and other topographical features, to help analyse any available historical data. Where a contemporary plan exists this is merely a matter of transcription, elsewhere it can be difficult. Furlong names often survive as ‘modern’ field names and these can be collected by reference to tithe maps, estate maps, sale catalogues and the collection of field names made by school children in 1932 (for Northamptonshire). Enclosure plans usually offer a little information, sometimes marking in the exact boundaries of the great fields. An enclosure record such as the 1795 Parliamentary Award for Ravensthorpe which relates the new enclosures to the furlongs39 is especially useful. The draft enclosure map of Little Addington (Plate 4) marks the new allotments and the furlong boundaries giving their names; the map of Little Houghton and Brafield (1829) is similar40.

East Haddon is used as an example of how to reconstruct furlongs and identify their names when there is no open-field map. The first stage is to collect ‘modern’ field names from a tithe map, estate plans and catalogues that give the names of the enclosed fields, many of which are furlong names41. The enclosed field names of East Haddon are shown on Figure 4.

The next stage is to collect furlong data in tabular form, as shown below. There is a complete survey of East Haddon open fields made in 159842. It describes the holdings of one of the three manors, stating the total number of lands in each furlong with its abuttals. In the furlongs the land of one of the lords, John Dive, is measured to the nearest pole and the number of lands and their position in the furlong noted. The name of the tenant is also recorded, except for the demesne, as for example:

40 NRO Map 2989. 
41 1774 estate map in NRO Box X5417; Tithe 135 (1845); Sawbridge Collection, 1859 estate maps and surveys in X6153–59; SC 315a, SC 343 (both 1919); 1932 Field Name Map. 
42 NRO IL 2120.
Figure 4, East Haddon enclosed field-names from sources dated 1774–1932.
Nether Emborowe furlong butting north and south, containing 32 lands and leyes, begin at ye east side of ye furlonge:

the 13, 14, 15, 16, containing 1 and half roods 12 pole of leys, in the tenure of John Faser
the 18, containing half rood leys, in the tenure of William Chapman

This survey is the main source of data for the table given in the Gazetteer. Additional abuttal and location information was obtained from terriers of individual holdings. Land widths vary greatly, even though lands were supposedly roods or half acres. Experience has shown that a common average is 8 yards width (or an area of 1/3 acre), which works out on a 1:10,560-scale map as 36 lands to the inch. Hence the number of lands in each furlong can be converted to a furlong size and plotted using a scale rule on a furlong plan made by field survey. Many of the furlong names are located by the modern field names, and since the 1598 survey works through the fields systematically, it is comparatively easy to identify and locate furlongs as shown on Figure 5.

East Haddon furlong data

<table>
<thead>
<tr>
<th>Number</th>
<th>Name</th>
<th>Orientation of lands</th>
<th>Number of lands</th>
<th>Abuttals and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>South Field</td>
<td>South Field Heath furlong</td>
<td>NS</td>
<td>63</td>
<td>All leys</td>
</tr>
<tr>
<td>1</td>
<td>Burdge Leys furlong</td>
<td>EW</td>
<td>58</td>
<td>All leys</td>
</tr>
<tr>
<td>2</td>
<td>Nether dod furlong</td>
<td>EW</td>
<td>49</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Manewell furlong</td>
<td>EW</td>
<td>72</td>
<td></td>
</tr>
</tbody>
</table>

In cases of uncertainty it can be quicker to use strips of card measured out to the correct furlong size, with the orientation and abuttals written around the edges. The cards can then be moved around to obtain the best fit of all the evidence. The complete result is shown in Figure 5 (a key, Table 15, with a full list of names and the number of lands in each furlong is given in the Gazetteer).

In the absence of a field book it is possible to work from a parliamentary enclosure commissioners' quality book. A quality book is a valuation of a township made prior to enclosure, and was needed to value the new allotments as well as the old. Each furlong is listed as in a field book, but groups of lands are taken together as a single entry (without ownership details) and valued in shillings.

The Wollaston quality book of 1788 was used by the commissioners in conjunction with an open-field map of 1774, writing on the furlongs the values used for the parcels of the quality book. From this it is possible to calculate that the number of lands in a parcel is roughly equal to the number of shillings, that is, the average value of a land was one shilling, or an acre was valued at 3s. Taking three of the furlongs the values are found to be as below.

Values and sizes of Wollaston furlongs in 1788

<table>
<thead>
<tr>
<th>Name</th>
<th>Reference on plan</th>
<th>1788 value (shillings)</th>
<th>Length of furlong at 1:10,560 scale</th>
<th>Estimated lands (36 to 1 inch)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Long Furlong</td>
<td>48</td>
<td>81</td>
<td>2.7 inches</td>
<td>97</td>
</tr>
<tr>
<td>Hun balk Furlong</td>
<td>48a</td>
<td>18</td>
<td>0.6</td>
<td>21</td>
</tr>
<tr>
<td>West Bridgeway</td>
<td>54</td>
<td>71</td>
<td>1.7</td>
<td>61</td>
</tr>
</tbody>
</table>

44 Wollaston Society Muniments, at Wollaston Museum.
45 NRO Map 4447.
Flore does not have an open-field map, but there is a field book of 1727 and a quality book of 1778\textsuperscript{47}, enabling furlongs and the enclosure commissioners' valuations to be compared directly. The following values have been selected for identified furlongs, where it is certain that like is being compared with like:

<table>
<thead>
<tr>
<th>Furlong name</th>
<th>Number of lands</th>
<th>Value (shillings)</th>
<th>Value of each land</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>West Field</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burymore furlong</td>
<td>11</td>
<td>20 (121)</td>
<td>1.82</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>20 (123)</td>
<td>2.50</td>
</tr>
<tr>
<td>Ridgeway furlong</td>
<td>67</td>
<td>94 (92-5)</td>
<td>1.40</td>
</tr>
<tr>
<td>Fernhill</td>
<td>56</td>
<td>72 (85-7)</td>
<td>1.29</td>
</tr>
<tr>
<td><strong>Middle Field</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six yards furlong</td>
<td>21</td>
<td>19 (225)</td>
<td>0.90</td>
</tr>
<tr>
<td>Upper cley</td>
<td>13</td>
<td>20 (223)</td>
<td>1.54</td>
</tr>
<tr>
<td><strong>East Field</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Upper greenhill</td>
<td>23</td>
<td>29 (256)</td>
<td>1.26</td>
</tr>
<tr>
<td>Flaxlands</td>
<td>24</td>
<td>26 (299)</td>
<td>1.08</td>
</tr>
<tr>
<td>Foxhills furlong</td>
<td>43</td>
<td>75 (296-8)</td>
<td>1.74</td>
</tr>
</tbody>
</table>

The numbers in brackets after the values are the quality book references. It can be seen that most of Flore lands were valued more highly than those of the previous examples, \( \text{c. 1.5 shillings average} \) for a land in the examples above.

The values of the quality book can thus be translated into the number of lands in a furlong and the results plotted in the same way as the data from field books, above. There are several difficulties to be avoided. The quality book values everything; the pieces of grass lying between a furlong and a brook, and lands with grassed-down heads have the heads valued separately. Such grass pieces must not be included when adding up the total for a given furlong, otherwise a land will have been counted twice.

The estimation of the number of lands at the rate of 1 per shilling needs continuous revision as the quality book is worked through, and when the actual furlongs are being identified. Sometimes the book says how many lands are in a particular parcel, which, if significantly different from 1s. per land, should be taken into account. Areas of waste or heath will be valued lower and leys may be valued higher. If furlong sizes seem to be out then a different value will need to be tested to fit the quality book measurements with the evidence of the furlong plan.

At Newton Bromswold the enclosure papers\textsuperscript{48} include a quality book and a sketch plan of part of Buscott (a deserted estate in Higham Ferrers) that belonged to it. The plan is marked out in the same parcels used in the quality book from which the value per acre can be calculated. There is considerable variation in the value, the meadow ranges from 3.79–9.56 shillings per acre and the arable, 0.89–12.31. The highest arable value is for a one-acre plot, most of the other lands being valued nearer to 1.0 shilling per acre. In the example from Newton given below a value of 3 shillings per acre (ie 1s. per land as at Wollaston) has been used, which gives sizes of furlongs that agree with those mapped.

The data added up for several furlongs are given in the table below.

\textsuperscript{47} NRO ZA 3080; Th 1663.
\textsuperscript{48} NRO X3474 for the Quality Book and other papers.
Table 4  Newton Bromswold furlong sizes and abuttals in 1800

<table>
<thead>
<tr>
<th>Furlong name</th>
<th>Orientation of lands</th>
<th>Number of lands/shillings</th>
<th>Length on plan 1:10,560</th>
<th>Abuttals and notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debdill</td>
<td>EW</td>
<td>37</td>
<td>1.03</td>
<td>Next Yelden at N,</td>
</tr>
<tr>
<td></td>
<td>common there</td>
<td>24</td>
<td>0.67</td>
<td>Park at S</td>
</tr>
<tr>
<td>Stitchers piece</td>
<td>EW</td>
<td>90</td>
<td>2.50</td>
<td></td>
</tr>
<tr>
<td>Bratch furlong</td>
<td>EW</td>
<td>48</td>
<td>1.33</td>
<td></td>
</tr>
<tr>
<td>Bean furlong</td>
<td>NS</td>
<td>61</td>
<td>1.69</td>
<td></td>
</tr>
<tr>
<td>Short waterlands</td>
<td>EW</td>
<td>12</td>
<td>0.33</td>
<td></td>
</tr>
<tr>
<td>Long waterlands</td>
<td>EW</td>
<td>27</td>
<td>0.75</td>
<td>Higham Park at S</td>
</tr>
<tr>
<td>Skuttle furlong</td>
<td>EW</td>
<td>27</td>
<td>0.75</td>
<td>Kelling pit at N</td>
</tr>
<tr>
<td>Garebroad</td>
<td>EW</td>
<td>29</td>
<td>0.81</td>
<td></td>
</tr>
<tr>
<td>Kelling pit</td>
<td>NS</td>
<td>63</td>
<td>1.75</td>
<td></td>
</tr>
</tbody>
</table>

From the quality book in NRO X3474.

The Newton Bromswold example illustrates the degree of accuracy obtainable. In the furlongs listed grass ends occur at the south end of Stitchers (duly omitted) and all the lands were arable and likely to be of similar value on similar clay soil. The total value in shillings was made by adding up the entries for each furlong. The only furlong not fitting very well is the first, Debdill, the reason doubtless being because some of it was common and valued much less than one shilling per acre, in effect ‘increasing’ the size of the furlong in the calculations. The abuttals make it clear that the furlong stretches the full way from Yelden parish to Higham Park. The data fixes all the furlong positions satisfactorily; the last two have confirmed locations from enclosed field names of 1856. The complete results are mapped on Figure 6.

For townships without fieldbooks or quality books, precision will generally be much less. Success depends on good survival of furlong names as modern field names, and matters are easier to work out if the the township is small with fairly large furlongs. A large parish with very many small furlongs may well prove to be intractable. Survival of field names is quite unpredictable; Wollaston has very few furlong names among the modern field names whereas at Brixworth nearly all the present fields are named after furlongs. The parishes were enclosed in 1788 and 1780 respectively. Early enclosed parishes tend to be poor for names, often large closes were made that took the name of the first or subsequent owners.

Grendon is a good example where nearly all of the furlongs can be identified from modern field names. The the sources from which the names were worked out are given in the Gazetteer. Since the furlong sizes are not known, precise boundaries between two furlongs lying side by side with lands in the same orientation will not be ascertainable. Some names changed over the years and multiple descriptions seem to have been a particular feature of Grendon furlongs (see below).

Having identified the furlongs fully, or as completely as the evidence will allow, it is possible to proceed with studies of the structure and layout of field systems.

Original surveys of open fields

Many surveys and terriers of open fields were made, not always being produced without difficulty. In 1493 there was concern to know exactly what property was being acquired 49 NRO YZ 4150.
Figure 6, Newton Bromswold furlongs 1800.
at Bradden; an attorney acting for Robert Matthews, who was purchasing the manor, stressed that:  

... ye must noysely oversee all these londs and what felds and furlongs every lond lyeth ... bryng word how many akers goth ther to a yerde lond, they have made herin theyre bill but 22 acre ... I thanke it should be at leest 24 acres to a yerde.

The court order for Lamport in 1567 (Chapter 2, no. 10) asked every one to provide a terrier. This may have been used to compile the township terrier, dated 1583 that exists (although it is not the easiest method of doing it), and to obtain a list of yardlands and their owners.

Sir Thomas Tresham’s agent, John Andrew, wrote in 1596 regarding identifying holdings at Grendon from old terriers ‘nether can I doe yt without the help of the tenants ... because one furlong hath some two or three names and yt taketh such a long tyme’.

Complete terriers were made working over each land noting the name of the owner (and) or tenant, the size of the land, whether it was arable or ley, and occasionally the type of tenure was recorded. The furlongs were walked over in a systematic way taking each great field at a time; sometimes the vill was recorded as well, surveying the houses, ancient enclosures and meadows.

Many such surveys were made to discover the lands belonging to the Gloucester Fee, that for Raunds already being mentioned. This land had been purchased by the Montagus in 1636 and although long let out to local tenants (many of them of gentry status such as the St Johns of Woodford and the Mordaunts of Drayton) there was due a fee of a few shillings when property changed hands by sale or inheritance. Some of these dues had been lost to sight over the centuries because of the tortuous history of the Gloucester Fee, and, in the 1720s and 1730s, the Duke of Montagu was anxious to know exactly what he owned. For this reason he had surveys made of all the many parishes in which the estate lay during the 1730s, maps being prepared for the central region around Boughton House and written terriers for parishes farther out such as Burton Latimer, Finedon, Irthlingborough and Raunds.

In many cases there was much opposition to the survey (especially at Woodford) and the information required was obtained with difficulty. Courts of survey were proposed in 1728, ‘when we might upon the spot get what light we could in those dark matters where the country fellows to save 5s. will without scruple forsware themselves’.

In December 1730, the Duke’s agent, John Booth, wrote from Woodford that Lord St John did not think anyone in the town could give an account of the fee, and later he reported, ‘[that he had] parted three or four furlongs ... [and] ... it seemes as much intermixed as anything can be ... The fields [are] so very large and the people so very backward in giving account of it ... [that] scarce two accounts will agree.’

50 NRO GI 14.
51 NRO IL 812, IL 1491 m.8d.
53 NRO Buccleuch 22–19 in X884.
54 NRO Buccleuch, 21–20 in X881, letters 19 and 27 Dec 1730.
Thomas Cowper was a surveyor to the commissioners of several Parliamentary enclosures (Titchmarsh, Wellingborough and Woodford). He kept a diary of his work at Wellingborough during 1765-6.55.

1765 August 28, Wednesday
Went out this morning and surveyed about 60 [leys] of Dunleys but got into TW's company in the afternoon at the Angel and Kings Arms, so did not go out to survey ... at the New Inn and Chequers afterwards until about 10 at night.

Thursday was spent at the same activity and on Friday

Went out and finished the survey of Dunleys and all the ley ground in the East Field before noon. Went in the afternoon (after drinking with John Allen of Woodford and his son) and surveyed Polock Furlong in the South Field and after two furlongs beside. In company with John Allen at the Kings Arms and with Bagly Dibbs at Jeremy Millers at night.

On good days he surveyed about 180 lands. The method was to record each furlong and its owners first, then make the detailed survey afterwards, as explained on 20 September 1765 'terrar'd Hindside and Longland and a little furlong north of Longland'. These were duly recorded as being surveyed the next day. He often worked until sunset during the months of August and September, but he probably needed to, to accommodate his social life; on 6th April 1766 he admitted to being ill because of the 'intemperance of the previous four days'.

Many field books, like that for 1598 of East Haddon, have summary tables of the holdings of each owner and tenant (Gazetteer). Kislingbury has, as well as the field book, separate terriers of each tenants' farm. At Harringworth, the lord of the manor, Charles Tryon, had discovered a discrepancy in a summary table from a field book made in 1732, and the surveyor, Tycho Wing, wrote, somewhat in self defence56:

... it would be almost a wonder if no errors should escape in a survey of such great extent as Harringworth, where there is such a great multitude of small parcels to cast up, transcribe, methodize, collect and abstract, ... I am sure I have taken as much care as possible ...

The preparation of summary tables from a field book is indeed a very tedious task.

55 NRO ZB 71/9; Joan Wake, founder of the Northamptonshire Record Society, noted that he also recorded 'other non professional matters'.
56 NRO TB 601.