
The Persistence of English Common Fields*

DONALD N. MCCLOSKEY

Equity and Efficiency

With its three great fields planted in a communally regulated rotation of crops, its common meadows and wastes, and its mixture of holdings in hundreds of strips less than an acre each, the common or open-field system in all its variants had, by 1700, characterized the agriculture of northern Europe for centuries. In England, as elsewhere, it had never been universal, and had from an early date been subject to erosion, giving way by agreement among the tenants and by compulsion from the landlords to compact enclosure. Yet in 1700 a broad north-south swath of England from the North Sea across the Midlands to the Channel still exhibited the system in a more or less complete form. A century and a half later, five thousand-odd separate acts of Parliament and perhaps an equal number of voluntary agreements had swept it away, transforming numerous and vague usufructs over scattered plots in the open fields into unambiguous rights of ownership to consolidated and fenced holdings, free of village use and village direction.

The open-field system in the Middle Ages and enclosure in modern times have long been among the handful of central concerns of British economic and social historians. It is odd, therefore, that the intimate relationship between the two has been slighted. The reasons for the persistence of communal agricul-

* I have inflicted earlier versions of this and related work on an embarrassingly large number of my colleagues, too numerous, indeed, to mention here. I thank them for their comments, and pledge more explicit acknowledgment when the work appears in extended form.

ture in England for so long a time, after all, must be related logically to the reasons for its eventual dissolution. A system of agriculture that for centuries retained its major features, however much altered in detail, must have had powerful justifications, as must have had the expensive and unsettling procedures for transforming it into a system of modern farms. Nonetheless, historians of the medieval agricultural community have concentrated on the one set of justifications and historians of the enclosure movement on the other, and the two have been permitted to live their intellectual lives, as it were, in isolation. It is often argued—to give one small example of the advantage to disciplined reasoning gained from treating them together—that the enclosure movement of the late eighteenth century was the result of a rise in the price of grain, especially during the Napoleonic Wars. Yet if this is true, as it may well be in part, one must ask why earlier rises and falls in the price of grain, of which there were of course many over the history of the open fields, did not produce comparable results. Again, it is often argued that the enclosure movement was motivated by the desire of powerful landlords to expropriate the birthright of the peasantry. Yet if this is true—and the next essay shows that it is doubtful—one must ask why landlords waited in most cases until the eighteenth century to expropriate. It may be possible in these particular instances to reconcile the logic of the open fields with that of the enclosures, but the difficult and neglected task is to reconcile them on all points simultaneously; that is, to provide a consistent body of reasoning that rationalizes both the persistence and the dissolution of open fields.

Another odd feature of the historiography of open fields and enclosures is that it has been concerned almost exclusively with the effects of agricultural organization and reorganization on equity, rather than on efficiency—on the balance of social classes, rather than on the allocation of resources. In his study of English open fields, George Homans, in the manner of Maitland and Vinogradoff, was chiefly concerned with “the elaborate arrangements whereby the economic equality of the villagers’ holdings, class by class, was assured” and with “the hierarchy of social classes which went with the classes of holdings.”¹ In their study

¹ George C. Homans, *English Villagers of the Thirteenth Century* (Cambridge, Mass., 1941), p. 206.

of English enclosures, the Hammonds, in the manner of Marx and Tawney, declared that “we are not concerned to corroborate or to question the contention that enclosure made England more productive. . . . Our business is with the changes that the enclosures caused in the social structure of England.”² This emphasis on equity rather than on efficiency is readily defended in an individual scholar, but less so in an entire body of scholarship, because it leaves the impression that the organization of agriculture was either an unimportant factor in the standard of life in the English countryside or a factor whose impact is obvious, neither of which is on the face of it correct.

This essay and its sequel take the first step in bringing the study of open fields and of enclosures closer together, and in righting the balance between considerations of equity and efficiency, by examining the change in the efficiency of English agriculture attributable to the enclosure of open fields. The subject is difficult—indeed, one purpose is to show that it is considerably more difficult than has been supposed—and this preliminary journey through the logic and the evidence cannot be expected to yield very many definite conclusions. It does, however, uncover a good many unsuspected snares.

The Goths and Vandals of Open-Field Farmers

The initial question to be asked is, how efficient were the open fields? The question presupposes that it is useful to speak of “the open fields” as a single phenomenon, despite the enormous body of scholarship documenting their variety and flexibility. It is convenient, nonetheless, to begin with the simplest textbook characterization, for nothing essential to the argument depends on variations in the system. The usual assumption is that the creation by enclosure of simple, one might say “modern,” property rights in land would expose agriculture to market forces tending to make it efficient, in the economic sense of producing the largest attainable satisfaction for given inputs of land, labor, and capital. If it is to be maintained that enclosure increased efficiency, therefore, it must be shown that the earlier system was not efficient.

² J. L. and Barbara Hammond, *The Village Labourer* [London, 1948, a reprint of the 4th (1927) edition], Vol. 1, 19.

Historical opinion has for the most part accepted the judgment of contemporaries, sixteenth-century opponents of enclosure as well as eighteenth-century enthusiasts, that the open-field system was indeed inefficient. An examination of the underlying evidence on the whole justifies this opinion, if not the exaggerated language in which it was sometimes expressed. The root cause of the inefficiencies was the excessive scattering of each peasant's land. Under the textbook version of the open-field system, with a wheat-barley-fallow rotation among the three great fields of the village, each peasant's holding was divided into three approximately equal parts, allocated among the three fields, instead of being consolidated, as efficiency in farming would seem to demand, into one. In 1635 in the village of Laxton, Nottinghamshire, for example, John Freeman, a typical tenant, held 29.6 acres in the open fields, of which 33 percent was in West Field, 31 percent in South Field, and 35 percent in Mill Field.³ He held, in addition, two enclosures of 3.4 and 7.3 acres, and town land of 1.6 acres, out of his total acreage in arable land of 42.1 acres—a fact that makes the point that by this date (and earlier) even nominally open-field villages were partially enclosed. Nonetheless, most of his land was scattered among the three fields. Worse still, within each field his holdings were split into dozens of scattered plots, ranging in size down to fragments of an acre. His 2.4 acres of meadow land were split into seven separate plots, his 29.6 acres of arable land into forty-four plots, of which three-quarters were smaller than an acre, and half smaller than half an acre.

Freeman's plots tended, however, to cluster together within a few broad bands across the face of the open fields, making their effective number considerably less than forty-four. The point is general: the evidence from maps in other open-field villages also suggests that the number of plots reported in lists of ownership and tenancy is usually well above the effective number. When, for example, one foreign half-acre strip separates three of Christian Coxe's in Llancadle, Glamorgan in 1622, it is clear that for most farming purposes the three count, although they were not counted, as one. No doubt Coxe and his neighbor could

³ C. S. and C. S. Orwin's classic study, *The Open Fields* (Oxford, 1938), reproduces the "booke of surveye" for Laxton in 1635, from which these figures are compiled.

have traded land to eliminate the small inconveniences of the lack of contiguity; no doubt, too, it mattered little whether or not they did. Determining the effective number of plots is necessarily somewhat arbitrary, but it does not follow that one must therefore adopt the equally arbitrary and less illuminating criterion that one nominal plot is to be counted as one effective plot. For example, if one adopts for Coxe's holding the criterion that a collection of plots is to be counted as one when no piece is separated from another by more than one foreign piece and no part of any piece is outside a radius of 150 yards from the center of the effective plot, Coxe's twenty-seven distinct nominal plots are reduced to twelve effective plots.⁴

The lists of nominal plots are misleading for another reason as well, namely, as M. M. Postan put it, that "the pattern of actual economic occupation of land might differ very widely from that of official tenancies."⁵ Subleasing and absentee ownership were common early and late in the history of the open field, and both obscure the nature of the typical operating farm. A peasant who held directly of the lord 20 acres might take subleases on 15 more from other peasants, renting out 5 of his own, to form a larger, relatively consolidated farm of 30 acres that would appear nowhere in the records. The evidence for this must be indirect, but it is persuasive. In Eversholt, Bedfordshire, in 1764, for example, there were 59 holdings of less than 50 acres, yet of these fully 33 were holdings of non-residents, who could not themselves have been operating their lands as farms.⁶ And holders were often widows or, on occasion, minors, any of whom could be expected to have rented out their land. It is apparent that one cannot lean too heavily on the legal records of holdings (which are, until modern times, the only records) in describing the pattern of farming.

Making all due allowances for these doubts, however, the typi-

⁴ The map for Llancadle is reproduced on pp. 504–505 of Margaret Davies, "Field Systems of South Wales," chapter 11 in A. R. H. Baker and R. A. Butlin, *Studies of Field Systems in the British Isles* (Cambridge, 1973). Coxe was a copyholder of thirty-nine acres.

⁵ Postan's introduction, p. lix, to C. N. L. Brooke and M. M. Postan, *Carte Nativorum, Publications of the Northamptonshire Record Society* 20 (1960). Compare Edward Miller, *The Abbey and Bishopric of Ely* (Cambridge, 1951), p. 133.

⁶ George H. Fowler, *Four Pre-Enclosure Village Maps, Quarto Memoirs of the Bedfordshire Historical Record Society* 2, pt. iv (1936), 37–53.

cal peasant farm appears to have consisted of some dozen or more effective plots scattered about the open fields, and this arrangement was costly. The most obvious cost, given much emphasis in the literature on modern cases of scattering, is the time spent moving from one plot to another in performing farming tasks on one's property, such as plowing. But the importance of this time spent has probably been exaggerated. When plowing was done jointly, as it sometimes was, there would be little loss on this account, for the entire area serviced by one plow would then be equivalent to a large consolidated plot, with no time wasted traveling. And it was often the case that a plot was typically one day's plowing (one or two-thirds of an acre), in which case, since the team of oxen or horses would in any event be brought back to the village at night to be fed and housed, there would be no travel other than the inevitable daily trip from the village to the land and back.⁷ Other tasks, such as harrowing, weeding (which was especially important for the root crops that came into general use in the eighteenth century), hauling manure, cleaning drains, and harvesting, would still involve some excess travel, except in the unlikely event that each happened to require an integral multiple of the number of days required for plowing each plot.

It is relatively easy to show, however, that even in the most unfavorable case this cost of scattering is small. In studies of scattering in Europe after World War II, the excess travel involved in scattered plots has sometimes been calculated from the sum of the distances from the village to each plot and back, one commuting trip, as it were, for each plot.⁸ This procedure, which yields impressively large travel distances, is misleading because the distances are the result of the nucleation of villages, not of scattered holdings of land: a consolidated holding, if it were

⁷ See the Orwins, *Open Fields*, pp. 35-36, 43, 126-27.

⁸ For example, Kenneth Thompson, *Farm Fragmentation in Greece: The Problem and Its Setting, with 11 Village Case Studies* Center of Economic Research, Research Monograph Series #5 (Athens, 1963), p. 29. Thompson uses the sum of one-way trips, but the criticism is the same. Compare Michael Chisholm, *Rural Settlement and Land Use: An Essay in Location* (London, 1962), pp. 43-66. His examples of the costs of scattering are usually examples of the cost of nucleation, such as that of moving manure from the farmyard to the field or of moving the crop to the barn. He uses the villages of La Mancha, Spain, as cases in point. Although these are very large villages, with long average trips to the fields, the holdings are not scattered.

located (as it would have to be) the same average distance from the village as the scattered plots, would require the same daily commute. Nucleation, a response to the desire for mutual aid and protection, was in large part independent of scattering, although scattering would have reinforced nucleation by reducing to some degree the relative advantage of dispersed homesteads over clustered ones. In the usual case, in which scattering is not itself the main cause of nucleation, the relevant distance is that traveled from plot to plot in tasks that require less than a full day's work.

With the plots scattered over the relatively small area of English villages, this distance would be small, even if it were not true that a peasant's holding tended to cluster in a few limited areas. If an average day could accommodate labor on as many as four plots, for example, there would be three trips between plots to be made each day. If John Freeman's forty-four nominal plots, to take the extreme case, were scattered over the entire area of Laxton in such a way as to maximize the distance between his plots, he would in three trips have to travel on the order of only 1.1 miles each day in addition to his normal commute from the village.⁹ The degree to which this upper-bound estimate overstates the amount of time wasted traveling between plots may be judged by the average of only .14 miles between each of Freeman's plots and the one closest to it in Laxton's South Field, in which they were scattered more than in the other two fields: this distance implies an average walk of less than half a mile in the course of visiting four in a day.¹⁰

⁹ This is an approximation to the solution of a difficult problem. The problem is to find the locations of plots in a village, perhaps a village of some convenient shape that can nonetheless approximate actual village shapes (such as a rectangle or a circle) such that the distance travelling from plot to plot is maximized. The special solution given here supposes that the area of Laxton (about 6 square miles, larger than most villages) can be approximated by a 3.28 mile \times 1.82 mile rectangle, and that Freeman is constrained to walk on a grid of squares .36 miles on a side, like an American middlewestern street plan, in visiting his property. His property (in forty-five rather than the correct forty-four plots) is imagined to be located at each of the street corners, as it were, in the 9 \times 5 grid. A route through four contiguous plots, then, would require three trips of .36 miles each, for a total of 1.1 miles per day.

¹⁰ This estimate of the average distance between plots was derived by marking off Freeman's plots on the map of South Field, using the guide to the strip numbers (both the map and guide are given in the Orwins, *Open Fields*). The scale of the map was inferred from the acreage of the field.

Again, on the eve of the enclosure of Goldington, Bedfordshire, in 1852, before which a good deal of consolidation had already taken place, one typical farmer held 103 acres in the open fields, scattered in only 7 or 11 plots (depending on how one counts close plots).¹¹ In the field in which they were least consolidated he had five, each about 5 acres, more than enough, one would suppose, to fill a day in most agricultural tasks, and certainly in plowing. Each of the five was about three hundred yards from its nearest neighbor. At one yard per second, a relaxed pace, each trip between plots would therefore take only five minutes, or, if as many as four of these large plots were to be visited, only fifteen minutes a day. It is evident that it was not the waste of time in traveling from one plot to another that inspired the enclosure of Goldington.

Nor was it here or elsewhere the waste of land in unploughed strips, or balks, between plots, a feature of the system that seems at first obviously inefficient. There is an ongoing dispute over the prevalence of balks, although there is little doubt that at least in some places they did exist: B. K. Roberts reports that in south Warwickshire, for example, they were commonly a yard or so wide between plots, which were themselves ten yards or so wide.¹² The 10 percent of the land occupied by them, however, was not merely an expensive form of fencing or access way. Indeed, a balk commonly occurred between two plots even if they were owned by one person, their use being, as G. Whittington put it in describing them in Scotland, as places "onto which were thrown the stones frequently turned up by the plough. The balks in fact were the drainage lines into which the crowns of the ridges shed their water."¹³ Furthermore, balks could be and were mown for hay, and animals grazed on them. In short, the net loss of output, if any, was far below the percentage of the land allotted to them.

The less obvious but probably more important sources of inefficiency in the system of small and scattered, and therefore intermingled, plots are neighborhood effects. If Tom did not

¹¹ Frederick G. Emmison, *Types of Open-field Parishes in the Midlands* Historical Association Pamphlet Series no. 108 (London, 1937).

¹² B. K. Roberts, "Field Systems of the West Midlands," in Baker and Butlin, *Field Systems*, pp. 197-98.

¹³ G. Whittington, "Field Systems of Scotland," in Baker and Butlin, *Field Systems*, p. 543.

keep the drains clean on his plot, Jack's plot was flooded. If he did not weed carefully or destroy molehills and anthills on his plot, Jack's was infected. If he was careless in turning his plow or making a way to his crop, Jack's crop was crushed. There are neighborhood effects under any organization of land, but they are greatly increased by holding land in small, scattered plots, an arrangement that increases the average propinquity of one man's land to others'.¹⁴ The significance of neighborhood effects is that they reduce the incentive to apply the optimal amount of labor to the land, for if the fruits of Jack's labor are spoiled, his incentive to cultivate his crop is attenuated. The fruits could be dissipated in the tangle of mutual damages, with no one benefiting, or they could merely be stolen: the difficulty of policing property rights as complex as those that characterized open field agriculture was a constant temptation to theft of crops or land. Because the theft of a small medieval sheaf of grain was easy, for example, elaborate precautions were taken to keep people out of the fields at night, and to make sure that they carried off their crop only by day in conspicuous carts. Because the boundaries of plots were long and numerous, the theft of a furrow was also easy. The standard illustration of these points has long been the confession of Avarice in *Piers Plowman*:

So I gather by guile the goods that I covet,
By day and by night, busy everywhere.

If I plant or plow I pinch so narrowly
That I fetch a furrow or a foot's swathing
From my next neighbour, and gnaw his half acre.
If I reap I over-reach, or tell the reaper privately
To seize for me with his sickle what was sown by another.¹⁵

The standard illustration of furrow stealing might just as well be a case in Castor, Northamptonshire, in which before the very late enclosure of 1898, "there was one spot in the common fields were two neighbors kept a plough each continually, and as fast

¹⁴ In Joan Thirsk, ed., *The Agrarian History of England and Wales*, Vol. 4, 1500-1640 (Cambridge, 1967), Thirsk remarks that even when land was "freed of the burden of common rights, few men owned ring-fence farms. . . . On the contrary their land lay in scattered bits and pieces, and their neighbour's bad or indifferent farming touched them nearly," p. 162.

¹⁵ H. W. Wells, trans., *The Vision of Piers Plowman* (New York, 1945), passus XIII, lines 390-96.

as one ploughed certain furrows into his land, the other ploughed them back into his."¹⁶ Whatever the cause, the lack of correspondence between effort and reward and the devices to make them correspond more closely were costly. The usual formula in the preamble to parliamentary enclosure acts in the eighteenth century asserted that in open fields the plots "lie inconveniently dispersed and intermixed, and in their present situation are incapable of improvement," and a propagandist for enclosure identified the source of the improvement to be expected from their consolidation: "Whatever tribute of fertility the grateful earth bestows as the reward of honest industry and good management redounds solely to . . . [the occupier's] own advantage."¹⁷

The local law, enforced by peasant custom or the lord's court, could and did intervene in a variety of ways in the tangle of intermixed plots, assigning part of a bundle of property rights to one man, part to another. The very existence of these elaborately detailed village bylaws is testimony to the severity of the neighborhood effects. An alternative explanation for bylaws, that they were framed to protect peasants against their own inclination to fall below certain minimum standards in farming, is not plausible, for the village community and the lord's court interfered with the activities of a peasant only when these had an impact on the activities of others.¹⁸ The bylaws marked the boundaries of rights where they conflicted, otherwise leaving men to their own devices. In addition to his claim to the crop from his own land (aside from tithes), for example, the peasant was assigned the right to prohibit trespass by men or animals on his growing corn.¹⁹ On the other hand, there was a large class of

¹⁶ Gilbert Slater, *The English Peasantry and the Enclosure of Common Fields* (London, 1907), p. 15.

¹⁷ Henry Homer, *Nature and Methods of Ascertaining Specific Shares of Proprietors Upon the Inclosure of Common Fields*, 2d ed. (Oxford, 1769), p. 11, spelling modernized.

¹⁸ The best discussions of village bylaws are contained in Warren O. Ault's many works on the subject, notably "Open-Field Husbandry and the Village Community, a Study of Agrarian By-Laws in Medieval England," *Transactions of the American Philosophical Society*, n.s. 55 (October 1965), and a shortened and revised version of this, *Open-Field Farming in Medieval England* (London, 1972), on which the assertion in the text is based. Thirsk finds some merit in the alternative explanation (*Agrarian History*, p. 163); as did E. C. K. Gonner, *Common Land and Inclosure* (London, 1912), p. 34.

¹⁹ Bylaws of Laxton given in the Orwins, *Open Fields*, pp. 172-81, provide

well-defined rights over his property placed in the hands of others, rights known in the Roman law as, appropriately, "servitudes." Some of his plots may have served during certain weeks of the year since time beyond memory as roads to other men's plots, or as places for them to turn their plows. Again, by virtue of holding certain plots, he may have been required to repair the fences around the common field or to clean the communal drains; because one man's land led to another's in the open field, the effects of poor fencing or draining spilled over onto neighboring land, and stiff fines were necessary to induce each to contribute his labor to the prevention of the nuisance.

The most important servitude of the land in the open field was that it was open to common grazing at certain times of the year, after the crop was harvested, or when the field as a whole lay fallow. It is likely that the growing scarcity of pasture caused this practice. As population grew, the waste and meadow shrank in relation to the arable land, making the stubble of the arable valuable for grazing.

The grazing could be common or private. If private grazing were to be feasible, some method of preventing animals from wandering off one's property would be necessary, but the costs of fencing a scattered holding were very high. The costs of fencing even the relatively consolidated holdings created by the enclosure movement of the eighteenth century were high—as is shown later, a quarter of the value of a year's crop was a typical figure—and the costs of fencing a holding such as John Freeman's, scattered in 44 plots (albeit nominal, not effective, plots), would have been higher than that for a completely consolidated holding of the same size by a factor of eight or nine. Only two sides of a plot need be fenced, for the neighbors will fence the rest. Therefore, the distance to be fenced on a completely consolidated square holding of A acres would be $2\sqrt{A}$. When the A -acre holding is scattered into N small plots, the plots must be

good cases in point. The Leet Court decreed in 1789, for example, "that if any one have one or two sheep that are common trespassers in the cornfield he shall pay for every offense 1d. or forfeit 3s. 4d" and "that none make a way up or down William Pinder's Acre at the top of the West field." A reading of these and others confirms the assertion of F. Pollock and F. W. Maitland in *The History of English Law Before the Time of Edward I*, 2d ed. (Cambridge, 1898), Vol. 2, 145, that "the most elaborate and carefully worded of the private documents that have come down to us are those which create or regulate pasture rights and rights of way."

elongated into strips to accommodate the plow team. If the length of these strips is ϕ times their width, it can be shown that each of the N plots required $(1+\phi)\sqrt{\frac{A}{\phi N}}$ in fencing, implying that the ratio of lengths to be fenced on the scattered holding to that on the consolidated holding is $\frac{1}{2}\sqrt{N}\left(\frac{1+\phi}{\sqrt{\phi}}\right)$. For Freeman's

holding of 44 strips ($N=44$), supposing, as the map of his holding indicates, that $\phi=5$ (that is, his strips were on average five times longer than they were wide), this ratio of fencing costs is 8.9. Even if he were able to make agreements with his immediate neighbors to fence larger areas in squares and to graze communally within the fences, as was sometimes possible, the ratio would be substantial. If he were able to allocate his 44 plots by threes into 15 such partial enclosures, for example, the ratio of costs would be $\sqrt{15}$, or 3.9. When the costs of land taken up by the fencing itself and of land shaded from the sun are added to the account (offset to some degree by the advantage of sheltering crops and livestock behind the fences from destructive winds), it is not surprising to find that scattered holdings were rarely fenced. Communal grazing, for all its inefficiency, was the better of two inefficient alternatives.

Tethering of animals was possible, and for this reason Marc Bloch rejected scattering as a sufficient explanation of communal grazing, declaring that it "arose first and foremost from an attitude of mind, from the notion that once land became unproductive it was no longer capable of individual exploitation."²⁰ But tethering was largely confined to horses, with elaborate restrictions required even for some of these, namely, mares with a foal.²¹ Oxen were seldom tethered, and sheep could not be. Tethering, moreover, would result in either inefficient grazing of the plots or repeated retetherings. And tethering is asymmetrical in its effects, unlike fencing: a fence protects my crops from your animals as well as your crops from mine, giving us both an incentive to build and repair the fence; tethering, however, only protects your crops from my animals, leaving your crop dependent on my altruism or on the force of law for protection. In

²⁰ Marc Bloch, *French Rural History* (Berkeley and Los Angeles, 1966; first published in French in 1931), p. 46.

²¹ Ault, *Open Field Farming*, pp. 43-44; Thirsk, *Agrarian History*, p. 165.

any case, tethering, like the fencing of scattered holdings, was the exception, and common grazing on unfenced fields the rule.

One direct cost of this arrangement was uncontrolled breeding and endemic livestock disease, despite bylaws directed at both. The pathetic condition of beasts raised on common grazing regularly aroused the scorn of agricultural writers from the sixteenth century on. Another cost was the overuse of land, for if no one faced a price for failing to restrain his use of the land, everyone would put out too many sheep or cattle, crushing the seed and impacting the ground beyond the ability of the land to recover in the next season. To suppose that overstocking was by itself a very important loss, however, is to suppose, contrary to fact, that villagers took no steps to reduce this loss. As with the other inconveniences of the open fields, village law intervened, limiting with increasing rigor as population grew the number of animals a man could put on the stubble to a traditional "stint," often in rough proportion to the quantity of land he occupied in the fields. To be sure, enclosed holdings would have produced self-interested husbanding of the land superior to the stint's crude check on inefficiency. If the stint proved too crude, however, the village could allow the stinted rights to be bought and sold, as it sometimes did. Gilbert Slater reported in 1907 that in the village of Eakring (near Laxton), which survived as an open field late enough for him to visit it, the village meeting decided each year how many sheep could be pastured on the stubble and other common pastures, then auctioned the rights to the highest bidders, distributing the proceeds to the occupiers of village homesteads (the original owners of the rights).²²

The logic of the overgrazing argument is not in any case compelling. Although cogent enough when applied to permanent pasture, the land in question was not permanent pasture, but fallow land, annually stirred by the plow if animals impacted it, and refreshed with new grain (and weed) seeds if animals crushed them. Therefore the arable lands lying fallow, which formed the bulk of the grazing (as distinct from hay) for animals in a fully developed open-field village, could not have been overgrazed, in the sense of that the land would not recover the following year. From this perspective the development of an elaborate stint and the frequent complaints that it was being

²² *English Peasantry*, p. 12.

violated by peasants with ambitions to become full-time graziers can be seen primarily as a problem of equity (how much grass for his livestock will there be this year for Jack compared with that for Tom and Simon), not of efficiency (how much grass for their livestock will there be this year for Jack, Tom, and Simon together).

If the direct costs of common grazing were small, the indirect costs—resulting from the necessity for communal rules of cropping—were large. Common grazing on a peasant's fallow lands implied that he was constrained by communal rules on the timing and character of his planting and harvesting, for it would be futile for him to plant a crop when others had decreed that the field in which his plots lay was to be open to foraging cattle and sheep. All crops had to be planted, cultivated, and harvested within each field on a uniform schedule, especially as the very scattering that made common grazing desirable also made it desirable to have systematic arrangements for access to the plots. The presence of a nearby reserve of waste land for grazing, as in the fenland of the Holland division of Lincolnshire, would make common grazing and therefore common cropping unnecessary: the absence of any "urgent necessity to graze the stubble when the fens afforded such luxuriant pasture," Joan Thirsk argues, explains the absence of bylaws on communal cropping there. In the fens of the Kesteven division or of the Isle of Axholme in Lincolnshire, however, the arable land was not so fragmented by fenny ground; the fallow land was more valuable, and there were, therefore, communal rules of cropping and grazing.²³ In the sparsely and tardily settled forest regions of England, grazing on the stubble was often not necessary, although limitations on the use of the king's forest or the scantiness of grass shaded by trees sometimes made it so.²⁴ Even when grazing on the stubble was necessary, the village could complicate its rotations or permit neighbors to put temporary fences around their furlongs, as was common in the East Midlands and many other places from the earliest times.²⁵

²³ Thirsk, "Field Systems of the East Midlands," in Baker and Butlin, *Field Systems*, pp. 252–53.

²⁴ *Ibid.*; Robert, in Baker and Butlin, *Field Systems*, p. 211; and see, on the poor quality of wooded pasture in the thirteenth century and its higher value for timber, David Roden, "Field Systems of the Chiltern Hills and Envirows," in Baker and Butlin, *Field Systems*, p. 327.

²⁵ Thirsk, in Baker and Butlin, *Field Systems*, pp. 258–62.

Although the communal rotation might have this flexibility, by comparison with enclosed land held in severalty it necessarily limited the ability of men to exploit unusual features of themselves or of their soil. A man with exceptional knowledge of root crops, or with soil able to yield three rather than two grain crops between fallowings, was discouraged from exploiting these advantages. As a sixteenth-century rhymester of agricultural improvement put it, referring to the illegality of taking more than the normal number of successive crops from land in regions of open fields (or "champion country"), where the commoners' decision as a group was law:

Good land that is severall crops may have three,
in champion countrie it may not so bee:
Ton taketh his season, as commoners may,
the tother with reason may otherwise say. . . .
There common as commoners use,
for otherwise shalt thou not chuse.²⁶

This analysis of the system's inefficiencies gives some indication of their importance. In view of the vigorous attempts to offset the inefficiencies with bylaws and changes in village routine, it would be surprising if the loss were extremely large—as large, say, as a quarter of output—notwithstanding the intemperate language of contemporary critics of the system. It will be shown in the next essay, in fact, that in the eighteenth century, on the eve of full enclosure, the barbaric practices of what Arthur Young called "the Goths and Vandals of open field farmers" reduced output by around 13 percent. And the loss was no doubt lower in open fields in their prime than in open fields on the verge of being enclosed. If such a loss is not enormous, neither is it negligible. The analysis, in any case, confirms the hypothesis that scattering was the root cause of whatever loss occurred: scattering, with its attendant inefficiencies, implied common grazing, with more inefficiencies, and scattering and common grazing together implied communal cropping, with still more.²⁷

²⁶ Thomas Tusser, *Five Hundred Pointes of Good Husbandrie* (1580), edited by W. Payne and S. J. Heartage (London, 1878), pp. 50, 141; spelling somewhat modernized. T. E. Scrutton used this quotation in *Commons and Comon Fields* (Cambridge, 1887), p. 115.

²⁷ This conclusion fits well with recent views on the evolution of open fields, expressed, for example, in Baker and Butlin's "Conclusion" to their *Field Systems*. They argue that full-blown open fields were the end product

The Shrine of Equality

The inefficiencies of the open field system have presented historians with a puzzle: Why did it persist? The puzzle is relevant here because one must know the reason for its persistence to understand its dissolution in enclosure. With a miserably low and precarious standard of living, it is hardly credible that peasants would throw away 10 percent of their crop without some compensating advantage, yet the inefficiencies appear at first to amount to precisely that. It is not convincing to suppose, as some have, that peasants were simply indifferent to the gains from more efficient organization. Folke Dovring's otherwise illuminating treatment of modern fragmentation of farms, for example, is marred by this supposition: "It has always been noted that fragmentation means waste of time and draught power. As long as manpower was in excess supply, this could be tolerated up to a point."²⁸ But if other factors of production besides labor were wasted by the open-field system, as they surely were, or if the marginal product of labor were above zero, as it surely was, the open fields led to lost output, which would require some compensating advantage. And one need not rely on general arguments such as these in rejecting the premise that an excess supply of labor explains open fields. It has already been shown that the cost of travel between plots, which underpins the argument, was in any case trivial. Furthermore, the notion that labor time was considered valueless is doubtful. The simplest and most persuasive test involves determining whether labor was used with no concern for its value in other occupations, such as commuting from the village. It was not. Michael Chisholm, among others, has presented ample evidence, following von Thünen and the many geographers after him who have made the same point, that even in regions with an alleged surplus of labor, the labor-intensity of crops varies inversely with the dis-

of population growth in the face of scattered plots; the historical sequence being from shifting cultivation to an infield-outfield system (partly shifting, partly permanent), to a permanent field system with abundant waste for grazing, to, finally, a permanent field system with grazing on the fallow and communal cropping.

²⁸ F. Dovring, *Land and Labor in Europe in the 20th Century*, 3d rev. ed. (The Hague, 1965), p. 53. See also his "The Transformation of European Agriculture," chapter 6 in H. J. Habakkuk and M. Postan, eds., *The Cambridge Economic History of Europe*, Vol. 6 (Cambridge, 1965), especially pp. 626-31.

tance from the village. If it were true that "human time saved in one process of cultivation adds nothing to the general welfare . . . all the territory would be farmed at the same level of intensity."²⁹

Nor is it convincing to argue simply that peasants tolerated the inefficiencies of the open fields until they were forced to change by the improvements of the agricultural revolution, for which enclosure was "necessary." M. A. Havinden and others have emphasized that open-field villages could and did introduce floating meadows, pasture land within fields of growing crops, clover, turnips, and other innovations.³⁰ Although this revision of the picture of technological stagnation in open-field agriculture drawn by hostile contemporaries has found its way into most accounts only recently, it has a long history: E. C. K. Gonner, for example, made the point in 1912.³¹ Enclosure and changes in technique were of course connected, but not by a bond of mutual necessity.

It is easier to dispute explanations for the persistence and eventual disappearance of the open field than to construct them. Regional variation in the rate of enclosure is one obstacle to understanding. As Slater remarked in 1907, "the surprising fact is not that the common field system should gradually and quietly disappear in parish A, but that it should persist in parish B, until ended by the very expensive and troublesome measure of a special Act of Parliament."³² The lack of progress in the last seventy years in solving this puzzle may be gauged by a similar remark by Joan Thirsk in 1964: "All countries in West-

²⁹ Chisholm, *Rural Settlement*, p. 64. He finds zoning to be especially plain in precisely those areas of modern Europe where the existence of surplus of labor is most plausible, that is, southern Italy (see his chapter 4).

³⁰ M. A. Havinden, "Agricultural Progress in Open-Field Oxfordshire," *Agricultural History Review* 9 (1961), 73-83. Compare W. G. Hoskins, *The Midland Peasant: The Economic and Social History of a Leicestershire Village* (London, 1957), pp. 231-33; and Thirsk, *Agrarian History*, p. 179. Dovring ("The Transformation of European Agriculture," p. 631), pointing to the introduction of modern techniques on severely fragmented land on the Continent down to the present, argues that "the allegation often made that land consolidation is a prerequisite of the use of modern crop rotations has not been borne out by experience, whatever damage fragmentation has done to the technical and economic efficiency of labour and capital."

³¹ *Common Land*, p. 32. Gonner did doubt that root crops were easily introduced, but the work of Havinden and others has removed even this qualification.

³² *English Peasantry*, p. 150.

ern Europe have the same problem to solve—they have all had experience of common-field systems existing side by side with enclosed farms.”³³

Since Slater wrote, there has been an increasing awareness of still another obstacle to understanding, also emphasized by Thirsk, namely, that open fields are not merely anachronistic relics of the distant past. Making use of recent German literature on the open fields, Thirsk points out that “it is possible to observe the gradual parcelling of rectangular fields into strips as late as the seventeenth and even the eighteenth centuries.”³⁴ For an earlier period, as Thirsk argues, the less abundant English evidence is similar. In the thirteenth century Kent and Sussex had very irregular field systems, if any. By the sixteenth century, Kent was a county of enclosures, yet parts of Sussex had by then fully developed open fields, with communal cropping and grazing.³⁵ Evidence such as this casts doubt on the theory that the open field was a static system “consecrated by immemorial usage,” as Gonner put it, whose rules “made conscious change well nigh impossible,”³⁶ as it does on the related theory that the open field and its variants are to be explained as remnants of the racial pattern of settlement in Anglo-Saxon England. Conscious change was in fact quite possible, whether away from or towards a strict open-field regime. A striking German case in point is the land owned by the Abbey of Kempton in the Algäu region of southwestern Bavaria, on which consolidation, initiated by the peasants themselves, went forward by agreement from the middle of the sixteenth century on, three centuries before consolidation in neighboring regions of Germany had begun.³⁷

Examples of the bewildering pattern of growth and decline in open fields need not be restricted to the eighteenth century and before, nor to one country. In 1928 Marc Bloch wrote in his celebrated essay on the comparative method in history that “we shall never arrive at a complete understanding of the English

³³ “The Common Fields,” *Past and Present* 19 (December 1964), p. 3.

³⁴ *Ibid.*, p. 10. There are other examples of new open fields in early modern times in eastern Europe and, more striking still, in New England (these however, disintegrated in the second generation of settlement).

³⁵ Alan R. H. Baker, “Field Systems of Southeast England,” in Baker and Butlin, *Field Systems*, pp. 428–29.

³⁶ *Common Land*, p. 35.

³⁷ Alan Mayhew, *Rural Settlement and Farming in Germany* (London, 1973), p. 187.

open field system, the German *Gewanndorf*, or the French *champs ouverts*, by examining England, Germany or France alone.”³⁸ His call for comparative work, unfortunately largely unheeded, was broadened still further by Joan Thirsk in 1966: “we may also learn something from the study of peasant cultivation in present-day Asia, Africa, and South America, where examples abound of intermingled strips.”³⁹ Indeed we may. Down to the present, farms in many parts of the world remain or have become in the course of a few generations severely scattered. In the early 1960s Folke Dovring estimated that “at least one-third, and probably over half, of the agricultural land in Europe would need re-allocation or consolidation in order to do away with the technical disadvantages of bad layout, including among these the constraint to conform with neighbours in farming operations.”⁴⁰ In 1969 the Organization for Economic Cooperation and Development delivered a similar judgment on southern Europe, reporting that in Spain, for example, the average number of separate plots per farm in 1962 was 14 and in Germany in 1960, 10, in both cases roughly a third of the farms having 10 plots or more.⁴¹ The average number of plots per farm here is less than the nominal number in England under the open field system, but in isolated instances in modern Europe it has approached or exceeded it. In Czechoslovakia in 1938, for example, the median number of plots per farm was 30, and in Portugal in 1940, 26.⁴² Around 1950, in parts of Greece many farms consisted of 50 to 100 plots each, and ten years later the situation was similar.⁴³ In a backward part of Ireland in the

³⁸ “A Contribution Towards a Comparative History of European Societies” in Marc Bloch, *Land and Work in Medieval Europe* (London, 1967), selected translations by J. E. Anderson from *Mélanges Historiques* (1966), p. 70.

³⁹ Thirsk, “The Origin of the Common Fields,” *Past and Present* 33 (April 1966), 143.

⁴⁰ Dovring, “The Transformation of European Agriculture,” pp. 63off.

⁴¹ Organization for Economic Co-operation and Development, *Agricultural Policy Reports, Agricultural Development in Southern Europe* (Paris, 1969), pp. 18, 83.

⁴² Dovring, *Land and Labor*, p. 40. He gives some twenty cases, ranging upwards from Belgium’s 6.8 plots per farm in 1950.

⁴³ Euthymios Papageorgiou, “Fragmentation of Land Holdings and Measures for Consolidation in Greece,” pp. 543–48 in Kenneth H. Parsons, R. J. Penn, and P. M. Raup, eds., *Land Tenure: Proceedings of the International Conference on Land Tenure and Related Problems in World Agriculture held at Madison, Wisconsin, 1951* (Madison, 1956). Part 17 of this volume (pp. 535–64) is entitled “Consolidation of Fragmented Holdings” and con-

1960s the average holding consisted of 60 scattered plots.⁴⁴ Nor are scattered holdings confined to Europe. They occur in Africa and in Latin America.⁴⁵ And in Asia they are ubiquitous: noting their prevalence in Formosa, Korea, Japan, India, Pakistan, Thailand, and Indonesia, the Asian Agricultural Survey Team of the Asian Development Bank reported in 1969 that "The basic cause of operational inefficiency on small farms is the poor farm layout. . . . A farm of one hectare may be divided into more than a dozen small fields."⁴⁶

In most of these cases scattering is treated as an unmitigated evil, as a source of inefficiency, and an obstacle to progress on a par with sacred cows and too numerous feast days, which must be rooted out, if necessary by compulsion, before agricultural development can proceed. Yet it has never been satisfactorily explained why peasants are so often opposed to consolidation if, as is commonly supposed, it would raise output with no impairment of other goals. Since the English example of the eighteenth century, followed closely by Sweden and France, one government after another in Europe and elsewhere has passed laws designed to eliminate scattering by persuasion, by subsidy, or by force, and it would be difficult to explain their painfully slow achievement of success if consolidation were so unambiguously advantageous. The Dutch reallotment act of 1924, amended in 1938 and later, made consolidation compulsory if favored by either a majority of the landlords or a preponderance of the land voted by its owners,

tains, besides Papageorgiou's piece, reports on scattering and enclosure in modern France, the Netherlands, and Japan. Thompson's *Farm Fragmentation in Greece* is a detailed study of the Greek case. See also Bernard O. Binns and others, *The Consolidation of Fragmented Agricultural Holdings*, Food and Agricultural Organization of the United Nations, Agricultural Studies #11 (Washington, D.C., 1950) for studies of scattering in Denmark, France, Ireland, and Switzerland.

⁴⁴ John C. Messenger, *Inis Beag. Isle of Ireland* (New York, 1969), p. 27. "Inis Beag" is a pseudonym.

⁴⁵ For example, among the farmers of east central Tanzania "the ideal pattern is to hold a number of scattered fields planted with several crops" (T. O. Beidelman, *The Karugu. A Matrilineal People of East Africa* (New York, 1971), p. 18). And see Oscar Lewis, *Life in a Mexican Village: Tepoztlán Restudied* (Urbana, Ill., 1951), p. 120.

⁴⁶ Asian Development Bank, Asian Agricultural Survey Team, *Asian Agricultural Survey* (Seattle, Wash., 1969), p. 645. See also Setsuro Hyodo, "Aspects of Land Consolidation in Japan," pp. 558-59 in Parsons, *Land Tenure*, and Oscar Lewis, *Village Life in Northern India* (Urbana, Ill., 1958), pp. 104-107.

and provided generous subsidies (all the costs incurred, for example, if the attempt to consolidate failed). Yet in the early 1950s consolidation of plots in the Netherlands was far from complete.⁴⁷ The first of many general consolidation acts in Germany was Hannover's in 1848, yet to this day farms in many parts of Germany are scattered.⁴⁸ Official concern with scattering, embodied at the state level in a series of consolidation acts, is half a century old in India, yet the problem (for so it is viewed) remains.⁴⁹

What we may learn, then, from the ubiquity of scattered plots and from the tenacity with which peasants have clung to them—for eight or nine centuries in parts of Europe—is that scattering must have some powerful advantage to offset its admitted drawbacks. The many advantages that have been proposed in the literature have one feature in common: in the background they all assume that an absence of markets among peasants in grain, in labor, in cattle, in grazing rights, or in land made the given advantage achievable only by scattering.

Consider, for example, one of the less important features of the open-field system as it is usually described, namely, the holding of approximately equal amounts of land by each villager in each of the three open fields. It requires some compensating advantage, because it presumably resulted in some loss of efficiency from scattering, however small. The usual explanation is that it was necessary to have land in all three fields because each year one of the three lay fallow: a peasant who held all his land in West Field would starve in the year in which the village decreed that it must lie fallow and open to grazing livestock. The plain statement of the argument is enough to reveal its weakness, for a peasant with a more consolidated holding could raise a larger crop in one year, sell the excess to his neighbors, and buy food with the accumulated sum in the year in which his land lay fallow. There is little doubt that a market in grain inside or outside the village existed in medieval times, and no doubt whatever that it existed in a highly developed form in modern times. In his study of *English Field Systems*, H. L. Gray

⁴⁷ Philine R. Vanderpol, "Reallocation of Land in the Netherlands," in Parsons, *Land Tenure*, pp. 548-54.

⁴⁸ Mayhew, *Rural Settlement*, pp. 178-99.

⁴⁹ S. K. Agarwal, *Economics of Land Consolidation in India* (New Delhi, 1971), pp. 5-12.

used the equality of holdings in the fields as a "crucial test" for the existence of a two or three-field system of communal cropping.⁵⁰ The difficulty with the underlying argument passed through his mind, but he rejected it on the ground that "increased abundance the ensuing year could scarcely repair the loss to a peasantry which probably lived close to the margin of subsistence." It may be wondered whether this bit of illogic in a seminal work on English field systems has biased the historical picture of their geography. To establish the existence of communal cropping (although not the other features of the open fields), evidence of roughly equal holdings in several fields may be sufficient, but is surely not necessary. If a market in grain existed, communal cropping could be sustained without equally divided holdings, and their presence or absence becomes a test only of whether such markets had developed. Without access to a market, indeed, the observed irregularities in the putative general rule of equally divided holdings imply implausibly large variations in real income from year to year.⁵¹

One might argue that equal division of holdings among the fields was necessary not to insure a crop every year, but to insure that the peasant's work was spread over several years, equalizing the marginal utility of leisure from year to year. The scattering of plots within each of the open fields has been explained by Charles Parain in a similar fashion: "At the outset, when each plot needed at least a day's work, the scattering was rather more advantageous than not. A single tenant's holding all on one kind of soil would often require to be worked quickly, when the soil was in the right condition, and harvested quickly. Plots with different soils are ready for working at different times."⁵² Again, however, the argument is undercut if there was access to a market, in this case a market for labor. If peasants could arrange

⁵⁰ H. L. Gray, *English Field Systems* (Cambridge, 1915), p. 40.

⁵¹ Thirsk ("The Common Fields," p. 21) observes that "The vast majority of tenants' holdings did not consist of strips evenly divided between two or more cropping units. The distribution was often highly irregular and this fact has been a constant source of bewilderment to historians." One explanation for this irregularity (aside from the possibility that peasants held makeweight plots of enclosed land, as they often did), is that there existed markets in food or, as is argued in the paragraph below, in labor.

⁵² In M. M. Postan, ed., *The Cambridge Economic History of Europe*, Vol. 1, 2d ed. (Cambridge, 1966), 138. I am indebted to Stephano Fenoaltea for drawing my attention to this point.

to trade labor, as they did, or to work part time for wages, either for another peasant on his land in crops or for the lord on his demesne, they would be able to spread their work without at the same time needing to spread their land. One might argue, too, that since the right to graze livestock on the stubble or fallow was often stinted in proportion to the amount of land a peasant occupied in a field, he would have to occupy land in all three fields to insure adequate grazing for his animals in each year. But a market could intervene here as well: grazing rights often could be, and in fact were, exchanged, permitting him to arrange his plots with an eye to efficient cultivation rather than a schedule of grazing rights.

Another feature of the open-field system, common grazing itself, would have been subject to the same process of erosion by self-interested exchange. It is sometimes argued that common grazing was an obstacle to gradual enclosure on private initiative, for each commoner would resist attempts to reduce by individual consolidation and enclosure the amount of land available for grazing. When grazing rights are stinted in proportion to land holdings, however, this argument loses force. To be sure, a commoner is deprived of the use of another's land for grazing when it is enclosed, but at the same time the number of cattle grazing on the remaining common field is reduced in proportion, leaving the acreage per head of livestock unchanged. In other words, when rights to grazing are well defined and exchangeable, each peasant can enter into a mutually advantageous exchange with the village as a whole.

Nowhere is the potential erosion of inefficient arrangements by market exchanges clearer than for the explanations of the central feature of the open fields, the scattering of plots. One or another *deus ex machina*—common plowing, egalitarian instincts, clearing of waste lands, partible inheritance—is lowered into the action to scatter the plots, but when it has been lifted back into the rafters, the question arises why its effects persist. In 1883 Frederic Seebohm argued that the scattered plots were a consequence of the large number of oxen required to pull heavy medieval plows: one contributor to the team would get one day's plowing, another the next, and so on, distributing the inconvenience involved in very early or very late plowing of a

contributor's land evenly over the whole group.⁵³ Seeböhm's argument, perhaps because of its attractive air of technological determinism, has proven remarkably hardy; recently, for example, Warren Ault and M. M. Postan have adopted it as their explanation of scattered plots.⁵⁴ It presupposes, however, that peasants did not rent oxen from one another, which is incorrect. Variations in the rental price of oxen could compensate a contributor for a bad plowing date, a cheaper arrangement than tolerating the inefficiencies of scattered plots. Furthermore, even if such a rental market did not exist, it does not follow from a desire to avoid inconvenience in plowing dates that the plots had to be scattered, for if each was a whole day's plowing it would not matter where they were located; they might as well have been consolidated.

In any case, as Paul Vinogradoff pointed out a few years later in his *Villainage in England*, Seeböhm's argument implies that the scattering and intermixture of plots would not occur in regions where small plows requiring few oxen were used, or on holdings large enough to support a full team, neither of which was the case.⁵⁵ He proposed an alternative explanation, which for a time supplanted Seeböhm's: "The only adequate explanation of the open-field intermixture . . . [is] the wish to equalize the holdings as to the quality and quantity of land assigned to [each peasant] in spite of all differences in the shape, the position, and the value of the soil."⁵⁶ Lord Ernle concurred: "To divide equally the good and bad, well and ill situated soil, the bundle of strips allotted in each of the three fields did not lie together, but was intermixed and scattered."⁵⁷ As did Maitland: "Who laid

⁵³ F. Seeböhm, *The English Village Community* (London, 1883), pp. 113ff.

⁵⁴ Ault, *Open Field Farming*, p. 20; Postan, *The Medieval Economy and Society: An Economic History of Britain 1100-1500* (Berkeley and Los Angeles, 1972), p. 49. As Ault points out, joint plowing is never mentioned in bylaws, although quarrels about joint agreements among two or three neighbors do figure in the proceedings of manorial courts.

⁵⁵ P. Vinogradoff, *Villainage in England* (Oxford, 1892), pp. 231ff.

⁵⁶ *Ibid.*, p. 254. Compare his *The Growth of the Manor*, 2d ed. (London, 1911), pp. 175ff., where he examines and rejects the arguments that the scattering of strips came about from the gradual bringing of the waste into cultivation or from the operation of partible inheritance. He concludes that "although this system was not by any means the best for furthering the progress of cultivation, it was particularly adapted to the requirements of a community of shareholders," p. 176.

⁵⁷ Lord Ernle (R. E. Prothero), *English Farming Past and Present*, 6th ed., edited and introduced by G. E. Fussell and O. R. McGregor (Chicago,

out these fields? The obvious answer is that they were laid out by men who would sacrifice economy and efficiency at the shrine of equality."⁵⁸

It is strange to find Vinogradoff, Maitland, and the rest assuming that communal pressures were powerful enough to produce equality, even when the equality is taken to be, as Homans put it, "economic equality . . . class by class." It is strange partly because it is false; even when they are grouped by social class, holdings were far from equal, at any rate by the time they can be measured. But it is strange chiefly because the purpose of these scholars was precisely to overturn the notion of an egalitarian village community with broad powers over the land of its members. Maitland, and many writers after him, insisted that from the earliest times—indeed, as a matter of Germanic custom—land was owned privately in a most thoroughgoing fashion: allotted in severalty, its fruits accruing to its owner alone, inheritable, and partible.⁵⁹ Maitland hesitated to attribute alienability to land, yet here the recent accumulation of evidence on the selling and leasing of peasant land discussed below is decisive. One is tempted to turn Maitland's acerbic characterization of the theory of communal ownership onto his own theory of scattered plots: "This theory has the great merit of being vague and elastic; but, as it seems to think itself precise, and probably owes some of its popularity to its pretence of precision, we feel it our duty to point out to its real merit, its vague elasticity."⁶⁰

There are, to be sure, documented cases of egalitarian distribution and redistribution of land. In open-field villages otherwise individualistic, for example, meadow lands were often redistributed by lot each year. But, to anticipate a later argument, the random distribution of scattered claims to the hay was more likely to have been a species of insurance in the face of a variable crop (variable because the area and yield of the meadows varied with rainfall) than an incongruous intrusion of egalitarianism. The insurance achieved by dividing the land on harvest eve was cheap because in this instance there was no fear that villagers

1961), p. 25. Compare E. Lipson, *An Introduction to the Economic History of England*, 5th ed., Vol. 2 (London, 1929), pp. 63ff.

⁵⁸ F. W. Maitland, *Domesday Book and Beyond* (London, 1960; first published 1897), p. 394.

⁵⁹ *Ibid.*, essay 2, chapter 6.

⁶⁰ *Ibid.*, p. 398.

would have neglected to supply their own effort in hopes of getting a share of the fruits of someone else's labor, for hay grew naturally, with no cultivation necessary. There are, too, occasional examples of the redistribution of arable land, although its prevalence in the part of Britain where it has been thought to have been common, Scotland, has been exaggerated.⁶¹ The most celebrated case of periodic redistribution, that of the Russian peasant community from the eighteenth century on, is instructive, for it appears that it was indeed a modern development, and that the redistributions were undertaken in response to a heavy burden of taxation and rent imposed upon the village as a whole. The redistributions, in other words, were not a result of innate and immemorial village egalitarianism; on the contrary, they were lately imposed by lord and state the better to collect their rents and taxes, with the enthusiastic and sometimes violent support of the poorer peasants.⁶²

Viewed merely as a theory of the origin rather than of the persistence of scattered plots, the egalitarian theory presents problems well expressed in 1928 by George Fowler (a follower of Seeböhm in this matter): "I am not aware of any direct evidence in support [of it]; and when one considers the handful of men who first settled in each township, and the abundance of land available, the theory seems to be unnecessary."⁶³ There would be no point, he was arguing, to a strictly egalitarian distribution of a free good. Viewed as a theory of the persistence, and not merely the origin, of scattered plots, its difficulties are still greater, and similar to those that afflict Seeböhm's theory of co-aration: scattering was an inefficient way of maintaining equality, just as it was an inefficient way of avoiding the inconvenience of early or late plowing. A community bent on equality might have chosen to simplify its task of equalizing the value of allotments by merely distributing a bundle of plots in all parts

⁶¹ Whittington, in Baker and Butlin, *Field Systems*, pp. 536-43. Arguing that the term "runrig" by no means always implies periodic redistribution, he notes that there exist only a handful of documented cases of redistribution, most of them from northwest Scotland.

⁶² G. T. Robinson, *Rural Russia Under the Old Régime* (New York, 1932), pp. 12, 34-35, 274 (note 24); Jerome Blum, *Lord and Peasant in Russia from the Ninth to the Nineteenth Century* (Princeton, 1961), pp. 509-23. There is some hint in Whittington that the Scottish cases arose from similar causes, namely, the conjoint tenancy common there, p. 542.

⁶³ Fowler, *Pre-Enclosure Maps*, pt. i (1928), p. 4.

of the village to each peasant, rather than by adjusting the size of a single consolidated holding to its quality.⁶⁴ Once random distribution had insured a rough equality among holdings with respect to the convenience of their location or to their drainage or soil qualities, however, each member of the village could benefit from exchanges of plots to achieve consolidation. Equality would not be disturbed, for the exchanges would have to be mutually beneficial for the peasants to engage in them voluntarily, yet in the long run efficiency would be increased. In other words, even if egalitarianism influenced the initial distribution of land, it did not require any particular subsequent allocation. A market in land—the prior development of a money economy is not necessary, although it would have reduced the costs of exchange—with different prices for different qualities would have permitted the consolidation of holdings.

The holdings of free men were involved in an active market from the earliest times, and where these dominated consolidation would have been easy. It is sometimes argued that the lord of the manor would have been reluctant to permit a reshuffling of land that might disturb obligations attached to holdings of villeins. But M. M. Postan has emphasized that this obstacle to the existence of a villein land market is somewhat hypothetical, although he admits that in some cases it carries weight. For instance, the lord faced the same sort of evasion of death duties that the Internal Revenue Service faces today, namely, transfers of dutiable property before death; in this case the lord had an interest in controlling sales.⁶⁵ And, like landlords during the Napoleonic Wars who forced enclosure as a means of renegotiating long leases when the value of land rose, the thirteenth-century lord wished to control subleasing that might deprive him of the advantage of the rising price of fresh leases. Postan concludes, however, that "the purpose of control was not to restrict, still less to destroy, the village market . . . [but] to profit from his villein's transactions."⁶⁶

⁶⁴ Vinogradoff, *Villainage*, pp. 235ff. argues that this administrative convenience was important. He recognizes briefly the difficulty that subsequent exchanges would transform the system to one of consolidated plots, but dismisses it by appeal to the continuing strength of "the communal principle with its equalizing tendency."

⁶⁵ Postan's introduction to Brooke and Postan, *Carte Nativorum* p. xlvi.

⁶⁶ *Ibid.*, p. xlviii. Compare Roden, in Baker and Butlin, *Field Systems*, p. 356.

From an early date villeins took advantage of the lord's willingness to permit transactions in land. That they did so is hardly surprising, in view of the changing amounts of land that a given peasant family would require over its cycle of youth and age or of poverty and prosperity.⁶⁷ Rosamund Faith, summarizing recent work on this phenomenon by herself and Postan, among others, argues that in open-field villages of the late fourteenth century, at least on the ecclesiastical estates whose records have survived in comparative abundance, "land changed hands rapidly and on a large scale. . . . The chief function of the manorial court began to be that of land-registry for the virtually free market in peasant holdings that had come into being."⁶⁸

Even in the thirteenth century, Faith notes, "there is ample evidence of an active peasant land market," although she argues that the transactions at this early date, in contrast to the centuries of the Black Death and the decay of serfdom, were "predominantly small-scale, involving odd acres and plots, a process which only marginally affected the ownership and structure of the basic family holdings."⁶⁹ If scattered plots had no advantages to set against their inefficiencies, however, and if there was no continuing mechanism to scatter them, even such piecemeal purchases and sales of land would produce in time consolidated holdings, for a peasant would seize every occasional opportunity to buy plots contiguous to his existing ones and to sell plots far from them, or merely buy up land in one quarter of the open field. If he could not get exemption from communal rules of grazing and cropping, of course, consolidation might not be worth the considerable effort necessary to achieve it. Sometimes he could not, the difficulty being that the other commoners felt that his enclosure reduced the grazing left for their animals.⁷⁰ It is unclear why this was so, for, as was noted earlier, when each person's stint was proportionate to the amount of land he held in the open fields, withdrawal of some of it would have no effect on the

⁶⁷ Postan, *Carte Nativorum*, pp. xxxiv-xxxv; Thirsk, in Baker and Butlin, *Field Systems*, p. 260.

⁶⁸ R. J. Faith, "Peasant Families and Inheritance Customs in Medieval England," *Agricultural History Review* 14 (1966), 92.

⁶⁹ *Ibid.*, p. 86.

⁷⁰ The roll of the manorial court of Aspley Guise, Bedfordshire in 1662, for example, has a long list of enclosers who are ordered to throw open their land (Fowler, *Pre-Enclosure Maps*, p. 34). Compare Ault, *Open Field Farming*, pp. 45-46.

remaining land available per animal. The difficulty may have been that stints were sometimes not proportionate to land held, but granted by virtue of having any holding in the common fields, of whatever size, or even having a certain house in the village, whether or not land was still attached to its ownership. An encloser who could continue to put out as many animals on the remaining open fields as he did before enclosing was clearly a menace. Be that as it may, mere consolidation had some advantage, and in some regions exemptions from communal rules were granted.⁷¹

That such favorable conditions did not by any means always result in enclosure is testimony to the existence of a motive for scattering other than initial egalitarianism. It is sometimes suggested, by what may be called the land-hunger hypothesis, that an active land market increases scattering, because a peasant would buy up scraps of land at every opportunity, regardless of their location; a similar suggestion is that he sold or granted bits of land to provide gifts for the church and for his friends, dower for his daughters, or prayers for his soul, leaving the recipients of the land with scattered pieces.⁷² Occurring as they do in a context in which scattering is being criticized for its inefficiency, these suggestions have a serious flaw: free trade in land would enable peasants to achieve whatever pattern of holding they thought best for themselves, and if scattering was the result, then scattering, contrary to the premise of the argument, must have been considered to be desirable. If scattering was perceived by peasants as an evil, as it has been by most outside observers, then it was open to the peasants to reduce or eliminate the evil by mutually advantageous exchanges of land. The conclusion must be, in short, that one must either ignore the voluminous evidence of a peasant land market, or abandon the egalitarian theory of the persistence of scattered plots.⁷³

⁷¹ Thirsk, in Baker and Butlin, *Field Systems*, p. 260.

⁷² Thirsk, *ibid.*, p. 268, uses this argument, as do many others.

⁷³ The Orwins are scornful of the egalitarian theory, labeling it the "schoolboy" theory and making the same point as the one made here, with less emphasis on the market mechanism involved (*Open Fields*, p. 2): "Why did the farmers . . . not occupy compact holdings . . . equalizing differences in the quality of the land, or in its accessibility, by adjustments in the respective sizes of the holdings or in the rent assigned to them?" Yet they too are puzzled by scattering, and arrive finally at an explanation based on community feeling, similar in spirit to the egalitarian theory.

Identical difficulties afflict another explanation of the scattering of plots, which replaced egalitarianism for a time, just as egalitarianism had replaced co-aration; namely, that they were scattered as a natural result of egalitarian distribution of new village lands acquired during the communal clearing of waste, each man who contributed equal effort to the common enterprise receiving a scattered and therefore equal holding. The seminal work on the subject, an article in 1935 by T. A. M. Bishop describing such a process in Yorkshire after the devastations of the Norman Conquest, emphasized that the clearings were not communal, but individual, a point that has sometimes been overlooked in subsequent presentations.⁷⁴ If the postulate of communal clearing is nonetheless adopted, the difficulties are merely pushed to a later stage. If a large area was involved in each clearing, and if the scattering of plots had no attraction other than its contribution to equality, it may be wondered why the land was not laid out in consolidated holdings, adjusting size to quality. If a small area was involved, making the process one of gradual accretions to the village land and a consequent gradual increase in the number of parcels held by each family, it may be wondered why exchanges of lands to consolidate holdings did not occur. And in fact they often did occur: otherwise it would be difficult to explain why peasants held their land in certain limited areas of the village, however scattered within these areas. In short, there must have been some recurring and rapid mechanism working against the tendency of a market in land and in other rights to eliminate inefficient arrangements of holdings, in which case it would be this mechanism, not communal clearing of waste or egalitarian feeling, that would be the cause of scattering.

Partible inheritance, by which a holding is divided among a number of heirs rather than passing as a unit to one heir or to one group of heirs working it in common, appears at first to be just such a mechanism. Its merits in providing a continuing rationale for scattering was recognized by Bishop, who made it the central element in his theory: furlongs "were originally cleared and cultivated by individuals," but were subsequently

⁷⁴ Bishop's article is "Assarting and the Growth of the Open Fields," *Economic History Review* 6 (1935), pp. 13-29, reprinted in E. M. Carus-Wilson, *Essays in Economic History*, Vol. 1 (London, 1954), to which subsequent reference is made.

"divided up by being shared among the heirs of the original assarters."⁷⁵ By 1964, when Joan Thirsk's article, "The Common Fields," stated the theory in full, the weaknesses of the alternatives had already made it the usual explanation of medieval scattering. It has long been the usual explanation for scattering in modern times. Folke Dovring, speaking of the nineteenth and twentieth centuries, concluded that "land fragmentation on the Continent has far from diminished in importance; on balance, it has worsened over the period dealt with here. This has been above all because of the increasingly consistent application of rules on free division of inheritance," that is, the rules embodied in the Napoleonic Code.⁷⁶ Bernard Binns, pointing out that free division of inheritance is a feature of Muslim and Buddhist law as well as of Continental law, reached a similar conclusion: "The most usual cause of excessive fragmentation may be briefly restated as the influence of a social structure that creates a too great demand for a limited area of land by a population completely dependent on the land under a system of private law and custom which encourages progressive subdivision, especially subdivision to maintain, by a meticulous similarity in each subdivision, a physical equality of shares in the original holding."⁷⁷

To use this argument, a number of geographical anomalies must be explained. On a worldwide scale, the hypothesis must explain how it is that similar rules of partible inheritance or similar rates of population growth can yield dissimilar degrees of scattering. In the Gojjam province of Ethiopia, for example, partible inheritance is applied today in the most thoroughgoing fashion, with daughters as well as sons inheriting land from their mothers as well as from their fathers; in Germany during the Middle Ages, on the other hand, sons alone inherited land, and only from their father's line. Yet farms in the Gojjam province consist of few plots—something over four—by comparison with the ten or twenty effective plots and many more nominal plots of medieval open fields in Germany.⁷⁸ In England the chief

⁷⁵ Bishop, "Assarting," p. 35.

⁷⁶ Dovring, "Transformation of European Agriculture," p. 631.

⁷⁷ Binns, *Consolidation of Fragmented Holdings*, p. 18.

⁷⁸ The Ethiopian case is described by Allan Hoben of Boston University in an unpublished paper, "Social Anthropology and Development Planning: A Case Study in Ethiopian Land Reform Policy" (no date c. 1971); the German case is in Mayhew, *Rural Settlement*, pp. 27, 90, 131, 134, and *passim*.

anomaly is that partible inheritance prevailed not in the heartland of the open fields, the Midlands, but in the very region where scattering was least severe, namely, the Southeast.⁷⁹ Thirsk has suggested that partibility was more widespread than this at one time, and believes that at least in the East Midlands there is evidence of partibility causing scattering.⁸⁰ Yet in the five counties from Oxfordshire to Essex, in all of which open fields occurred, David Roden finds "no evidence of the large-scale fragmentation following partible inheritance," even in the thirteenth century.⁸¹ In any case, to posit an original partibility that died out in later times is to sacrifice the chief merit of the argument: namely, that it gives a continuing rationale, generation by generation, for the persistence of scattered holdings, and is therefore partly immune to the criticism that a market in land would eventually rectify an inefficient system of agriculture founded in the distant past.

However these empirical difficulties are to be overcome, partible inheritance does at least appear in logic to imply scattering, if not exactly by the route that one would expect. A scattered holding could be formed only by joining parts of two or more initially separate holdings: if some of John Tailer's land passes by inheritance to his nephew, Richard Smith, who inherits land from his father as well, Richard will have a scattered holding, some plots being Tailer land and some Smith land. Partible inheritance was in the Middle Ages, as it is today in societies that practice it, usually a division of the patrimony among the sons. Customs that put daughters on an equal footing with sons appear to have been rare, and daughters acquired land—dowries did not usually consist of land—only in the absence of sons.⁸² In

⁷⁹ Faith, "Peasant Families," esp. p. 84, reviews the evidence for this assertion.

⁸⁰ In "The Common Fields" and in her contribution to Baker and Butlin, *Field Systems*.

⁸¹ In Baker and Butlin, *Field Systems*, p. 356.

⁸² See Faith, "Peasant Families," p. 82, where daughters inheriting equally with sons is described as "an extreme form" of partible inheritance. Homans (*English Villagers*, p. 141) described dowries from fathers to daughters as "all in money, or houses, or livestock, or utensils, or clothes. This was probably the rule in the matter of marriage portions in the champion country of England. Dowries were not generally made in land, unless in the form of a grant of land for a term of years." Dowry "at the church door," given by the groom to his bride as a guarantee of support should he die before she did, was in land, often a third share of the estate, but reverted to

the absence of any children, the holding was usually inherited by the brothers of the dead man, and in the absence of brothers by his sisters. Consequently, if all heirs in a village married and all families had at least one son in every generation, there would be no scattering. There would be no heiresses bringing land to their marriages, and no nephews or nieces of childless couples inheriting an uncle's land. That is to say, there would be no joining of initially separate holdings. Richard Smith, with two brothers, would inherit one-third of each of his father's thirty scattered plots, but would acquire no additional land from his marriage or from his uncles. He would have a smaller holding than his father (the penalty for being in a family with more than one son), but a holding with the same number of plots.

This reasoning belies the common assertion that rapid growth of population directly increases scattering through inheritance.⁸³ On the contrary, it would appear to reduce it. The two events that cause scattering under partible inheritance in its usual form—marriages that produce no sons and marriages that produce no children at all—are less likely, the faster the natural rate of increase of the population of a village. Marriages must produce more surviving children if population is in fact to grow, implying a lower frequency of childless or sonless marriages. And in the rare form of partible inheritance in which daughters inherit equally with sons, the rate of scattering is not affected one way or the other by the rate of population growth, for no matter how quickly or slowly population is growing, all women are heiresses who add the existing average number of plots per holding to their husband's plots, thereby doubling the average number of plots per holding with each passing generation. In short, the theory implies that the rapid population growth of the nineteenth and twentieth centuries or of the thirteenth and early fourteenth centuries would have had no direct tendency to increase scattering.

The usual growth of village populations before the demographic revolution was, of course, either slow or negligible, and under these circumstances partible inheritance can be a potent

the heirs of the dead husband at the widow's death or remarriage, and could not be sold (Homans, pp. 177-91).

⁸³ The writings of Joan Thirsk may be taken, once again, as the best of a large literature. On this point see Thirsk in Baker and Butlin, *Field Systems*, p. 268. The indirect effects by way of land hunger were discussed above.

force for scattering.⁸⁴ The best way to show that this is the case is to simulate the experience of a village with no population growth, inferring the rate at which initially separate holdings would be joined. Population growth, putting migration to one side in order to simplify the argument, depends on the distribution of completed family sizes. One distribution that yields no population growth and is consistent with what little is known about medieval population is shown in Table 2-1.⁸⁵ It is assumed here that everyone marries, that there are exactly a hundred males in each fresh generation of two hundred people, and that all these take wives from within the village (in regions of primogeniture, by contrast, the rule was "no land, no marriage" and many men had no land: this assumption cannot be used even approximately, therefore, to simulate the results of a rule of

Table 2-1. A Distribution of Completed Family Size in a 200-Person Village that Yields 200 People with Each New Generation

Number of Children per Family	Number of Families	Number of Children Surviving to Marry from these Families
0	15	0
1	26	26
2	25	50
3	20	60
4	8	32
5	4	20
6	2	12
Total	100	200

primogeniture). Because marriages with no children can be thought of as being no marriages at all, but merely pairs of

⁸⁴ Indeed, if there are enough marriages lacking sons, primogeniture can be a potent force for scattering as well, because the holding was usually divided among the daughters in the absence of sons (Homans, p. 123). A close study of such details of inheritance rules may provide a way out of the difficulty that the regions of England with the most severe scattering practiced primogeniture, not partible inheritance.

⁸⁵ The distribution is calculable, although not here calculated, from wills, in the manner of F. R. H. DuBoulay, *The Lordship of Canterbury* (New York, 1966), pp. 159-60. His sample of forty-five wills of men on the estates of the Archbishop of Canterbury in the fifteenth and early sixteenth centuries (a third of which, unfortunately for present purposes, were "gent." or "esq.") contains some 20 percent with no children and 32 percent with only one (compared with 15 and 26 percent in the example here).

unmarried men and women, this assumption is not critical to the result.

The first route by which partible inheritance creates scattering is by producing heiresses, who bring land to their marriages. Only in the absence of sons will daughters become heiresses. Thus, in the one-child families in the table, half of the 26 children will be heiresses, because the probability of a one-child family having no sons is .50. The probability of a two-child family having no sons is .25, and therefore 25 percent of the 50 children of these families will be heiresses. Proceeding in this fashion through all sizes of families yields a total of 35.8 heiresses on average (out of the total of 100 women to be married) in each generation. Since under partible inheritance all males in the village inherit land from their fathers, 35.8 percent of the 100 marriages will be heir-heiress marriages and the rest heir-non-heiress marriages. The heiresses bring the average number of plots per holding in the village (call it N) to their marriages, and their husbands bring another N plots. Therefore, the average number of plots per holding when the new holdings are formed will be $N^* = (.358)(2N) + (1.000 - .358)(N) = (1.358)(N)$. That is to say, the average number of plots per holding will increase on this account 35.8 percent per generation.

The other route by which partible inheritance creates scattering is through childless families, whose land reverts to the brothers of the husband on his death. In essence, the land of Edward Cadman, dying without children, reverts to his father's estate or, if Edward was an only child, to his grandfather's estate; this newly refreshed patrimony is then split among the heirs of his father or of his grandfather in the usual way. For the distribution of family sizes given in Table 2.1, the average number of children who are heirs for each family endowed with property and having children is 1.6.⁸⁶ If Edward Cadman's

⁸⁶ The calculations underlying this result assume that all the estates increased by Edward Cadman's death are shared by families that do in fact have at least one child. The assumption is surely justified at this remove: dropping it would only add other, more remote childless marriages to the calculations, and childless marriages are in any event uncommon in the distribution used here. The nature of the calculations can be made clear by considering a three-child family. There is a probability of $1/8$ that such a family will consist of three sons (that is, three male heirs), $3/8$ that it will consist of two sons and a daughter (two male heirs), $3/8$ that it will consist of one son and two daughters (one male heir), and $1/8$ that it will consist of

land reverts to his father's estate—that is, if Edward does have siblings (the probability of this event being .69 for the distribution of family sizes in the table, given that all the inheriting families have at least one child)—the new patrimony is subject to two applications of filtering down by inheritance before it reaches the next generation, and each successive application increases the number of heirs by a factor of 1.6 on average. If his land reverts to his grandfather's estate—that is, if he does not have siblings (the probability of this event being .306)—the patrimony is subject to three successive increases of the number of heirs by a factor of 1.6. Therefore, the total number of heirs in the next generation for each childless family is $.694(1.6)^2 + .306(1.6)^3$, or about 3. In the distribution of family sizes given in the table, 15 percent of the families are childless, which yields $3(15) = 45$ holdings of N plots each descending indirectly to the next generation. By a similar logic as that for heiresses, therefore, the number of plots per holding increases on this account 45 percent in each generation.

In short, in each new generation of 200 people, 100 holdings of N plots are created by the 100 sons receiving a share of their patrimonies, 35.8 by the failure of male issue, and 45.0 by the failure of any issue, for a total of 180.8 holdings of N plots each. These are formed by marriage into 100 holdings, then, of $(1.81)(N)$ plots each on average. Partible inheritance under these circumstances increases the average number of plots per holding by 81 percent for each generation. In only six generations, or roughly 120 years, consolidated holdings of the first generation would be scattered in holdings of 35 nominal plots each. An effective number of plots of 10 or so would develop in only 80 years. The argument that scattering in the open fields can be explained by partible inheritance appears to be cogent.

Having examined the machinery of this argument in detail, however, it is now necessary to reject it—the first objection being that it is indeed mechanical. The difficulty is that once the machine has been set in motion, the hypothesis itself provides no brake on its motion. If partible inheritance is to explain scat-

three daughters (three female heirs). Weighting the number of heirs by the probability of its occurrence yields 1.875 heirs on average. A similar calculation is performed for each family size, and the results are weighted by the probability of occurrence of each family size (excluding zero-child families); this yields 1.6.

tering, it must also explain why scattering did not continue indefinitely, the 35 parcels of the example giving way to 81 percent more in the next generation, and so on, in a progression 35, 63, 114, 207, towards agricultural disaster. At the end of a long discussion of "The Role of Inheritance" at a conference held in 1951 on the subject of land tenure, during which one case after another of scattering in Europe and elsewhere was explained by appeal to a model of partible inheritance, Otto Schiller pointed out that the model is contradicted by the very fact to be explained, namely, *stable* amounts of scattering.⁸⁷ At the least, then, the model must be supplemented by some factor bringing the scattering to a halt, perhaps the increasing inefficiency of scattered plots, which becomes large enough at some point to make it worthwhile to incur the costs of consolidation through exchanging land.

The second, and more fundamental, objection is that the argument assumes that a holding is split among the heirs plot by plot, each of three brothers, for example, receiving one third of each of the thirty plots of their parents. If scattering itself had no advantages, however, one would suppose that the more sensible way of dividing the holding would be into three holdings of ten of the original thirty plots.⁸⁸ And if this method of dividing the inheritance is adopted, the model of scattering through partible inheritance collapses. If the number of plots is sufficient to permit equal portions, the division of holdings will never involve the division of individual plots. The total number of plots in the village as a whole will not, then, change from generation to generation. The average number of plots per holding will be equal to the unchanging number of plots in the village as a whole, divided by the number of holdings. If there is no population growth, the number of plots per holding will not change at all, regardless of what rule of partible inheritance is in effect—whether division among the sons or division among all the children. And if population is increasing, the average number of plots per holding will *decrease* at a rate equal to the rate of population growth.

This reasoning must be modified somewhat to take account of

⁸⁷ Parsons, *Land Tenure*, p. 573.

⁸⁸ Or "to settle the property on one of [two or more coheirs] or to sell it to another person," as was the practice in seventeenth-century Kent (Baker, in Baker and Butlin, *Field Systems*, p. 392).

an inability to divide a holding equally among the heirs when the number of plots was inappropriate: a holding consisting of one consolidated plot to be divided among three heirs, for example, would have to be split into three portions. Yet once a modest degree of fragmentation had been achieved, well below that actually observed in the English open fields, there would be little further fragmentation on this account, and none at all if, as seems reasonable, the slight inequalities of inheritances in land were ironed out with direct payments in more fungible assets, such as money or livestock. Even assuming that such side payments were impossible, no more than one plot would need to be split in each holding when the land passed to the heirs; since any number of plots can be split into equal holdings consisting of an integral number of plots plus some fraction of a single plot.⁸⁹ In the hypothetical village constructed above, whose population does not grow, there would be 100 such plots (from the 100 holdings) to be split in each generation. The increment to the number of plots per holding would be the number of heirs per holding minus one: a holding of 10 plots with three heirs, for example, would be divided into three holdings consisting of nine of the original ten plus three thirds of the original tenth plot, for a total of twelve rather than ten plots, or an increase of two. Applying this reasoning to the hypothetical example constructed earlier, the average number of heirs per holding being 1.81, 81 new fragments ($1.81 - 1.00 = .81$) would be created with each generation of heirs.⁹⁰ In other words, supposing the land of the 100 families of the village to be consolidated to begin with, the number of plots in the village would increase by 81 in each generation, in a progression 100, 181, 262, and so on, and the average number of plots per holding 1, 1.81, 2.62, and so on. Such a mechanism could perhaps explain why a consolidated holding was broken into three or four separate

⁸⁹ To simplify the analysis, it is assumed here that all holdings consist of plots of equal size, or have at least one plot large enough to serve by itself as a makeweight.

⁹⁰ This is the factor derived above by which the number of plots increases in each generation under the simple model of partible inheritance. Incidentally, the most direct way of deriving it is to observe that the 85 families (out of 100 total) that have children have on average 1.6 heirs, as was shown earlier, and that the 15 who have no children have on average 3.0 heirs. Thus, there are $.85(1.6) + .15(3.0) = 1.81$ heirs per holding on average in each generation.

plots, but it cannot explain why it was broken into a dozen or more: it would take 14 generations with no reconsolidation—conservatively, 280 years—to reach the typical figure in medieval open fields of, say, 12 effective plots per holding by this route.

The issue, then, is whether each individual plot or the entire patrimony was divided among the heirs. A technique for resolving this issue has been applied to evidence from Gillingham, Kent in 1447 by A. R. H. Baker. Baker used a survey of the manor in that year to determine whether people with the same last name (presumably brothers or the widows of brothers, or perhaps paternal cousins) held contiguous plots. If they did, as he found was sometimes the case, it would suggest that each individual plot from the patrimony was divided; if they did not, as he also found was sometimes the case, it would suggest that the entire patrimony was divided.⁹¹ Notwithstanding the ambiguity of this particular use, the method does provide a way of assessing the significance of the argument from partible inheritance. In Laxton in 1635, for example, the results are less ambiguous. Holders of land with the last name "Tailor" were the most common of the 45 or so last names in the Laxton survey, 14 Tailors having holdings ranging from $\frac{1}{2}$ to 137 acres. Yet only 4 of the 14—Thomas Sr., Alexander, Hugh, and the Widow Tailor—had any contiguous plots in the open fields. Furthermore, the nominal plots held by these 4 that were contiguous to at least one of the others amounted to only 12.7 acres out of their total holdings in the open fields of 138 acres (excluding meadows and closes, as does the figure for contiguous plots), or only 9.1 percent of the total. Only two other families—Robert and Samuell Holbem, and John and Thomas Freeman—out of the 45 landholding families (which included many families with multiple occurrences in the lists) held contiguous plots. The contiguous acreage for the Holbems was $1\frac{1}{2}$ acres out of their total holdings (including closes) of 59 acres, and that of the Freemans $1\frac{1}{2}$ acres out of 100 acres. Partible inheritance was certainly not a powerful force supporting the scattering of plots in Laxton, and yet the scattering persisted in full vigor for another three centuries after the survey of 1635.⁹²

⁹¹ A. R. H. Baker, "Open Fields and Partible Inheritance on a Kent Manor," *Economic History Review*, 2d ser. 17 (1964), 1–23, esp. pp. 8ff.

⁹² All these figures are compiled from the book of survey and pp. 136–47 in the Orwins, *Open Fields*.

Until such methods are applied to a wide sample of English villages, we will not know whether individual plots in the open fields were split on inheritance frequently enough to provide a cogent explanation of scattering. One can, however, directly examine the logic of splitting. The usual rationale is that the splitting of individual plots was necessary to achieve perfect equality in the new holdings formed from the patrimony. As Thompson put it in explaining scattering in modern Greece, equality demanded the "punctilious apportionment of . . . land even at the price of excessive fragmentation."⁹³ Peasants accepted this Judgment of Solomon, it is argued, because, although costly, it was fair. At its root, then, the explanation of scattering based on partible inheritance, like the other explanations we have examined, depends on the premise that scattering was thought to be necessary to achieve equal qualities of holdings. And it is subject to similar objections, principally the objection that scattering is an inefficient way of achieving equality. In an atmosphere of mutual suspicion, to be sure, it might be difficult to divide the entire holding into new holdings without each heir claiming that another's was superior in some way. There is, however, an obvious solution to this difficulty, namely, to form approximately equal holdings without unwarranted scattering, and then to determine which heir got which holding by drawing lots. As was noted earlier, open-field villages commonly used this method in the annual allotment of meadow lands, and it was also used by villages in regions on the fringe of the open fields; in Scotland and in Russia, for example, where the plow-land itself was reallocated periodically. The method was hardly foreign to the peasant mentality. And if the modern Greek case can be used to support the assertion that sometimes division by lot was not in fact used, it can also be used to support the opposite assertion: in the village of Vasilika on the Boeotian plain, for example, this method is applied in a thoroughgoing fashion to the lands, the animals, the buildings, and the equipment of the patrimony.⁹⁴

Finally, aside from all these preliminary difficulties, the argument from partible inheritance ignores the possibility of sub-

⁹³ Thompson, *Farm Fragmentation in Greece*, p. 36.

⁹⁴ Ernestine Friedl, *Vasilika, A Village in Modern Greece* (New York, 1965), pp. 60-64, "The Division of the Patrimony."

sequent exchanges of land. The historians of medieval agriculture in the southeast of England are especially sensitive to this point. Speaking of the tenure of land peculiar to Kent, "gravel-kind," under which land descended by partible inheritance but could also be bought and sold with a minimum of the usual feudal restrictions, A. R. H. Baker argues that "the former produced fragmentation, but the latter made possible consolidation."⁹⁵ He is able to rationalize, therefore, the observed pattern in Kent of simultaneous fragmentation and consolidation: as F. R. H. DuBoulay put it, "the fragmentation of inheritance was liable to be changed or even reversed by the operation of the land market."⁹⁶ And as, over time, the markets both in land and in other products and factors of production in the open fields developed and became less expensive, the argument that inefficient arrangements could not long survive market erosion is strengthened.

Scattering as Behavior toward Risk

One explanation of the scattering of plots in the open fields that does stand up under scrutiny is that scattering reduced risk.⁹⁷ Although he did not marshal the evidence for the point, and leaned towards an explanation of scattering in terms of communal solidarity, Marc Bloch is exceptional among historians of the system in emphasizing the force of avoiding risk. The consolidation schemes encouraged by French governments in the eighteenth century, he argued, were frustrated not only by the conservative and distrustful attitude of the peasantry, but also by their concern "to reduce exposure to agrarian accidents . . . to a minimum by working plots scattered over the whole terrain." If the heavy wheeled plow of the open fields could explain the extreme length of plots in regions in which it was used, risk aversion could explain their extreme narrowness, and therefore their large number, even in regions in which a lighter plow was used: "If the plots were dispersed . . . everyone had

⁹⁵ Baker, "Open Fields and Partible Inheritance," p. 19.

⁹⁶ F. R. H. DuBoulay, "Partible Inheritance in Medieval Kent," unpublished manuscript, p. 18, quoted in Baker, "Open Fields and Partible Inheritance," p. 20.

⁹⁷ What follows is a radical condensation of a long paper on the subject, available on request, "English Open Fields as Behavior towards Risk."

some hope of avoiding the full impact of natural or human disasters—hailstorms, plant diseases, devastation—which might descend upon a place without destroying it completely.”⁹⁸ Bloch’s argument is occasionally echoed in the work of economists and, more commonly, of anthropologists. In Bangladesh (then East Pakistan) in 1970, farmers “were strongly opposed to consolidation since fragmentation of land holdings was their prospective protection against loss of crops due to natural disasters,” especially flooding that would leave high land (a mere six to ten feet above the rest) untouched.⁹⁹ Scattering of plots by the Amhara farmer of Ethiopia “is highly desirable, . . . for by providing him with fields of different qualities it enables him to diversify his crops and reduce the risk of total crop failure.”¹⁰⁰ And one can find testimony that the desire to avoid risk caused scattering in a wide variety of other anthropological studies—of the Hopi Indians, of the Karugu in Tanzania, and of the peasants in southwest Switzerland.¹⁰¹

In the English case the explanation passes the first and most elementary test applied to the explanations discussed above, namely, scattering does follow from its premises. The object was to hold a diversified portfolio of locations. The land of England is notoriously variable, even over the two square miles or so of the typical village, in underdrainage, in slope, in soil structure and chemistry, and in exposure to frost, sun, and wind, each type being sensitive in a different way to each different pattern of weather over the farming season. A part of the village with sandy soil on a rise would shed excessive rain, while one with clay soil in a valley would hold the scanty rain of a dry season; a place open to the wind would grow wheat likely to lodge if there were high winds and rain at harvest time, but free of mold in a generally wet year, while a sheltered one would be relatively immune from windy disasters, but less dry and more moldy on that account; and one plot could be hit—to name a few more of the risks from which an English peasant would want insurance—

⁹⁸ Bloch, *French Rural History*, pp. 233, 55.

⁹⁹ John W. Thomas (Development Advisory Service, Harvard), personal correspondence.

¹⁰⁰ Hoben, “Social Anthropology,” p. 34.

¹⁰¹ Melville J. Herskovits, *Economic Anthropology* (New York, 1952), p. 363, citing work by Beaglehole, Lowie, and Forde on the Hopi; Beidelman, *The Karugu*, p. 18; and Robert M. Netting, “Of Men and Meadows: Strategies of Alpine Land Use,” *Anthropological Quarterly* 44 (1972), 134.

by flooding, fire, insects, birds, rust, rabbits, moles, thieves, hail, and wandering armies—while another close by would go free. Furthermore, a year of high prices for wheat could be a year of low prices for oats and barley, adding a price risk to the yield risk, and consequently a peasant would scatter his holdings among the three fields of the village. Under such circumstances, in short, it behooved the peasant to hold many types of land, reducing the variability of his income from year to year, albeit (in view of the inefficiencies of tiny scattered plots) at the cost of a smaller average income. The inefficiencies of the open fields were premiums on an insurance policy in a milieu in which agricultural yields were low and unpredictable, and in which the costs of a shortfall—at best crushing debt or malnutrition and its associated diseases, at worst starvation—were high.

These ideas can be given a precise expression. A peasant dividing his A acres into N plots, each of which had a variance of yield of σ^2 and a correlation of yield from year to year with all the other plots of R , would achieve a variance for his entire holding of $\frac{A^2\sigma^2}{N} [1 + (N-1)R]$. That is, the larger N is, the lower the variance. The larger N , however, would reduce the average yield: the yield is at a maximum when the holding is consolidated into one large plot ($N=1$), easy to visit, to guard, to work with massive implements, and the yield is at a minimum when the holding is scattered into many tiny plots ($N=100$, say). A convenient mathematical form for this notion is that the expected total yield of a holding is $Ac\left(\frac{A}{N}\right)^\epsilon$. The parameter ϵ measures the inconvenience of small plots (more precisely, it is the elasticity of yield with respect to the average size of plots, A/N) and the parameter c measures the productivity of the tools, techniques, land, and labor in agriculture. The peasant sacrifices expected total yield from his land in exchange for a lower variance of the total yield by increasing the number of plots, N . Let r be the ratio at which he is willing to sacrifice bushels of expected yield (or, when prices are introduced into the analysis, shillings of expected income) in exchange for one bushel squared (that being its units) lower variance. It follows that the best N he can choose is

$$N = \left[\frac{r\sigma^2(1-R)}{\epsilon c} \right]^{\frac{1}{1-\epsilon}} A$$

The equation is in accord with common sense. When ϵ is small (as it was), and $1/(1-\epsilon)$ therefore close to 1, it is easy to see that the equation asserts that the best N will be larger, the larger are the valuation of insurance (r), the variance of yield on a typical plot (σ^2), and the acreage of the holding (A), and the smaller are the correlation among yields in the village (R), the inconvenience of small plots (ϵ), and the productivity of agriculture (c).

The equation is also in accord with the evidence. In particular, when the values observed in medieval English agriculture for the variables on the right-hand side of the equation are inserted into it, the equation produces the observed number of plots. The detailed proof of this surprising assertion is too involved to present here, but the logic of the result is straightforward enough. Consider, for example, a 25-acre holding, one-third of which lies fallow each year ($A=16.7$), that was broken into a dozen effective plots ($N=8$, because 4 of the 12 lie fallow), and that on consolidation would have experienced a rise in productivity of 8 percent (well below the value observed in the enclosure movement of the eighteenth century). It can be shown that these data imply an ϵ of around .02 and a c near 1.0 (when output per acre is taken to be 1.0, to set the scale). It can also be shown (chiefly from the records of medieval demesnes and of modern experimental farms) that on such a holding $R=.3$ and $\sigma=.6$ (when, again, output per acre is 1.0). It can be shown, finally, that r must have been in the neighborhood of .02. These estimates together imply a best N of 8.3 effective plots or so, startlingly close to the observed value of 8. The closeness is not especially significant. What is significant is that at, say, only 3 plots, there is a net advantage in having more plots, and at 20 this advantage has long been offset by reduced productivity. The explanation in terms of risk aversion predicts correctly not only that scattering would have existed, but that it would have existed to the approximate degree that, in fact, it did.

The explanation passes the second test as well: it is not as vulnerable to erosion by market exchange as are the alternative explanations. Whereas other explanations must contend with the ample evidence for markets in grain, labor, grazing rights, oxen, and land, the market for insurance was poorly developed. A modern farmer can hedge against price risks by selling forward

in organized commodity markets, but even he does not usually have available an insurance contract for hedging against yield risks. The peasant in an open-field village had available still fewer market arrangements for insurance, which drove him, the argument avers, to insure himself by scattering his plots. Apparently (given their absence), markets in insurance were expensive, and so the device of scattering, so costly in output foregone, was protected from market erosion.

Some care should be taken to use a wide definition of "insurance." Even in the most primitive agricultural economies there are available, at least potentially, devices for spreading risk that need not entail scattered plots, as when one peasant buys a share of another's crop. Peasant partnerships in land were, in fact, common in the areas of partible inheritance, which may be one reason why these places (East Anglia, for example),¹⁰² contrary to the usual argument that partible inheritance causes scattering, had from an early date less scattering than the Midlands. Where extended families prevailed (the Balkan *zadruga* or perhaps the subdivisions of the Celtic clan), these could provide insurance without scattered plots—at the cost, to be sure, of shirking by some members of the family. Common charity among neighbors could provide insurance as well, although the volume of sermonizing on charity in the Middle Ages is no doubt testimony to its scarcity. And just as the relationship of peasant with peasant could provide protection against risk, so too could the relationship of tenant with landlord, for the landlord might share the risk of variations in yield (and the rewards for bearing the risk) by extending loans in bad years (at the cost of bad debts), or by entering into sharecropping arrangements with his tenants (at the cost of supervision), as he did in parts of France. Sharecropping was not unknown in England, although it appears only fleetingly in the records because it had no status in feudal law.¹⁰³ In short, the evidence is mixed, but it may be concluded tentatively that in most circumstances scattering was a cheaper form of insurance than the available alternatives.

Finally, the explanation in terms of risk aversion passes the

¹⁰² See Miller, *Abbey and Bishopric of Ely*, pp. 130, 134, speaking of freeholds in Norfolk and the Isle of Ely in the thirteenth century.

¹⁰³ Eric Kerridge, in *Agrarian Problems in the Sixteenth Century and After* (London, 1969), p. 52, gives examples from the seventeenth century, some in open field regions.

test of consistency with the timing and extent of open fields and enclosures. The Midland clays were always more sensitive to weather than the free-draining sands of eastern England; it is not surprising, then, to find the Midlands slower to enclose. The peasants of the southeast and perhaps of the coast generally, involved from an early date in the diversified economy of London and the northwest coast of the Continent, faced broader and therefore more stable markets for their crops than did peasants farther inland, and could diversify their personal portfolios more easily outside of agriculture; it is not surprising to find their lands enclosed early—if, indeed, they were ever open. Nor is it surprising to find enclosure spreading from the sixteenth century on, as wider areas were brought into the network of national specialization, or as the security of property and the depth of the local capital market increased.

In fact, to return briefly to the formal model, each of the terms in the equation for the best number of plots moved, on the eve of enclosure, towards reducing that number. The variability of yields, σ , was reduced from the seventeenth century on by the introduction of disease-resistant grains, by the control over drainage represented by floating meadows, and by more reliable crops for feeding animals. As the variability fell, the uniformity (R) rose, as did the average yield (c). These changes in technique and in the direction of investment, furthermore, often increased the inconvenience of small plots (ϵ): small plots made it necessary to engage in cumbersome negotiations with one's neighbors to float a meadow; and they made it more difficult to specialize in the rearing of livestock, as was permitted by the availability of cheaper fodder. Finally, the rise in income and the wider opportunities for diversification outside of agriculture reduced the value of diversifying inside it (r).

The interpretation of scattering as behavior towards risk, then, has much to commend it. It does not rely, as do the alternatives, on an assumption that peasants adopted unnecessarily inefficient means of achieving their objectives. Nor does it rely on an assumption that chief among those objectives was equality. Finally, although much remains to be done in testing its applicability to the history of English open fields in detail, it agrees with the grosser facts of that history. If the interpretation survives further tests, the history of the open fields will need re-

writing, as a history not of simple villagers driven by motives of communal solidarity, but of calculating farmers driven by motives of survival in conditions of extreme poverty and extreme uncertainty. And the romantic version of English agricultural history, so long under scholarly attack—of communities of peasants whose love of equality permeated even their economic affairs, wrenched from the soil by the new and grasping forces of market capitalism—will need further rewriting.