

The Size of Open Field Strips: A Reinterpretation

By ALAN NASH

SINCE the pioneer work of Gray, a large number of scholars have examined the operation of the open field system, but have until recently paid little interest to a fundamental aspect, the dimensions of the component selions.¹ This is surprising because there has been a long-standing requirement to resolve a dispute concerning the cause for the variation in their dimensions, and a more recent need to consider strip size and the development of planned medieval fields. Thus, it is argued here that an analysis of selion dimension is not the arcane pursuit that it appears, but rather is an integral part of the continuing investigation of land measures and field system origins which Maitland called for in 1897.²

I

In order to examine these problems, the open field systems of Sussex were selected for analysis. This county was chosen because its range of environments and history of settlement provide an adequate scope for investigation of the variation in strip size, and because the work of previous scholars has indicated that this would be a fruitful area for research.³

Sussex lacks sufficient extant physical evidence for strip size so it becomes necessary to use estate maps, dating from the seventeenth to the nineteenth centuries, which depict open field cultivation and the constituent selions of such fields. This assumes that a boundary continuity exists between these strips and those of the Middle Ages. The proof for this must be circumstantial, given the lack of early map material, but the burden of evidence is such that this assumption can probably be made. Thus, Conzen and Harvey have demonstrated that estate maps can be used for this type of work, while Beresford has shown that such map evidence accurately reflects strip relicts and their medieval counterparts, and so must be considered a legitimate tool of investigation.⁴ In terms of physical evidence, while ridge and furrow is unknown in Sussex, strip lynchets shown on estate maps at Petworth and Upper Beeding from field investigation appear to be medieval, if their angle of slope is diagnostic. Thus, these give some indication that strip boundaries may persist through time, a phenomenon also noted for medieval burgage plots.⁵ The fossilization of medieval arable strips in the town plans of New Winchelsea, Brighton, and East Grinstead provides a further demonstration from relict features that the size of the medieval Sussex selion was comparable to

¹ H. L. Gray, *English Field Systems*, Cambridge, Mass., 1915; R A Dodgshon, 'The origin of the two- and three-field system in England: a new perspective', *Geographia Polonica*, 38, 1978, pp 149-64; A R H Baker, 'Observations on the open fields: the present position of studies in British field systems', *J Hist Geog*, 5, 1979, pp 315-26; T Rowley (ed), *The origins of open-field agriculture*, 1981.

² F W Maitland, *Domesday Book and Beyond*, Cambridge, 1897 (1960 edn.), p 596.

³ W D Peckham, 'Customary acres in South-west Sussex', *Sx Arch Coll*, 66, 1925, pp 148-62; S. Göransson, 'Regular open-field pattern in England and Scandinavian sölskifte', *Geografiska Annaler*, 43B, 1961, pp 100, 102; G R J Jones, 'Multiple estates and early settlement', in P H Sawyer (ed.), *Medieval Settlement: Continuity and Change*, 1976, pp 26-35.

⁴ M R G Conzen, 'Alnwick: a study in town-plan analysis', *Trans. Inst Brit Geog* 27, 1960; M Harvey, 'Regular field and tenorial arrangements in Holderness, Yorkshire', *J Hist Geog* 6, 1980, pp 3, 8; M W Beresford, 'Ridge and furrow and the open fields', *Econ Hist Rev*, 2nd ser., 1, 1948, p 39.

⁵ Institute of Archaeology, *Rescue Archaeology in Sussex*, 1974; P F Brandon, *The Sussex Landscape*, 1974, p 27; M G Whittington, 'The distribution of strip lynchets', *Trans Inst Brit Geog*, 31, 1962, pp 115-30; West Sussex Record Office Add Ms 2025; T R Slater, 'The analysis of burgages in medieval towns', Dept. of Geog., Univ. of Birmingham, *Working paper series*, 4, 1980, p 1.

those derived from much later estate plans for nearby areas.⁶

In terms of documentary evidence for continuity, at Portfield, near Chichester, data from a thirteenth-century cartulary indicates that the area of strips remained the same as those cultivated in the same fields centuries later, while at Strettington detailed archival and morphometric analysis has demonstrated the probable continuity of field boundaries from the thirteenth century, and given the layout of the system, the continuity of its component strips.⁷ Clearly, it is impossible to demonstrate continuity for each selion, but since systems with manifest signs of alteration were omitted from analysis, it is likely that there would be few cases violating the assumption, and they could have very little effect on the statistics used in this study which are based on a large data set. Thus, it is argued that those strips available for study should provide sufficient insight into the shape of medieval selions, and it becomes necessary next to pay attention to the accuracy of the maps themselves.

The criteria a map must meet here are those of precision and widespread coverage. These the Sussex estate maps do. The earliest ones date from Treswell's maps of 1608, and from then their number markedly increases. The majority can be shown to be remarkably accurate, a fact consistent with other counties, and with the involvement of their surveyors in the early work of the English Ordnance Survey.⁸ Nevertheless, all maps used here have been checked against modern Ordnance Survey maps. County maps, beginning with Saxton's of 1575, have also

been used to corroborate the regional picture and to examine the continuity of field boundaries. Finally, later evidence from tithe and enclosure maps has been used to check estate material.

From the forty-six Sussex estate maps, which showed open field strips, a sample of twenty-eight field systems was chosen.⁹ Selection was designed to avoid systems that exhibited interference or enclosure and to ensure countywide coverage (Fig 1). These systems ranged from less than 100 strips, as at Littlehampton, to 984 at Brighton and comprise a data set of over 10,000 strips.¹⁰ Each one was individually measured by ruler to the nearest millimetre. On a scale of twenty inches to one mile this represents a maximum possible error of 5.197 feet, a figure comparable to that accepted by Sheppard.¹¹ It is unlikely this error could be reduced due to the thickness of the draughtsman's lines, the creased and faded condition of many maps, error in the original survey, and expansion and contraction in map, ruler, and the surveyor's chain or rope due to weather conditions.¹²

The majority of strips measured were rectangular and posed little difficulty when measuring width and length, but where irregular shapes were encountered an element of subjectivity was necessary to determine the principal axes, while irregular strips could not be usefully measured and were omitted from the study. However, this only occurred in a very few cases and typically the strip was on the periphery of a field system.

Only the minority of maps recorded strip acreage. Consequently, this information is derived here by multiplication of strip width and length. Since both these dimensions

⁶ W M Homan, 'The founding of New Winchelsea', *Sx Arch Coll*, 88, 1949; P D Wood, 'The topography of East Grinstead borough', *Sx Arch Coll*, 106, 1968; S and J Farrant, 'Brighton 1520-1820: From Tudor town to Regency resort', *Sx Arch Coll*, 118, 1980, p 346.

⁷ L Fleming (ed), *The Cartulary of the Priory of Boxgrove*, Sussex Record Society, Lewes, vol 59, 1960, appendix 2; A E Nash, 'The medieval fields of Strettington, West Sussex, and the evolution of land division', *Geog Annaler*, 64B, 1982, pp 41-9.

⁸ Lord Leconfield, *Sutton and Duncton Manors*, 1956; T R Holland, 'The Yeakell and Gardner maps of Sussex', *Sx Arch Coll*, 95, 1957, pp 95-104.

⁹ F W Steer, *A Catalogue of Sussex estate and tithe award maps*, 2 vols, Sussex Record Society, Lewes, 1962 and 1968.

¹⁰ Manuscript references for the field systems analysed are given in the appendix below.

¹¹ J Sheppard, 'Metrological analysis of regular village plans in Yorkshire', *Ag Hist Rev*, 22, 1974, p 121.

¹² B K Roberts, 'Village plans in County Durham. A preliminary statement', *Med Arch*, 16, 1972, pp 33-56.

contain error, this calculation must consequently compound that inaccuracy. However, where comparison between surveyed and computed areas is possible, as in an Oving map of 1758, it appears that the results are almost identical.¹³ This suggests the method used here introduces little additional error into the final results, either for area or, by implication, for the width and length dimensions from which it is calculated.

The mode, or most commonly occurring size, for each of the three dimensions for each field system in the sample is given in Table 1, being the most representative single statistic for each system. Using these data, it is now possible to examine the rival hypotheses concerning the origin of strip size variation, and then to consider its wider significance.

II

Seeböhm and Curwen suggested the typical strip in an open field would be ten times as long as it was broad and its dimensions were 22 yards wide and 220 yards long, producing an area of one statute acre, or 4840 square yards. Shape was determined by the convenience of ploughing a furrow as long as possible before turning back, hence the word 'furlong', while area was governed by the amount of land which a man and his team could plough in one day, or, more strictly, the forenoon.¹⁴ This is still a definition found for the term 'acre', and others suggest the width of such a strip determined the length of the modern cricket pitch.¹⁵

It is possible to test this view with the Sussex evidence by dividing strip length by strip width. As can be seen from Table 1, however, the ratio 10:1 is found in only six cases, even if measurement error is con-

sidered. Width ranged from 15.6 to 181.8 feet, length from 273.5 to 1078 feet and area from 21.0 square statute perches to 557.2. Moreover, only one case conformed to the strip dimensions of 22 yards wide and 220 yards long, and only one even approached the expected acreage of 160 square perches. It seems clear therefore on the basis of this evidence that the 'traditional' strip size model cannot be found in Sussex, and this concurs with results elsewhere.¹⁶

It is possible that if the key factor determining selion size was the amount of land that could be ploughed in a day, then the size of a strip must vary with local conditions such as terrain and soil quality. An easily-worked and well-drained sandy soil would permit a strip to be larger than a statute acre, a heavy clay might compel its size to be smaller. In view of the variety of environments encountered, no typical size for a strip would be apparent, but despite this seeming lack of conformity, an underlying common factor would be present. The Orwins suggest that strip width in particular is controlled in this way.¹⁷ Moreover, since strip width limits strip length in abutting furlongs, it can be argued that length also must be affected, even if it is not directly related to the environmental controls which alter width; it follows also that strip area must be so influenced.

This view can be tested by grouping the Sussex data according to land quality, although it must be recognized that this procedure is not easy. Modern soil maps are inappropriate for this task since they do not reflect soil texture, previous conditions, or past perceptions. Consequently, Young's 1813 map of the county was used here (Fig 1). This was supplemented by Topley's 1874 geological map, and by modern rainfall and geological distribution maps as other

¹³ WSRO Add Ms 2036.

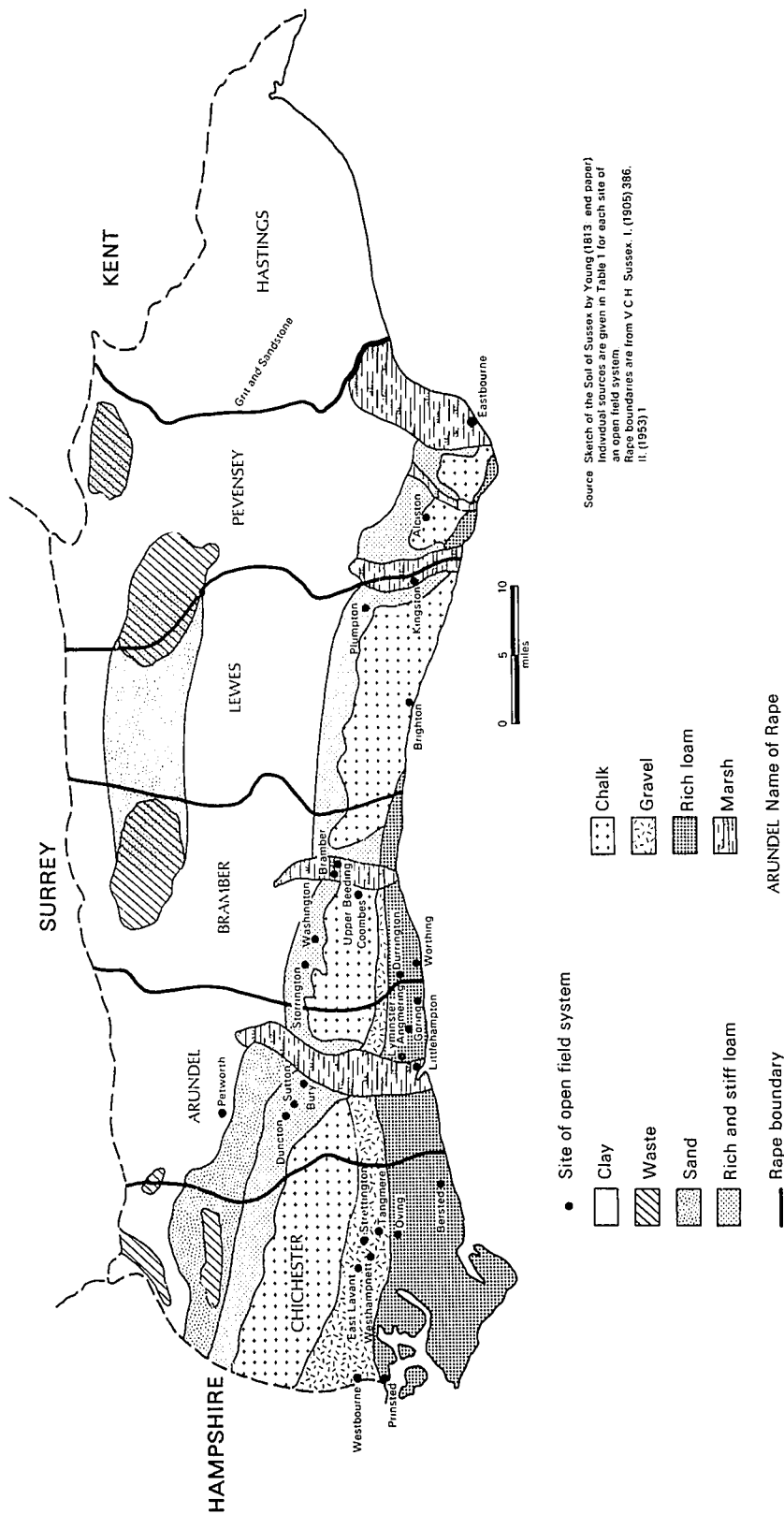
¹⁴ F Seeböhm, *The English Village Community*, 1883, pp 2-5, 381; E Curwen and E C Curwen, 'Sussex lynchets and fieldways', *Sx Arch Coll*, 64, 1923, pp 1-66; E C Curwen, *Prehistoric Sussex*, 1929, pp 78-81; Maitland, *op cit*, pp 432-42.

¹⁵ *Webster's New World Dictionary*, (College edition), New York, 1960, p 13; H S Altham and E W Swanton, *A history of cricket*, 1926, pp 26-8.

¹⁶ B K Roberts, 'Field systems of the West Midlands', in A R H Baker and R A Butlin (eds), *Studies of field systems in the British Isles*, Cambridge, 1973, pp 197, 223; Harvey, *op cit*, pp 15-16.

¹⁷ C S Orwin and C S Orwin, *The Open Fields*, 3rd edn., Oxford, 1967, pp 43, 101; W O Ault, *Open-field farming in medieval England*, 1972, p 22.

SUSSEX OPEN FIELD SYSTEMS: THE LOCATION OF THE SAMPLE



Source Sketch of the Soil of Sussex by Young (1813 and paper)
Individual sources are given in Table 1 for each site of
an open field system.
Rape boundaries are from V.C.H. Sussex. I. (1905) 386.
II. (1953) 1

FIGURE 1

indicators of environmental controls.¹⁸ It should be noted that even if the medieval climate was wetter than at present this would not alter the result since relative differences between land qualities would remain unaltered.¹⁹

If the evidence for selion area is divided by soil type, geological region, or climatic zone, it can be shown by a series of t-tests that no significant statistical difference exists between any of the categories.²⁰ Consequently, the environmental factors considered cannot be shown to control strip area. This can be seen in Table 1, for strips situated on clays are not necessarily smaller in area than those on loamy soils. Thus the view that strip size varies with land quality cannot be demonstrated in Sussex, and this confirms the limited findings made elsewhere. Moreover, such a conclusion is implied by work which has suggested that the size of the customary acre in Sussex was not controlled by soil type or geology.²¹

Two other explanations pose intriguing solutions to the problem. There remains the possibility that alterations in medieval farming technology across a region, rather than any change in soil, might cause variations in strip size. Knowledge of regional agrarian practice in medieval Sussex is scanty, but clearly the broad divisions of coastal lowland, Downland, and Weald would be important for environmental reasons.²² However, the available strip evidence does not compare either with such a

pattern, or with any other obvious distribution of techniques across the county. Moreover, the Sussex turnwrest plough is known not to affect field shape, and the substitution of horses for oxen as draught animals has been shown to be unimportant.²³ Thus this notion must be rejected. A further hypothesis is that strip size may have altered over time as the county was settled. This can be examined ergodically, that is to assume that the further a field system lies away from the coast or a river system, the more recent it must be. In doing so, this broadly replicates the presumed chronology of Sussex colonization and the importance of water routes for access to the interior.²⁴ However, if the data are considered in this way, no such relationship seems to emerge and thus this mechanism must be dismissed, at least until such time as the evidence concerning settlement chronology is refined.

The final suggestion that has been made is that selion sizes may have been influenced by earlier measures. Authorities have pointed to the possibility of centuriation at Bosham, Polegate and Ripe, while the Roman unit of area, the *iugum*, is believed to be the predecessor of the yoke, a medieval unit of land measurement found principally in Kent, but also known in Surrey and Sussex.²⁵ To examine this hypothesis the data in Table 1 were examined for any indications of Roman influence. Only at Petworth, Duncton, and Rustington did strip width, area, and length approach Roman units, but in no case was the relationship between them one that indicated centuriation. Moreover, despite the presence of nearby villas in two of these

¹⁸ A Young, *General view of the agriculture of Sussex*, 1813, endpiece; W Topley, 'The geology of the Weald', *J Roy Ag Soc Eng*, 8, 1872; R W Gallois, *British regional geology*, 4th edn, 1965; HMSO, *British Rainfall 1968*, 1969.

¹⁹ P F Brandon, 'Late medieval weather in Sussex and its agricultural significance', *Trans Inst Brit Geog*, 54, 1971, pp 1-17.

²⁰ S Siegel, *Non-parametric statistics*, New York, 1956.

²¹ H M Clark, 'Selion size and soil type', *Ag Hist Rev*, 8, 1960, pp 91-8; J Thirsk, 'Preface to the Third Edition' in C S and C S Orwin, *op cit*, 1967, p xiii; A E Nash, 'Perch and acre sizes in medieval Sussex', *Sx Arch Coll*, 116, 1978, p 61; A E Nash, 'Morphometric analysis: its relevance to historical geography. A case study of field sizes in Sussex', unpub. BA dissertation, Univ. of Cambridge, 1976, p 36.

²² A E Wilson, 'Farming in Sussex in the Middle Ages', *Sx Arch Coll*, 97, 1959, pp 98-118; A R H Baker, 'Field systems in medieval Surrey and Sussex', in A R H Baker and R A Butlin (eds), *op cit*, pp 419-29.

²³ M D Nightingale, 'Ploughing and field shape', *Antiquity*, 27, 1953, pp 20-6; J Langdon, 'The economics of horses and oxen in medieval England', *Ag Hist Rev*, XXX, 1982, pp 31, 40.

²⁴ A Mutton, 'The process and pattern of the Saxon settlement of West Sussex', *Sx Arch Coll*, 78, 1937; P F Brandon (ed), *The South Saxons*, Chichester, 1978.

²⁵ A H Allcroft, *Downland Pathways*, 2nd edn, 1924, pp 70, 268; I D Margary, *Roman Ways in the Weald*, 1949, pp 204-7; K A Bailey and I G Galbraith, 'Field systems in Surrey', *Surrey Arch Coll*, 69, 1973.

TABLE I
Modal dimensions of Sussex open field strips

<i>Location</i>	<i>Width</i> ¹	<i>Length</i> ¹	<i>Area</i> ²	<i>L/W</i> ³	<i>Area(S)</i> ⁴	<i>Area(C)</i> ⁵
<i>Chalk</i> ⁶						
Alciston	51.97	506.69	50.22	9.75	0.31	0.42
Brighton	20.79	498.91	37.30	23.99	0.23	0.31
Coombes	31.18	623.18	20.95	19.99	0.13	0.18
Mean:	34.67	542.93	36.12	17.91	0.23	0.30
<i>Gravel</i>						
East Lavant	15.63	507.98	29.16	32.50	0.18	0.24
Strettington	31.18	530.09	40.48	17.00	0.25	0.34
Tangmere	34.65	606.31	48.01	17.50	0.30	0.40
Westbourne	51.97	476.36	121.23	9.17	0.76	1.01
Westhampnett	32.33	309.47	72.00	9.57	0.45	0.60
Mean:	33.15	486.04	62.18	17.15	0.39	0.52
<i>Clay</i>						
Bramber	31.26	586.16	50.47	18.75	0.32	0.42
Eastbourne	21.70	489.98	80.17	22.58	0.50	0.67
Kingston	20.79	446.94	35.71	21.50	0.23	0.30
Littlehampton	140.67	1078.47	557.24	7.67	3.45	4.64
Petworth	181.89	701.57	317.19	3.86	1.98	2.64
Upper Beeding	23.32	303.19	46.74	13.00	0.29	0.39
Mean:	69.94	601.05	181.25	14.56	1.13	1.51
<i>Loam</i>						
Angmering	168.26	627.14	378.13	3.73	2.36	3.15
Bersted	91.47	748.35	241.28	8.18	1.51	2.01
Bury	113.94	1039.40	31.75	9.12	0.20	0.26
Duncton	77.95	402.75	75.95	5.17	0.47	0.63
Durrington	20.06	451.06	33.25	22.50	0.21	0.28
Goring	46.74	273.53	23.56	5.85	0.15	0.20
Lyminster	31.18	644.43	41.67	20.67	0.26	0.35
Oving	62.52	320.42	74.00	5.13	0.46	0.62
Plumpton	63.88	665.18	50.79	10.41	0.32	0.42
Prinsted	145.52	561.28	261.90	3.86	1.64	2.18
Storrington	137.67	749.50	463.21	5.44	2.90	3.86
Sutton	38.98	571.65	84.00	14.67	0.53	0.70
Washington	54.71	664.26	76.27	12.14	0.48	0.64
Worthing	23.45	437.64	33.65	18.66	0.21	0.28
Mean:	76.88	582.61	133.53	10.40	0.83	1.11

Notes:

1. Width and length dimensions are given in statute feet, each comprised of 12 statute inches.
2. Area: modal strip area in square statute perches, each statute perch being 16.5 statute feet long.
3. L/W: modal strip length divided by modal strip width.
4. Area(S): modal strip area as a proportion of the statute acre containing 160 square statute perches.
5. Area(C): modal strip area as a proportion of the customary acre containing 120 square statute perches.
6. Soil categories are derived from Young (1813). 'Clay' here includes his 'clay' and 'marsh' divisions, 'loam' his 'rich stiff loam' and 'rich loam' types.

Sources: Data were drawn from computer analysis of approximately 10,000 strips, using modified SPSS, Version 6, package programs (N H Nie *et al*, *Statistical Package for the Social Sciences*, 2nd edn, New York, 1975). The twenty-eight maps used are listed in Appendix 1.

TABLE 2
Strip size analysed by local perch length

Location	Modal dimension (size in feet)		Local perch (in feet)	Modal dimension (local perches)	
	Width	Length		Width	Length
Bramber	31	586	15.0	2	39
N. Westbourne	144	560	16.0	9	35
Westbourne	52	476	17.0	4	28
Alciston	52	507	17.5	3	29
Petworth	182	702	17.5	10	40
N. Westbourne	14	558	17.5	8	32
Durrington	20	451	18.0	1	25
Sutton	39	572	18.5	2	30
Petworth	182	702	20.0	9	35

Note: All feet dimensions are given as statute feet units. Source: Data from Table 1; local perch sizes from Nash, *op cit.*, 1978, pp 63-7.

cases, this cannot demonstrate that Roman influence extended to all of the systems examined, and some scholars discount all such suggestions.²⁶

It is possible that influences were not inherited from the Roman, but from the medieval period. Evidence has been advanced which perhaps indicates that planned field systems were developed in Sussex during the early Middle Ages at Angmering, Apuldram, Icklesham, Maresfield, Strettington, Willingdon and Yapton.²⁷ Certainly it is not surprising that an area as agriculturally developed as the Sussex coastal plain might share in innovations noted in northern England and Sweden.²⁸ If this is so, the measures used in such planning need to be known before investigation can proceed.

The perch, perhaps originating from the width of four oxen yoked abreast, was fixed at 16.5 statute feet by law, but locally varied. Indeed, the observed inconsistency in early cricket pitch lengths was probably so caused.

Across Sussex, local perch size ranged from fifteen to twenty statute feet.²⁹ However, since it is difficult to know which local perch was used in any field system it is necessary to analyse the data in Table 1 using seven possible perch sizes for strip length and width. If it is assumed that the only results which can be signs of planning are integer multiples of each local perch in both width and length dimensions, then seven places qualify (Table 2). However, some results may be numerical coincidences, and it is difficult to be sure that all possible perch sizes have been examined. Thus, while suggesting the possibility exists that the field systems at Alciston, Bramber, Durrington, North Westbourne, Petworth, Sutton, and Westbourne may be the outcome of medieval planning, it is impossible to prove this.

However, if the rigid notion of planning via width and length is replaced by the concept that area alone was regulated using the customary acre, it might be possible to demonstrate that strip area had a relationship with locally used acre size. This itself varied considerably from statute requirements across the county. Thus, if the data in Table 1 are reconsidered in relation to the most

²⁶ SE Winbolt, 'Romano-British Sussex', in L F Salzman (ed), *Victoria County History of the County of Sussex*, vol 3, 1935, pp 20, 24, 65; A L Rivet, *Town and country in Roman Britain*, 1958, p 101.

²⁷ G C Homans, 'Terroirs ordonnés et champs orientés: une hypothèse sur le village anglais', *Annales d'histoire, économique et sociale*, 8, 1936, p 447; S Göransson, *op cit.*, pp 100, 102; A E Nash, *op cit.*, 1982, pp 46-7; Peckham, *op cit.*, p 159.

²⁸ J A Sheppard, 'Pre-enclosure field and settlement patterns in an English township', *Geog Annaler*, 48B, 1966, pp 59-77; S Göransson, 'Regular settlements in Scandinavia: the metrological approach', *Landscape History*, 1, 1979, pp 76-83.

²⁹ J R Wigfull, 'The bay as a unit of measurement', *Trans Hunterian Arch Soc*, 3, 1929, pp 154-8; Maitland, *op cit.*, pp 435-8; R Bowen, *Cricket: a history of its growth and development throughout the world*, 1970, p 43; Nash, *op cit.*, 1978, pp 63-7.

common Sussex customary acre size, 120 square statute perches, 32 per cent of the systems' strips lie between 30 and 50 square statute perches, approximating one-third of such an acre, a fraction favoured in customary measure. Larger strip sizes can be interpreted as integer multiples of this unit. Indeed, the average of all the field systems' most common sized strips is itself, at 120.5 square statute perches, almost exactly a customary acre.³⁰

If local acre size was the controlling factor, then it should also be possible to demonstrate this in those cases where the local acre was larger or smaller than two-thirds of a statute acre, and this the Sussex data seem to show. Thus, at Worthing, where the local acre was 106.6 square statute perches, and at Sutton, where it was 180, strip area can be seen to represent respectively one-third and one-half of the local acre's size. At Brighton, with a customary acre of 35 square statute perches, and at Westbourne with one of 109, strip size approximated a complete local customary acre. Moreover, seemingly anomalous sizes at Petworth and Littlehampton can be seen as products of larger local acres in the Weald and smaller ones on the coastal plain.³¹

III

Obviously it is possible to demonstrate that any measure influenced strip size with sufficient manipulation, but this has not been attempted here. Rather, it has been shown that previously accepted hypotheses are either poor or irrelevant explanations for selion size in Sussex, and an alternative view, that local customary acres were involved, appears a more fruitful approach. It is not being argued that this constitutes the sole

explanation since the exigencies of terrain must always have played a part in shaping the detail of some strip sizes. Nevertheless, in a large number of cases, the importance of local tradition in field system layout appears a strong possibility.

What remains for examination in future research is the reason for variation in local acre measurement practice itself. The suggestion has been made that the size of customary acres was determined by feudal lords, and was not evolved by the community. Thus, the pattern of local acre sizes reflected the distribution of lordship.³² In Sussex, this appears to have been partly influenced by rape divisions found in Domesday Book.³³ Certainly, the general pattern of local acre sizes in the county seems to fit such a suggestion, and crude t-tests of strip width divided by rape produces encouraging results.³⁴ Moreover, while much more detailed work is required to demonstrate that manorial lords introduced their own specific measures, the monarch as a local lord can be seen imposing the "king's measure" at Winchelsea before it became the national standard.³⁵

What should be noticed is that lordship provides a powerful rationale for zoning the county along north-south lines, a system which cuts across natural regions and fits closest with the demonstrated spatial variation in local acre size. Moreover, there is accumulating evidence to suggest the rape system pre-dated Norman and even Saxon occupation of the county, so that the origin of local acres may lie with the Celtic Sussex multiple estate.³⁶

Thus, it would seem that a mechanism for variation, based upon local practice con-

³⁰ E Sayers, 'The acre equivalent of the Domesday hide', *Sx Arch Coll.*, 62, 1921, p 202; J F Morgan, *England under the Norman occupation*, 1858, p 19; R Dilley, 'The customary acre: an indeterminate measure', *Ag Hist Rev*, XXIII, 1975, pp 173-6. (Note, however, customary acres did not always comprise 160 customary perches as Morgan and Dilley assert.)

³¹ Maitland, *op cit*, p 435; F Seebohm, *Customary acres and their historical importance*, 1914; Peckham, *op cit*, p 152.

³² B E Howells, 'The distribution of customary acres in South Wales', *J Nat Lib Wales*, 15, 1967, p 230.

³³ J H Round and L F Salzman, 'Introduction to the Sussex Domesday', in W Page (ed), *Victoria County History of the County of Sussex*, vol 1, 1905, pp 351-4, and map between pp 386-7.

³⁴ Nash, *op cit*, 1976, pp 39-42; 1978, p 65.

³⁵ A King, 'German Street, Winchelsea', *Sx Arch Coll.*, 118, 1980, p 369.

³⁶ Jones, *op cit*, 1976, pp 26-35.

cerning the size of customary measures used, has a firm basis and a number of interesting implications. Furthermore, it appears that such an explanation is more important in determining open field strip size than has

previously been hypothesized, or than the rival theories considered. Consequently, it is clear that the role of strip size variations must be carefully considered in future studies of field systems at the county and national level.

ACKNOWLEDGEMENTS

For permission to consult documents in their care or possession the author is grateful to the following: the Duke of Norfolk (Arundel Castle Manuscripts); Lord Egremont (Petworth House Archives); Viscount Cowdray (Cowdray Manuscripts); The Sussex Archaeological Society (documents held in the Barbican, Lewes); the West Sussex County and Diocesan Record Office (Chichester); the East Sussex Record Office (Lewes); the County Library (Chichester); the Public Library and Museum (Worthing); and the Sub-department of Aerial Photography (University of Cambridge). The Goodwood Estate Archives are quoted by courtesy of the Directors of the Goodwood Estate Company Limited and with acknowledgements to the West Sussex Record Office and the County Archivist. The

author is also indebted to the following: the late Dr F W Steer (Maltravers Herald Extraordinary, Archivist and Librarian to his Grace, the Duke of Norfolk), Mrs P Gill (West Sussex County Archivist), Mr S Newton (East Sussex County Archivist), Dr A R H Baker (University of Cambridge), Dr Sölve Göransson (Kulturgeografiska Institutionen, Uppsala, Sweden), Mr P L Drewett (Field Director, University of London, Sussex Archaeological Field Unit), Dr P G Goheen and Mr A Tebb (Queen's University, Canada); The Vaughan Cornish Memorial Research Institute for the use of its extensive library; Mr J Kendall, Mr A and Mrs J Nash for their help in the field; and Mr Ross Hough who kindly drew the map.

Appendix 1: Sources for Table 1

Alciston: Sussex Archaeological Society G45/25 (1758); *Angmering*: West Sussex Record Office Add Ms 5168 (1805); *Bersted*: WSRO Add Ms 227 (1840); *Bramber*: WSRO Add Ms 9474 (1729); *Brighton*: East Sussex Record Office Danny Ms 2105; *Bury*: Arundel Castle Ms LM1 (1634); *Coombes*: WSRO Petworth House Archives 3216 (19th C); *Duncton*: WSRO Petworth House Archives 3568 (1608); *Durrington*: Arundel Castle Archives HC2 (1768), WSRO Add Ms 1991 (1800); *Eastbourne*: ESRO Gilbert Ms XC/14 (1816); *East Lavant*: WSRO Goodwood Ms E5030 (1831); *Goring*: Worthing Public Library (19th C); *Kingston*: WSRO Wiston Ms 5595 (1773); *Littlehampton*: WSRO Add Ms 5170 (1841); *Lyminster*: WSRO Add Ms 9482 (1724); *Oving*: WSRO Add Ms 2035 (1725), WSRO Add Ms 4656 (1838-42); *Petworth*: WSRO Petworth House Archives 3574 (1610), 3232 (1796), 3633 (1824); *Plumpton*: ESRO Add Ms 4952, number 6 (1819); *Prinsted*: WSRO Add Ms 2857 (1640); *Selham*: WSRO Cowdray Ms 1699 (1812); *Storrington*: WSRO Petworth House Archives 3384 (1788, copy 1809); *Strettington*: WSRO CAP 1/29/7.26 (1768); *Sutton*: WSRO Petworth House Archives 3570 (1608), 3630 (1820); *Tangmere*: WSRO Goodwood Ms E137 (1760); *Upper Beeding*: WSRO Add Ms 2025 (1775); *Washington*: WSRO Wiston Ms 5592 (1739), Wiston Ms (1825); *Westbourne*: WSRO Add Ms 2856 (1640), WSRO QDD/6/W31 (1858); *Westhampnett*: WSRO Goodwood Ms E4993 (1775); *Worthing*: WSRO Petworth House Archives 3214 (1807).