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## The Economics of Enclosure: A Market Analysis

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### *The Great Metamorphosis and Its Historians*

"If in the agrarian history of Europe there is one really striking transformation," wrote Marc Bloch, "it is the one that took place in the greater part of England, from about the beginning of the 15th century up to the early years of the 19th—namely the great enclosure movement. . . . Everything about this great metamorphosis catches and holds our attention."<sup>1</sup> So it does, and everything about the age of parliamentary enclosure that consummated it has caught and held special attention. Making all due allowances for the continuity of enclosure from century to century—the continuity of history is an easy theme, for it is usually a true one—the special place of the last century of enclosure in the attention of historians is fully justified on many counts, among them the statistics on the share of England's land enclosed after 1700.

The statistics, to be sure, are flawed for many reasons: the detailed records relate to enclosure by private act of Parliament alone, and the area enclosed by agreement, which was very large, must be inferred as a residual; the base point for the residual must be uncertain estimates by contemporaries of the area open or enclosed before the age of parliamentary acts; some few of the acts, indeed, especially before 1760 or so, merely confirm earlier private agreements; how to treat the enclosure of waste lands, even when they are catalogued separately in the parliamentary

<sup>1</sup> *Land and Work in Medieval Europe: Selected Papers by Marc Bloch*, translated by J. E. Anderson (New York, 1969), p. 49.

records, is conceptually difficult, especially during the massive extension of cultivation in the Napoleonic Wars; even within a nominally open-field village a substantial portion of the acreage in 1700 may have been "anciently enclosed," and it is uncertain in many cases whether or not this acreage was included in the enclosure awards. For some counties the uncertainty of earlier estimates made by Gonner, Slater, and Gray before World War I on the basis of aggregate parliamentary records, travellers' accounts, and other national sources,<sup>2</sup> has been narrowed by local history in the style of J. D. Chambers and his students. The importance of voluntary enclosures, to take an early example, was confirmed in 1932 by Chambers' own finding that in eighteenth-century Nottinghamshire, 41 percent of the land was enclosed by voluntary agreement, against 25 percent with parliamentary sanction.<sup>3</sup> Until all the counties of England are treated in similar detail, however, or until a proper random sample of the histories of enclosure in the 8500 or so parishes of England is collected, the precise statistical dimensions of the last century of the enclosure movement will remain obscure. Nonetheless, through the statistical haze one can discern its crude outlines: out of the 24 million acres of useful land in England (excluding Wales); some 6 million acres were enclosed by parliamentary act and, much more speculatively, perhaps 8 million acres by private agreement after 1700.<sup>4</sup> That is, at least half the agricultural land

<sup>2</sup> E. C. K. Gonner, *Common Land and Inclosure* (London, 1912; reprinted with an introduction by G. E. Mingay, London, 1966); Gilbert Slater, *The English Peasantry and the Enclosure of Common Fields* (London, 1907); H. L. Gray, *English Field Systems* (Cambridge, Mass., 1916).

<sup>3</sup> J. D. Chambers, *Nottinghamshire in the Eighteenth Century* (London, 1932), p. 149. These figures refer to 1700-1800. Twelve percent of the land area of Nottinghamshire was enclosed before 1700, and 22 percent remained unenclosed in 1800.

<sup>4</sup> The acreage of agricultural land, including arable, meadow, pasture, and woods, is taken from the testimony of W. Couling to the Select Committee on Emigration (1827), quoted in Lord Ernle, *English Farming Past and Present*, 6th ed. (Chicago, 1961; a reprint with introductions by G. E. Fussell and O. R. McGregor of the 5th ed., 1936), p. 503. It agrees with the estimate for 1688 of King, quoted on the same page. The acreage enclosed by act is the estimate of F. Clifford in *A History of Private Bill Legislation*, Vol. 1 (London, 1885), p. 495. The acreage enclosed by agreement is an estimate (or, more candidly, a guess) by Gilbert Slater in a review of the Hammonds' *The Village Labourer* in *The Sociological Review* 5 (January 1912), 63-65. It is meant to apply only to the eighteenth century, and might be taken, were its foundation in fact indisputable, as a lower bound on the acreage enclosed by agreement over the entire period, 1700 to the present.

of England was enclosed in the eighteenth and early nineteenth centuries.

Such statistical proofs of the importance of eighteenth-century enclosure have not gone unchallenged. Eric Kerridge, estimating that only a quarter of the land remained to be enclosed in 1700 (leaving a still smaller share to be enclosed by the parliamentary procedures that became popular in the second half of the century), can stand as the most persuasive representative of the view that "the hoary fable of the supreme importance of parliamentary enclosure should be relegated to limbo."<sup>5</sup> Kerridge's estimate, however, includes Wales, as the one here does not. Furthermore, when we map out his evidence by farming region, it appears that on his own reckoning about 45 percent is the correct figure for England alone. The share of land still to be enclosed in 1700 is in any case a low estimate of the more relevant figure—output or employment on such land—because the land of the Midlands (where by all accounts the open-field system survived longest) was intensely cultivated. It might be argued that there is direct evidence of earlier enclosure on a large scale, especially in the sixteenth century, when, to recall another set of hoary fables, sheep ate men. There seems to be no compelling reason, however, to reject Edwin Gay's calculation (as many historians nonetheless have, following Tawney in this) that under 3 percent of the cultivated land of England was enclosed from the middle of the fifteenth to the beginning of the seventeenth century.<sup>6</sup>

The eighteenth century, then, in the second half of which Parliament added broad powers of compulsion to the tools available for dismantling the open-field system, is the preeminent century of English enclosure. In the eighteenth century agriculture was still a large part of English income, and one might expect that the spectacle of a large part of the nation's productive apparatus being transformed by enclosure would have inspired elaborate historical inquiries into its causes and its consequences for efficiency. Yet the literature on enclosures, like the literature on open fields, passes lightly over causes, and emphasizes the effects on equity to the neglect of the effects on efficiency. An emphasis on equity rather than efficiency, and a lack of curiosity

<sup>5</sup> *The Agricultural Revolution* (London, 1967), p. 24.

<sup>6</sup> E. F. Gay, "Inclosures in England in the Sixteenth Century," *Quarterly Journal of Economics* 17 (1903), 576-97.

about the causes of enclosure, was to be expected, perhaps, in the pamphlet war among contemporaries, but it was carried forward in the nineteenth century by British scholars such as Thorold Rogers and Arnold Toynbee, who were puzzled by the decline of the yeoman; and by continental scholars such as Wilhelm Hasbach and Hermann Levy who, viewing the scene from the perspective of agricultural societies with a large class of peasant landowners, were fascinated by the dichotomized English system of masters and men, and by the barbaric way in which it was achieved.<sup>7</sup> The barbarism was brought to the center of the stage by the Hammonds in *The Village Labourer*, first published in 1911.<sup>8</sup> Much of the literature on enclosures since then has concerned itself with rejecting or supporting their implied political message, and the great bulk of it has adopted their definition of the historical issue involved. Historians of the old and the new systems of agriculture have treated efficiency as a matter of improvements in agricultural technique, such as new crops and new methods of drainage, or of improvements in marketing. Changes in agricultural organization within the village have been discussed in detail in relation to changes in the social classes of rural England, but not to changes in output. Thus, when W. G. Hoskins describes peasant land sales in Wigston Magna, Leicestershire, in the late sixteenth century, he asks questions about the distribution of property by class, and not whether the inefficiencies of the open-field system were altered by the sale and exchange of plots; when he discusses the village's enclosure in 1761-66, his questions again concern the weight of various social classes in the proceedings and the impact of enclosure on their strength in the community, not whether enclosure affected the efficiency of agriculture.<sup>9</sup>

This is not to say that the effects of agricultural organization and reorganization on equity should be ignored—they are of

<sup>7</sup> Marx's chapter 27 in *Capital* (Vol. 1) is, of course, the *locus classicus*. W. Hasbach, *A History of the English Agricultural Labourer* (London, 1908) and H. Levy, *Large and Small Holdings* (Cambridge, 1911) used the pamphlets as sources intensively. It is therefore not surprising that they, like many other historians of enclosures before and since, fell into the mental categories of the pamphleteers, categories primarily of equity, not efficiency.

<sup>8</sup> J. L. and Barbara Hammond, *The Village Labourer*, 4th ed. (London: 1927), reprinted for British Publishers Guild (London, 1918), 2 vols., is the edition to which subsequent reference is made.

<sup>9</sup> *The Midland Peasant: The Economic and Social History of a Leicestershire Village* (London, 1957), pp. 115-30, 247-60.

interest in their own right; we will see too that understanding the distribution of the spoils is essential for estimating their size and their causes. But the emphasis on equity has produced an unbalanced view of the enclosures of the eighteenth century. Aside from summary judgments based on scant evidence that they were "important" or "unimportant," there have been no estimates of the impact of enclosures on national income, and little inquiry into the reasons they occurred.<sup>10</sup> Reorientation is in order.

### *Cutting the Gordian Knot: The Costs of Enclosure*

The gradual decline of the riskiness of farming can explain, perhaps, why the dissolution of the English open fields occurred chiefly in the seventeenth or eighteenth century, rather than in the thirteenth or fourteenth. It cannot explain without supplement, however, why enclosure was especially intense in the second half of the eighteenth century, or why the intensity of enclosure varied from year to year or from village to village. For purposes of explaining the persistence of the open fields over many centuries it is natural to emphasize, as did the previous essay, the power of markets to erode inefficient arrangements. Each separate use of the market reduces the inefficiencies, and the summation over centuries of these small steps can be expected to eliminate them entirely. For purposes of explaining as relatively brief an episode as the enclosure movement of the late eighteenth century, however, it is natural, in contrast, to emphasize the limits on the market's power to erode inefficiency—the limits, that is, imposed by the costs of engaging in markets. Here there is no passage of centuries to reduce the costs to insignificance, only sixty years of intense effort in leaping over them. The open fields could be propped up for many years (if not for many

<sup>10</sup> The unsettled state of thinking on the issue of efficiency can best be illustrated by contrasting the opinions on it rendered in two useful summaries of the recent literature on agricultural change in the seventeenth and eighteenth centuries: E. L. Jones, "Editor's Introduction" in his *Agriculture and Economic Growth in England 1650-1815* (London, 1967), and Peter Mathias' discussion in his *The First Industrial Nation* (London, 1969). Jones: "Novel systems of husbandry thus account much more for the new 'responsiveness' of agricultural supply than do improvements in agrarian organization" (p. 12); Mathias: "Enclosure was quantitatively the most important single movement affecting land use because it made all other innovations possible" (p. 73). Neither looks deeply into the causes of enclosure.

centuries) when it was expensive to exchange land. Clearly, then, the costs of changing from one system of agriculture to another belong in an account of the enclosure movement.

The costs of enclosing open fields were tightly bound to the legal methods for achieving enclosure. If one reflects that enclosure was a mere reassignment of property rights in land, it becomes plain that there is no purely technological reason that an enclosure should have been costly; if imposed from without with no regard for equity, it could have been achieved overnight. By a stroke of his pen a conqueror can achieve the result of eliminating inefficiencies in an earlier social arrangement, on which a society of laws must spend many years and much labor. If two identical villages are enclosed, one by expropriation and the other by mutual agreement constrained by laws, and if voluntary and legally guaranteed exchange of services is permitted in both villages after the enclosures, the allocation of resources, aside from the effect of the distribution of income itself on allocation, will come to be identical in both. Technology and the amounts of physical and human resources available in the two villages being the same, the most efficient method of organizing agriculture in the two will be the same, and, consequently, whatever the distribution of ownership of the resources available, the owners will deploy them in the same way. The only difference in the aggregate incomes of the two villages, without regard to the distribution of incomes within each, will be that the enclosure under the law will have been a good deal more expensive. Legal constraints on enclosure for the purpose of preserving equity, then, had the effect of making enclosure more expensive than it need have been.

The legally constrained agreements in question varied in complexity and solemnity from temporary exchanges of land among a few peasants to full parliamentary enclosure. Each of the alternative routes to enclosure had its own special array of costs, increased by the notoriously clotted state of the law of land and contract before the reforms of the late nineteenth century, and, therefore, even as parliamentary procedures cheapened and became the prevalent form, the older alternatives continued to be used in many enclosures. Aside from the seizure of wastes by the lord of the manor under the Statutes of Merton and Westminster (to begin at the beginning), under the common law

perhaps the oldest and most natural procedure was consolidation by the piecemeal exchange of land, each landowner slowly building up a more and more consolidated holding until enclosure was accomplished. An alternative to this method was a simultaneous agreement to exchange lands. Simultaneous exchange had the advantage over piecemeal exchange that it more rapidly achieved whatever gains were to be had from cultivating consolidated plots, but it had the disadvantage that it required one large transaction rather than several small ones. A peasant who entered such an agreement was taking the risk that his new and unfamiliar holding would be substantially worse than his old one, a risk he did not face if he built up a new holding slowly, testing each piece of land as it was bought.<sup>11</sup>

For either method, the common law put up many obstacles. One obstacle, which, it has already been argued, must on the whole have been relatively minor, was that the lord of the manor had the right (except by local custom in Kent) to permit or to prevent the exchange of lands among those who held lands of him.<sup>12</sup> It is not immediately obvious why this would have slowed enclosure, especially when the lord-vassal relationship acquired the character of a landlord-tenant relationship, as it did increasingly in early modern times; after all, the landlord stood to gain, or at least did not stand to lose, from any increased efficiency of his tenants. Yet the power to permit implies the power to charge a fee for permission, and when he was not constrained by tradition to charge only a nominal sum, the lord of the manor could extract some or all of the mutual gains from exchange for himself, and thereby discourage it.

The law raised obstacles to the exchange of land in more direct ways, as well. For the larger freeholders, the ingenuity of the

<sup>11</sup> The analysis of the choice between slow and rapid methods of enclosure is probably more complex than this simple argument suggests. This argument is at least capable of being rejected by the facts—it would be rejected, for example, if villages with uniform land were no more likely to enclose by simultaneous agreement than villages containing many different types of land; and if a rise in the interest rate had no tendency to increase the share of enclosure accomplished by rapid methods (the higher interest rate would tend to raise the relative advantage of direct, brief methods of enclosure).

<sup>12</sup> The Orwins, with many other students of the open fields, put a good deal of emphasis on this legal obstacle to enclosure, attributing the enclosed state of Kent to its absence there. *The Open Fields* (Oxford, 1938), p. 68. But see the discussion of the land market in the previous essay.

common law lawyers in protecting a family's estate for all time from the depredations of profligate members of the line had by the eighteenth century reversed earlier tendencies towards the freer alienation of their land. For the copyholders, the ambiguity of their title long discouraged them from exchanges, the more so as they shared with the freeholders, large and small, the burdensome expenses imposed on transactions in land by the law and by the lawyers.

Some enclosures would not be worthwhile if they could not be accomplished rapidly by simultaneous agreement, extinguishing communal rights in an entire village, and under the common law simultaneous agreement to enclose was difficult to achieve. All those who owned rights of any sort in the open fields had to be brought into the agreement for it to be a legally binding contract, for the law quite reasonably required that a man's consent be obtained before the community could meddle with his property. What was perhaps less reasonable was that another part of the common law simultaneously made it impossible for some—minors, for instance, or those with life interests in entailed estates—to give their consent. In the seventeenth century men eager to enclose increasingly called on the other law of England, equity, to help them out of this difficulty.<sup>13</sup> Much of the county of Durham, and parts of Lancashire and Cheshire, for example, were enclosed in the seventeenth century by recourse to the Courts of Chancery or Exchequer, where the agreements were cast in the form of a collusive suit by one party in the village against another. In 1666 a bill in Parliament affirming the binding force of enclosures ordered by equity courts failed however, and this route to enclosure was partially blocked. In most counties it had only infrequently been traveled, and in the middle of the eighteenth century statute law—parliamentary procedures for enclosures—superseded it even more completely than the older common law procedures of voluntary agreement.<sup>14</sup> In 1795, a select committee remarked of collusive actions in Chancery, in its *Report on . . . the Means of Promoting the Cultivation . . . of the Waste* (p. 24), that "from the difficulty and expense attending such proceedings, they have been long disused." We do not know

<sup>13</sup> The most detailed study of this method of enclosure is E. M. Leonard, "The Inclosure of Common Fields in the Seventeenth Century," *Transactions of the Royal Historical Society* n.s. 19 (1905), 101–46.

<sup>14</sup> *Ibid.*, pp. 232–33; Gomner, *Common Land*, pp. 55–57.

whether the degeneration of proceedings in Chancery (on their way to the horrors of Jarndyce and Jarndyce),<sup>15</sup> or whether the opening of an alternative and cheaper route through statute law was responsible for the abandonment of the route through equity. In any case, increasingly during the eighteenth century enclosure became a matter for special parliamentary action.

A parliamentary statute to enclose had two related advantages over the procedures available under either equity or the common law. It had, first, the advantage of special solemnity and permanence deriving from its constitutional power to override much of the other law. A very early act, of 1725, confirming the enclosure of a village in Leicestershire, was sought because, in the words of the bill, "the Agreement of the said Parties to the said Articles can [not] be made absolutely valid and effectual to answer the purpose thereby intended without the Aid of an Act of Parliament."<sup>16</sup> Indeed, if the full force of the statute was not directed at extinguishing the pattern of rights prevailing under the open fields, not even a parliamentary act was capable of making good an enclosure. A case in point was described in the Buckinghamshire report to the Board of Agriculture. An agreement in a village to exchange lands was ratified by Parliament, but despite this precaution, apparently because the new allotments were not properly fenced and were therefore not fully legal enclosures, one of the villagers was able to destroy the agreement fourteen years later, quite legally, by putting his flock of sheep out to graze in the traditional season on his neighbors' fields planted in clover.<sup>17</sup> The full parliamentary procedures, then, were necessary to prevent one man from imposing on his

<sup>15</sup> Dickens wrote in *Bleak House* (Cambridge, Mass., 1936; first pub. 1853), pp. 2–3: "This is the Court of Chancery . . . which gives to monied might the means abundantly of wearying out the right; which so exhausts finances, patience, courage, hope; so overthrows the brain and breaks the heart; that there is not an honourable man among its practitioners who would not give—who does not often give—the warning, 'Suffer any wrong that can be done you rather than come here!' . . . Jarndyce and Jarndyce drones on. This scarecrow of a suit has, in course of time, become so complicated that no man alive knows what it means."

<sup>16</sup> "An Appeal for confirming Articles of Agreement . . . in the Township of Norton-juxta-Twisscross," quoted in G. R. Fay, *Great Britain from Adam Smith to the Present Day* (New York, 1928), p. 233.

<sup>17</sup> James' and Malcolm's *General View of the Agriculture of Buckinghamshire* (1791), p. 29, quoted in T. E. Scrutton, *Commons and Common Fields* (Cambridge, 1887), p. 120 and in Ernlé, *English Farming*, p. 162.

fellow villagers a revival of the open fields whenever it suited his immediate convenience.

The second advantage of a parliamentary statute was that it eliminated the power formerly vested in each villager to block the agreement at the outset. The rule of unanimous agreement in the procedures under common law and equity would not have created difficulties if there had been market competition to set the terms of the agreement. If Jack and Tom fall to quarreling about the price at which to exchange wheat for leather, they have only to reflect that the other could easily take his business elsewhere, and to ascertain what price the other could get elsewhere, to end the quarrel and strike a bargain. Under the circumstances created by the rule of unanimity in an agreement to enclose, however, the sponsors of an enclosure of a village had nowhere to turn if one of the owners of common rights proved recalcitrant. That one man could veto the enclosure, both by virtue of the legal requirement that he agree, and by the threat he posed to the new arrangement by the potential exercise of his ancient and legal rights if the rest of the villagers concluded an enclosure without his agreement. With each man placed in a position of monopoly with respect to the village as a whole, each had an incentive to bargain for a large share of the spoils of enclosure in exchange for his vote in favor of it, and the amount he could in principle extract was limited only by the total gain to the village as a whole from accomplishing it. Under these circumstances, it is apparent that only universal altruism or strong social pressures to conform could prevent the negotiations from breaking down. And this obstacle to agreement would obtain even in the unlikely event that no proprietor, whether from a rational calculation of his advantage or from mere perversity, was opposed to enclosure.

The parliamentary procedures, in contrast, required only a majority, and therefore broke at once the monopoly power of the parties to an enclosure. The usual majority required in the early years of the procedures was four-fifths of the land of a village, voted by its owners. This formula was itself significant. Under both the common law and equity, an owner of any rights in the open fields, a category that included tenants owning long leases (sometimes even those owning yearly leases) and cottagers owning minor rights, such as that of gathering the gleanings of the

harvest, was considered an interested party whose veto was final.<sup>18</sup> It was the elimination of the veto itself, however, that was the chief advantage parliamentary statutes had over procedures available in case law. The amount a man could extract from the sponsors of an enclosure was now limited by the substitutability of others' votes for his in achieving a majority. The transfer payments—or, in more direct language, bribes—required for an agreement, and the negotiating costs of fashioning an agreement, were sharply reduced at a stroke. As Blackstone put it, speaking of the tangle of legal restraints on property developed in equity or common law, "in these, or in other cases of the like kind, the transcendent power of parliament is called in, to cut the Gordian knot."<sup>19</sup>

Why the cutting of the knot was delayed until the middle of the eighteenth century is unclear. The power of Parliament was less than "transcendent" under the Tudors and Stuarts, and, coupled with the opposition of the executive on social grounds to the supposed depopulating effects of enclosure, this may have limited the use of the parliamentary route for a time. The first enclosure of arable land by act appears to have been in parts of the manors of Marden and Bodenham, Herefordshire, in the fourth year of James I, but the experiment was not repeated until the end of the seventeenth century, and did not become commonplace until the 1760s.<sup>20</sup> The tightening grip of the landed classes on the machinery of Parliament under the first two Georges very probably had much to do with the gradually increasing popularity of parliamentary enclosures in the years before 1760. Perhaps, too, increasing costs of the procedures under the common law and equity, as these bodies of law became progressively more complicated, and as the legal profession tightened its monopoly on their use, made the parliamentary route more attractive. The very fact that the parliamentary route became more popular indicates that for some villages, at least, its costs (including costs of delay and recalcitrance) were lower. In any case, with the intervention of Parliament in the middle of the eighteenth century, the effective costs of enclosure did fall substantially and suddenly.

<sup>18</sup> Leonard, "Inclosure," pp. 236-38.

<sup>19</sup> William Blackstone, *Commentaries on the Laws of England*, 8th ed. (1778), 2, 344-45.

<sup>20</sup> Leonard, "Inclosure," p. 232; Gonner, *Common Land*, p. 58.

The effect of the fall in costs would not have been felt uniformly, but would vary with the character of the village contemplating enclosure. Villages with many men, for example, would experience a greater fall than small ones. A large village is much more likely to contain at least one recalcitrant villager than a small one. The introduction of a majority rule sharply reduces the importance of the difference in population, at least as it relates to the likelihood of failure in a vote on the enclosure. (Indeed, if the likelihood of recalcitrance is low, whether from the great profitability of enclosure, from altruism, or from fear of reprisal, the likelihood of failure to get a majority in a vote might be expected to be slightly higher for a small village than for a large one.)<sup>21</sup> One would expect on this count, therefore, to see more large enclosures after Parliament perfected its methods than before.

The effective population of villages was reduced in parliamentary procedures by the limitation of the franchise to freeholders, but it probably remained true, as it had been before, that larger villages were on balance more costly to enclose. To be sure, some costs—the fixed element in the fees to commissioners and, in the case of parliamentary enclosure, fees to parliamentary officials as well—were constant for any enclosure, of whatever size, and therefore lower per acre for a village of many acres. When such a village had many men, a large population would lead on this account to lower, not higher, costs. And some costs were probably more or less constant per acre, such as surveying and fencing. The costs of locating and buying out (or coercing) recalcitrants, however, would be higher in a large village than in a small one, as would be the costs of arbitrating the welter of claims. A larger bargain, involving more bargainers, is more expensive than a smaller one. In any event, historians

<sup>21</sup> The reasoning here is somewhat naive, leaving to one side as it does the question of how the shift from unanimity to majority will affect the strategic behavior of the villagers in casting their votes, but it is nonetheless suggestive. It depends on a binomial model of the probability of ayes and nays. If the fraction of recalcitrants is as low as 15 percent among the population of voters in all villages, under the rule of unanimity villages of ten voters will on average vote to enclose 20 percent of the time they are presented with the choice, but villages of twenty voters only 4 percent of the time. On the other hand, under the rule of a four-fifths majority, the ten-voter villages (assuming for simplicity equality in the holdings of each voter) will achieve enclosure 82 percent of the time and the twenty-voter villages 83 percent of the time.

have long assumed that the balance of costs favored small villages; it has served as part of the explanation, for example, of the early enclosure of the West country, the Welsh border, and Scotland, all regions of small villages, in sharp contrast with the Midlands.<sup>22</sup>

The costliness of large size is significant here because it is one of the characteristics easiest to measure among those that affect the costs of enclosure (among them the social strength of the large landowners, the native cooperativeness of the freeholders, the extent to which the village was already partly enclosed, and the cost of fencing in the region). A full study of the causes and consequences of eighteenth-century enclosure would use village size as one of the explanatory variables in a statistical explanation of how costs varied from one village to the next. "Between the idea/ And the reality/ Between the motion/ And the Act/ Falls the Shadow," says the poet, and in this exploratory essay the idea of isolating influences on the costs and benefits of enclosure statistically must remain in the shade. The bare idea, however, disciplines thinking. The costs of physically altering the face of the village varied from region to region with the cost of materials and labor—fencing costs, for example, would vary with the cost of hedging materials or of stone for walls. The specialists in the services of enclosure, such as lawyers, surveyors, and commissioners, were no doubt mobile over wide areas, but to the extent that they were not, some variation in their contribution to costs could be measured. This could be combined with the other variables to help disentangle the effects of costs from the effects of benefits on a region's rate of enclosure.

The extent of old enclosure in a village is still another such variable, for the closer a village was to an enclosed state, the less complex and expensive would have been the completion of the enclosure. In the limiting case in which a very few landlords

<sup>22</sup> See, for example, H. G. Hunt, "The Chronology of Parliamentary Enclosure in Leicestershire," *Economic History Review*, 2d ser., 10 (1957), 265–72: "[W]here the number [of proprietors] was small the surveyor had less work to do in making their 'particular survey' and the commissioners had fewer claims to deal with, the redivision of the land was much less complicated, and the expense of obtaining the proprietors' consents would also normally be less." Cf. Gray, *English Field Systems*, pp. 153, 407; Chambers, *Nottinghamshire*, p. 142; J. H. Clapham, *An Economic History of Modern Britain*, Vol. 1 (Cambridge, 1939, reprinted 1964), p. 23; Hoskins, *Midland Peasant*, p. xiv; F. G. Emmison, *Types of Open-field Parishes in the Midlands*, Historical Association, Pamphlet no. 108 (London, 1937), pp. 11–12.

owned all the land in the village, voluntary enclosure under the common law would have been cheap. The records of parliamentary enclosures are less informative on this point than they are on the size of villages, but, like information on the size of villages, information on the extent of old enclosure has the advantage that it applies to a specific village rather than to a more or less vaguely defined region of the country; when it is available it provides a more delicate instrument with which to dissect costs.

There are good reasons, then, to expect that the costs of enclosure varied across regions at any one time, and it is perhaps possible to exploit this variation to separate the influences on the rate of enclosure of a village's costs from that of its benefits. There are equally good reasons to expect that the costs varied through time in any one region. In both voluntary and parliamentary enclosures, for example, the costs of surveyors and fencing would vary from time to time. The most important variable cost, however, arose because all enclosure involved present costs in expectation of future benefits. That is to say, the rate of interest is relevant to the costs, as to the returns, of an enclosure.

T. S. Ashton put great emphasis on variations in the rate of interest as a cost factor in the explanation of the cyclical variations of investment in the late eighteenth century, and his observation that there is a good correlation in particular between the percentage yield on consols and the rate of enclosure has become a standard point in the literature. Later discussions have generally raised Ashton's point only to reject it, for two reasons. The first—given credence, indeed, by the way Ashton expressed himself in framing the hypothesis—is that landlords sponsoring an enclosure did not always have to borrow money or, what is equivalent, to sell assets to finance it.<sup>23</sup> The possibility of financ-

<sup>23</sup> T. S. Ashton, *An Economic History of England: The 18th Century* (London, 1955), p. 41: "The large proprietor might meet this [large expenditure on an enclosure] out of his own resources. . . . But this would usually involve a sale of assets. . . . Or he might seek a mortgage." In commenting on Ashton, J. D. Chambers and G. E. Mingay, in their *The Agricultural Revolution* (London, 1966), p. 82, use his admission of the possibility of self-financing to attack the relevance of the rate of interest: "Now it is possible that much enclosure was financed by borrowing on mortgage, and it is true that [the interest rate would then be relevant]. . . . But it seems probably . . . that a large proportion of enclosure, especially that promoted by large landlords, was financed not by borrowing but out of current estate income."

ing the enclosure out of current income, however, is irrelevant to the issue of the importance of the interest rate. If the sponsors chose to spend current income on an enclosure they would not, it is true, face future outlays of cash for interest payments; but they would forego future income by choosing not to invest in alternative projects, projects whose rate of return can be expected to run parallel with the yield on consols. Self-financing, in other words, has an opportunity cost, and this cost is proportional to the prevailing rate of interest.

The second reason for objecting to giving the interest rate a central place in a discussion of the costs of enclosure also rests on a misapprehension of what is germane to the decision to invest. The objection is that the correlation between the yield on consols and the rate of enclosure breaks down during the Napoleonic Wars, a great many enclosures being undertaken then despite a high interest rate.<sup>24</sup> Ashton pointed out that even if the rate of interest rose, the sharp rise in the relative price of agricultural products, which would increase the benefits of enclosure, could well have offset the rise in costs. But a more fundamental response is available, namely, that it is not the money rate of interest that measures the real opportunity cost of an investment, but the rate of interest corrected for the expected rate of inflation in the general level of prices. A commitment to pay £5 per year in future years for the right to use £100 now is a very satisfactory arrangement indeed for a borrower, if the rate of inflation is 5 percent a year, for the real rate of interest in that case is zero: since his £100 of borrowed capital will be worth £105 next year from the effect of inflation alone, he can meet the interest payment next year by selling off £5 of it and can keep whatever real fruits the capital bears for himself as a clear gain. From their experience in the 1790s Englishmen had very likely come to expect a rate of inflation in the neighborhood of 2 or 3 percent per year by 1800, and in fact such an expectation was confirmed by the experience of the next decade.<sup>25</sup> Under these circumstances the money rate of in-

<sup>24</sup> Chambers and Mingay, p. 83, make this point, as do others who have commented on Ashton's hypothesis.

<sup>25</sup> Rates of annual growth within this range are characteristic of the price indices of E. B. Schumpeter and E. W. Gilboy, and of A. D. Gayer, W. W. Rostow, and A. J. Schwartz from 1790 to 1799, given in B. R. Mitchell, *Abstract of British Historical Statistics* (Cambridge, 1962), p. 469-70. The



terest of around 5 percent corresponded by 1800 to a real rate of interest of 2 or 3 percent, which is at least as low as the rates prevailing during the earlier burst of enclosures in the late 1760s and early 1770s. In short, the interest rate does appear on the face of it to have been a significant influence on the costs of enclosure. It does belong with other variables, therefore, in a statistical study of the variation of those costs over time.

The costs of interest foregone, fencing, surveying, and so on, were incurred in any enclosure, whether it was achieved by act of Parliament or by agreement under the common law. Little is known—or, given the paucity of records, directly knowable—about how the other costs of enclosure, such as legal fees, organizational effort, and bribes to recalcitrants, varied from year to year in proceedings under the common law. For parliamentary enclosures, however, voluminous records of many of these costs were generated by the legal and customary requirements of disclosure to public view of each step in the proceedings. The course of the debate over the bill to enclose a particular village, the large fees paid to parliamentary functionaries (although some, no doubt, were secret), and the terms of the act that finally emerged are more or less knowable from the records of Parliament itself and from published reports of its activities. In a few cases the daily account books of the commissioners, appointed by name in the act to supervise the enclosure, have survived. At least before 1800, at about which time the custom of providing it appears to have died out in some places,<sup>26</sup> a detailed statement of the costs of surveying, the expenses of the commissioners' activities (including ample provisions of wine to speed their deliberations), and the like was often appended to the final award of new properties. And the award itself, sometimes containing a detailed field map or a statement of allotments of property by the amount of each and the name of the recipient, survives in the county record office or the parish chest for about two-thirds of the villages enclosed by act.<sup>27</sup>

very high prices of the first two years of the new century are excluded from these calculations purposely, to achieve estimates biased to the low side. The rates of growth from 1802 to 1813 are similar in magnitude.

<sup>26</sup> Cf. W. E. Tate, "The Cost of Parliamentary Enclosure in England (with special reference to the County of Oxford)," *Economic History Review* 2d ser., 5 (1952), 264, on Oxford and Lincolnshire.

<sup>27</sup> The estimate of two-thirds surviving is W. E. Tate's, in *The Parish Chest: A Study of the Records of Parochial Administration in England*,

The records suggest that the parliamentary procedures were progressively simplified and cheapened. The expenses of the commissioners were a substantial portion of the recorded total, and it is therefore significant that the number of commissioners specified in the acts fell during the second half of the eighteenth century from a dozen or so to three or four.<sup>28</sup> An act of 1773 (13 Geo. III. c.81) reduced and standardized the majority required to set in motion the parliamentary procedures from four-fifths to three-fourths of the number and value of the acreage in a village, voted by its owners. The acts came to specify the date by which the award was to be promulgated, in order to meet the frequent complaint that the commissioners, taking on the responsibility for too many enclosures at once, dallied at their work on each and prolonged the period of uncertainty between the act and the award. The commissioners gradually became a professional class, and could be expected to have become more proficient as their experience broadened; the name of any given commissioner recurs many times in different acts.

The experience of Parliament itself, particularly in the first period of substantial parliamentary enclosure in the 1760s, no doubt had a similar cumulative effect on the ease with which a bill was made law.<sup>29</sup> It is true that not until 1836 (6 and 7 Wm. IV. c.115), well after the period of massive enclosure, was a truly general act for enclosure passed, under which the special appeal to Parliament for each was eliminated. Before that time each act of enclosure begged special exception from the law of property, as did each act of incorporation from the law of contract before the Joint Stock Companies Act of 1856. Repeated attempts were made during the seventeenth and eighteenth centuries to pass a general enclosure act, but Parliament chose to retain its power of detailed intervention into each of the thousands of private bills. As Maitland put it, "The mass of the statute law made in

3d ed. (Cambridge, 1969), p. 271. Some six thousand awards resulted from the forty-seven hundred or so parliamentary acts.

<sup>28</sup> W. E. Tate, *The Enclosure Movement* (New York, 1967), published in England as *The English Village Community and the Enclosure Movement* (London, 1967), p. 49.

<sup>29</sup> Gonner (*Common Land*, pp. 63, 65) disputes this, arguing from the fullness with which one Henry "Horner" described the procedures both inside and outside Parliament in 1761, that they were perfected before this time. The matter awaits statistical resolution. Incidentally, the author of *An Essay on the Nature and Methods of Ascertaining Specific Shares . . .* was Henry Sacheverell Homer, and his book was first published in 1766.

the 18th century is enormous . . . [and] bears a wonderfully empirical, partial and minutely particularizing character. In this 'age of reason,' as we are wont to think it, the British parliament seems rarely to rise to the dignity of a general proposition."<sup>30</sup> The so-called General Enclosure Act of 1801 (41 Geo. III. c.109) was resisted by fee-takers inside and lawyers outside Parliament, as well as by the Church of England, which suspected that the value of its tithes was threatened by the act. Its passage was a victory for the improving spirits on the Board of Agriculture, but only a partial one: the requirement that each enclosure be approved by Parliament was retained. Among other simplifications, however, the framers of the bills for enclosure could now draw on forty standard clauses, and affidavits were now accepted in lieu of the physical presence of the signatories to a petition. The act provides a test of the sensitivity of the rate of enclosure to changes in its cost, and, true to expectations, a spurt of enclosures, particularly of waste lands, followed it. Each of the improvements in parliamentary procedures can be examined in this fashion, inserted together with the other influences on costs into a statistical analysis of their progressive reduction.

It may seem peculiar, however, to argue that the costs of parliamentary enclosure were reduced, in view of the plain evidence in the literature on enclosure that the expenditure per acre rose dramatically in the late 1780s and after. In Warwickshire, whose experience was by no means unusual, J. M. Martin found that the public costs—that is, the costs of securing the act, paying the commissioners and surveyors, and fencing the allotments of the title owners—rose sixfold from the earliest to the latest enclosures, and especially after 1790.<sup>31</sup> An adequate allowance for the inflation of the Napoleonic Wars would reduce the sharpness and extent of the rise somewhat, particularly as the commissioners and other specialists in enclosures would have reaped economic rents from the increased demand for their services.<sup>32</sup> Yet the rise would still be substantial.

<sup>30</sup> F. W. Maitland, "English Law" in *Encyclopedia Britannica*, 11th ed.

<sup>31</sup> J. M. Martin, "The Cost of Parliamentary Enclosure in Warwickshire," *University of Birmingham Historical Journal* 9 (1964), reprinted in Jones, *Agriculture and Economic Growth in England*, to which subsequent reference is made. Compare W. E. Tate, "The Cost of Parliamentary Enclosure," and H. G. Hunt, "The Chronology of Parliamentary Enclosure in Leicestershire," *Economic History Review*, 2d ser., 10 (1957), 265-72.

<sup>32</sup> Homer remarks in his *Nature and Methods*, 2d ed. (1769), that enclosures

As useful as this evidence is in providing a quantitative *explicandum* for an inquiry into the determinants of costs, however, it is not directly relevant to discovering how the cost curve moved. As Martin and the others who have documented the rise in costs have pointed out, the recorded costs rose not because an enclosure of given complexity had become more expensive, but because progressively more complex enclosures were undertaken as they became more profitable.<sup>33</sup> There is direct evidence of this increasing complexity in the widening interval between the date of the act to enclose and the actual award. In Tate's list of parliamentary enclosures in Nottinghamshire, for example, it is around two years in the 1760s and 1770s, but rises to six years by the 1790s and 1800s.<sup>34</sup> Each year's delay contributed directly to the real costs of enclosure by reducing the incentive to conserve one's soil, which on the morrow might become someone else's, and by a variety of other costs of disorganization. These costs of delay, incidentally, neglected in studies of the costs of enclosure, could be quite large. With yields of, say, 2½ quarters of wheat an acre on lands in such crops constituting half the acreage in any year, and prices of forty shillings a quarter, a loss of output from the overworking of land soon to be enclosed of as little as one-fifth for one year would add ten shillings to the other costs, which Martin reckons at something over forty shillings an acre before the inflation of the Napoleonic Wars. What is to the point here, however, is that a long interval is indicative of a complex, and therefore, costly, enclosure: an enclosure of a large village with many land owners and other claimants to ancient rights, and with many parcels of land severely scattered and intermingled. A typical enclosure in 1810 was not the same as one in 1770. Whatever the relevance of the rising cost to issues of equity, in particular to the issue of the burden on the small landowners, then, it is not relevant to the issue of how the costs of parliamentary procedures changed. To make progress on the latter

"have the temporary Effect of raising the Markets of the several Parties employed in carrying them into Execution" (p. 109).

<sup>33</sup> Cf. Martin, "Cost," pp. 133ff; and Hunt, "Chronology," p. 269: "Many enclosures involving very high costs were postponed till later in the eighteenth century . . . when market conditions were more favourable."

<sup>34</sup> W. E. Tate, *Nottinghamshire Parliamentary Enclosures, 1743-1856*, Record Series of the Thorton Society, Vol. 5 (1935), *passim*. Compare Martin, "Cost," p. 135, where he speaks of an interval of one year during the early enclosures in Warwickshire rising to four or five years in the late eighteenth and early nineteenth centuries.

issue one must have information on the changing costs of an enclosure of unchanging specifications, and the observed costs do not directly provide this information; the observed increase in costs is a reflection of the increase in benefits, not of an increase in costs for a given enclosure.

### *A Plain Enough Case of Class Robbery*

The argument being developed here speaks of costs and benefits, and presupposes that when benefits exceeded costs for a project to enclose, enclosure was undertaken. An enclosure, however, was not an investment by one man incurring the costs and receiving the benefits himself, but an investment by an entire community. The redivision and improvement of the community's land was regulated by a few commissioners, who acted together, in the words of Arthur Young, as "a sort of despotic monarch, into whose hands the property of a parish is invested, to recast and distribute it at pleasure among the proprietors; and in many cases without appeal."<sup>35</sup> True, he went on to observe, "if more cautious methods were resorted to . . . the work of an enclosure would be spun out through half a century," as indeed it was in the case of enclosure by gradual purchase and sale. Yet bold methods, wielded by commissioners appointed by the lord of the manor and owners of the tithes, presented ample opportunities for the redistribution of wealth from the poor to the rich. A bill in Parliament sponsored by a group of the larger landowners of a village, enacted into law by what in this period may be considered an executive committee of the landed class, and carried to its conclusion in an award formulated by commissioners who might reasonably be expected to be the agents of that class, had great potential for damaging the men trapped in its machinery. E. P. Thompson's pronouncement on this issue could serve as a motto for the many contemporaries and historians who have felt that the damage was severe: "Enclosure (when all the sophistications are allowed for) was a plain enough case of class robbery."<sup>36</sup>

<sup>35</sup> Arthur Young, *A Six Months' Tour Through the North of England* (London, 1770), Vol. 1, 226, quoted in the *General Report on Enclosures to the Board of Agriculture* (London, 1808), p. 61. The Act of 1801, by the way, contained provisions for appeal, among other restrictions on the power of commissioners.

<sup>36</sup> E. P. Thompson, *The Making of the English Working Class* (New York,

This judgment on the equity of enclosure would require no comment in an inquiry into its effects on efficiency and its causes were it not that the incentive to enclose could have been affected, at least theoretically, by the distribution as well as by the size of the spoils of enclosure. Wilhelm Hasbach's observation on the contemporary and retrospective assessments of enclosure is to the point here: "Those who look at the matter from the standpoint of production will not see that the economic changes have their ethical and social dangers. And the representatives of the ethical and social side fail to recognize or estimate the economic advantages."<sup>37</sup> This is true, and a balanced examination of either issue requires not a mere alternation of the two perspectives, setting the loss in equity against the gain in efficiency, but a mingling of them. The large landowners may have gained more from enclosure than the small, yet the increase in efficiency may have permitted all classes to gain something. Similarly, enclosure may have at all times and places raised the efficiency of agriculture, yet the method of sharing the costs and benefits may have varied from year to year and from village to village in such a way that an expectation of equal social benefit in two villages would produce an enclosure in one and a continuation of the open fields in the other. In other words, a mere shift in the distribution of the costs and benefits, with no change in their size, could have prompted an enclosure.

An ideally equitable enclosure would be one in which villagers were assigned shares of land of value proportionate to the value of their rights in the open fields. No one could be made worse off under such an arrangement, assuming that the costs of enclosure left a net social gain in efficiency to be distributed among the new property owners. The critics of enclosure have in mind two deviations from this ideal, and it must be asked whether these would have so shifted the burden onto the poor as to alter substantially the size of the net benefits accruing to the rest of the community.

The first is that those with vague rights in the open fields sometimes lost all claims on the fruits of enclosure; a valuable right was extinguished with no compensation. Squatters on the

1963), p. 218. See also the Hammonds' account of Arthur Young's disillusionment with the way enclosure affected the poor (*Village Labourer*, Vol. 1, 78-80).

<sup>37</sup> *English Agricultural Labourer*, p. 162.

commons and waste of the village were often treated in this fashion, and on occasion some part of the usufruct of the commons and waste owned informally by other classes in the village also vanished through disallowance of the claim before the commissioners, to reappear as part of the wealth of landowners generally. The question is whether in a substantial number of cases enclosure would have failed to go forward had equitable compensation for the loss of these ill-defined rights been required. It is difficult to answer this question. Ill-defined rights are, by the very meaning of the phrase, illusive and uncountable, consisting in this case of the right to take a few bits of fallen wood from the waste, or of the advantage of a location close to the commons on which a cow could be grazed. Without an elaborate accounting here, it is perhaps justifiable to draw the provisional inference from the descriptions of these rights in the literature that the answer to the question is, no: enclosure would not have been retarded by just compensation, because before enclosure the rights were of low total market value, however large a part they formed of the meagre living of those who claimed them.

The second deviation from the ideal, about which the interminable historical debate on the decline of the English yeoman has centered, is that the shares of land allotted in lieu of common rights were too small to bear the heavy costs of enclosure. It is generally agreed that allocation of land itself to small and large owners was reasonably equitable, and that therefore, aside from minor variations in the quality of soil, the small man might expect his just share of the increased efficiency from consolidated holdings.<sup>38</sup> To acquire the land, however, he was committed by law to fence it at his own expense within a specified short interval after the enclosure award. With an agricultural technology that depended heavily on the raising of livestock together with crops, an enclosure without fencing to prevent the livestock from wandering onto another man's land would be pointless. The cost of fencing per acre of allotment would vary inversely with the number of acres fenced; to be perhaps overly precise, assuming roughly similar rectangular plots, it would vary in-

<sup>38</sup> Note that it is land owners, large and small, who figure in this half of the tale of class robbery. At another remove, though worthy of further study, is the issue of whether new economies of scale in farming, unexploitable in open fields, reduced the value of small tenants' capital and managerial skills relative to that of large tenants.

versely with the square root of the number of acres in the plot. The cost of fencing per acre would be about three times larger for a plot of ten acres than for one of a hundred acres.<sup>39</sup> Fencing was a substantial part of the total costs of enclosure. J. M. Martin, in his largely successful attempt to rebut W. E. Tate's contention that enclosure costs were too low to damage the small landowners, puts them at half of the total, the rest being public expenses (fees for lawyers, commissioners, surveyors, and parliamentary officials, costs of new roads, and so forth) incurred up to the time of the award.<sup>40</sup> The costs of fencing weighed heavily, then, and especially heavily on the recipients of small allotments, who were driven by their disproportionate burden to a choice between a large mortgage on their property, if they could get it, and sale.

Although consistent with the alternative view that the small

<sup>39</sup> For rectangular plots with the longer side  $\phi$  time larger than the shorter side, and assuming that only two sides were fenced by one person, trivial manipulations yield the expression

$$K \frac{1+\phi}{\sqrt{\phi}} \left( \frac{1}{\sqrt{A}} \right)$$

for the cost per square foot of a plot of  $A$  square feet, where  $K$  is the cost per linear foot of fencing (which is assumed constant over all plots, and which includes hedging and common drains as well). The result is insensitive to deviations from similarity in the rectangles of large and small plots, as can be shown by inspecting the ratio of the expressions for two dissimilar plots (that is, for two plots with different values of  $\phi$ ). Nor is it sensitive to reasonable deviations from rectangularity, although a more elaborate expression is needed to show this. The formula here is a special case of the formula developed in the previous essay to exhibit the effects of the number of plots ( $N$ ) on fencing costs per holding (namely, the special case  $N = 1$ , expressed per acre of holding). It should be noted that new holdings, particularly large ones, were not completely consolidated. This would somewhat reduce the contrast in fencing costs between large and small holdings.

<sup>40</sup> Martin, "Cost," especially p. 141, where he collects his estimates of 22 shillings per acre for the public expenses and 24 shillings per acre for fencing, hedging, and drains on the edges of allotments. Martin's estimate of fencing costs is based on the cost of fencing tithe allotments (which were a public expense). It can be confirmed by inserting the costs of fencing per foot (about 6d., with sizeable regional variations: see Hammonds, *Village Labourer*, Vol. 1, 93n.) into the formula developed in footnote 39, simultaneously lending credence to the formula itself. The average allotment in Warwickshire enclosures was about 63 acres; J. M. Martin, "The Parliamentary Enclosure Movement and Rural Society in Warwickshire," *Agricultural History Review* 15 (1967), 23. For a square plot ( $\phi = 1$  in the formula), this implies that the two sides fenced would total 3320 feet, which would cost 1660 shillings (at 6d. a foot), or about 26 shillings per acre enclosed on the average allotment (close to Martin's estimate of 24 shillings).

landowners' hurt was negligible, the relatively small amount of complaint against parliamentary enclosure in the eighteenth century (contrasted, say, with the uproar against common law enclosure in the sixteenth) is not decisive evidence. In 1912, the year after the first publication of the Hammonds' impassioned attack on the equity of enclosure, Gonner remarked with much truth that "when the gravity and delicacy of the task undertaken by the [enclosure] commissioners is considered, the existence of complaint against them is not astonishing. It is rather a matter for wonder that the complaints were not far louder and more universal,"<sup>11</sup> a theme to which W. E. Tate later directed his prodigious labors on the records of enclosure.<sup>12</sup> Yet, to use Albert Hirschman's vocabulary, industrialization, improved transport, and a general quickening of the pace of economic life in the late eighteenth century would have provided the poor with opportunities for "exit" from a village newly hostile to their interests that would have made an attempt to acquire "voice" relatively less attractive, however much parliamentary enclosure damaged them.<sup>13</sup> That voluntary enclosure occurred alongside parliamentary enclosure in the late eighteenth century is also consistent with the rosier picture of the fate of small landowners, although again it is hardly decisive, for similar reasons: the damage could be great, yet the opportunities for complaint limited by the coercive powers of the larger landlords, and the opportunities for escape relatively attractive.

There is, however, a less easily corrected flaw in the picture of expropriation, which depends on exactly when during a parliamentary enclosure a small landowner would choose to sell out (or, if stronger language seems warranted, was compelled to sell out by his economic circumstances: the language differs but the observed behavior is the same). If he sold out only after he had fenced his plot, his wealth would indeed be reduced by the inappropriateness of small plots to the new circumstances of

<sup>11</sup> Gonner, *Common Land*, p. 82.

<sup>12</sup> For example, his "Members of Parliament and the Proceedings upon Enclosure Bills," *Economic History Review* 12 (1912), 68-75; "Parliamentary Counter-Petitions During the Enclosures of the Eighteenth and Nineteenth Centuries," *English History Review* 59 (1944), 392-403; "Opposition to Parliamentary Enclosure in Eighteenth Century England," *Agricultural History* 19 (1945), 137-42; and "Members of Parliament and their Personal Relations to Enclosure," *Agricultural History* 23 (1949), 213-20.

<sup>13</sup> As suggested by Eric Jones in the concluding essay of this volume.

agriculture. The large landowner who bought his plot but had not paid the onerous costs of fencing it (a sunk cost, and therefore no part of its price) would be better off, and in anticipation of this result would have been more eager for enclosure. In the extreme case, of course, a fenced plot of three roods might be of little use to him. He would have to tear down the fences and build new ones to incorporate such pitiful scraps into a profitable farm. This, however, would merely reduce the price he and the other landowners would be willing to pay for the scraps, adding a gratuitous social loss of having to rebuild the fences to the burden on the poor.

If the small landowner sold his allotment before he fenced it, however, the result is very different. The price that the larger landowners would be willing to pay would in this case be the present value of the net return from future crops minus the amount that it would cost to fence the purchased land along with their other land. Since the land is more productive in an enclosed than in an open state, the price the large landowners would be willing to pay (and would be compelled to pay if they compete with each other) would in fact be above what they would be willing to pay for the same land before enclosure. There is in fact a good deal of evidence that landowners did possess this minimum degree of foresight. F. G. Emmison's summary in 1937 of the evidence for Bedfordshire is a good example of how narrowly the best historians have missed the significance of the evidence. He reports that a " cursory examination of Bedfordshire documents revealed evidence in eight parishes of strong buying of strips and common-right cottages by the chief owners during the years before enclosure," interpreting it as an effort to avoid opposition to enclosure by early purchase. It does not occur to him that the evidence is also consistent with a successful attempt by small landowners on the other side of the market to avoid the hurt of enclosure by early sale. He reports, too, that "shortly after enclosure some of the survivors undoubtedly sold their allotments," arguing that the costs of fencing and the fixed costs of commissioners weighed heavily on the small men. Although he does not recognize that exactly when they sold out "after enclosure" is critical, he nonetheless sees that the motives to sell out included "the enhanced monetary value of newly

allotted land over open-field land."<sup>44</sup> If the large bill for fencing and commissioners did not take the small landowners by surprise, in short, their land would have participated in the net benefits of enclosure, and the final result of parliamentary enclosure would have been the same as enclosure by agreement.

There may not have been inequities in parliamentary enclosure, then, making it difficult to argue that the opportunity of the rich to impose inequities on the poor, rather than the gain in efficiency to be achieved, motivated enclosure. Still, small landowners sometimes opposed enclosure, and one may ask why. It is occasionally suggested that open-field agriculture conferred unique advantages on them, such as more than their share of manure on their land when livestock grazed in common. It is uncertain that small landowners did in fact have a lower ratio of livestock to land than large, as is assumed in this particular argument. If they valued the manure highly, they could in any case invite their neighbors to feed their livestock on the newly enclosed plot. And opposition by the poor to enclosure is a world-wide phenomenon, even in agricultures less dependent on animal fertilizers than English agriculture in the eighteenth century. A more general explanation of their opposition is an alleged reluctance to part with particular pieces of land, farmed by their fathers and their grandfathers before them. This behavior can be given a narrowly rational interpretation. A small landowner entering an agreement to enclose exposes himself to the risk of getting a worse allotment than he had before, as was argued earlier, even if there is an overall increase in efficiency, and if the mechanism for reallocation has on average no systematic bias against small owners as a class. Given the administrative limits to precise adjustment of the new allotments to the value of the old, he might prefer to bear those ills he had (namely, the inefficiencies of open-field agriculture) than fly to others that he knew not of. A man with a larger portfolio of land, by contrast, would be exposed to less risk, even aside from any direct influence over the terms of the enclosure that he might have as a rich member of the village. And, in accord with the reasoning of the previous essay, the small landowner might oppose forced consolidation of his land that would leave him exposed to accidents of the market and the weather.

<sup>44</sup> Emmison, *Types of Open Field Parishes*, pp. 10-11.

Even if enclosure inflicted damages on small landowners, however, the advantage to the large landowners from inflicting them can be shown to be so small that it seems unlikely that the rate of enclosure was substantially altered by the potential for doing so. This is the decisive point. The facts on which the point rests are by no means novel. In 1928 George Fowler, noting that in a village in Bedfordshire enclosed in 1804, 98.3 percent of the cultivated land was owned by large owners, remarked that "the reader may well wonder where can be the large class of smallholders whose lamented disappearance is attributed to the Parliamentary Enclosures. The answer is that, in Oakley, as in many other places, he had almost vanished before these Enclosures were made."<sup>45</sup> In a recent survey of research into the issue over the last half century, Gordon Mingay estimates that by 1780 only 11 to 14 percent of the land was owned by the small owner-occupiers of Sweet Auburn.<sup>46</sup>

J. M. Martin's statistics on 125 parliamentary enclosures in Warwickshire can illustrate the point in more detail.<sup>47</sup> Allotments under 50 acres were fully 71 percent of the total number, and their average size was only 12.7 acres; that is, a sizable majority of the landowners were small, and from their point of view the potential damage from the costs of fencing was great: according to the formula developed earlier, the per-acre costs of fencing a 12.7-acre allotment would have been 59 shillings, greater than the costs of fencing a 71.5-acre allotment (the average size of those between 50 and 100 acres) by a factor of about 2.4.<sup>48</sup> To assess the advantage to be gained by the larger landowners from inflicting this damage, however, the relevant statistic is that the small allotments were so small that they made up only 14.5

<sup>45</sup> G. H. Fowler, *Four Pre-Enclosure Village Maps, Quarto Memoires of the Bedford Historical Records Society* 2, pt. i (1928), 10.

<sup>46</sup> G. F. Mingay, *Enclosure and the Small Farmer in the Age of the Industrial Revolution* (London, 1968), p. 31.

<sup>47</sup> J. M. Martin, "Parliamentary Enclosure Movement," p. 23. These statistics refer only to those enclosures that involved at least some common field; enclosures of waste alone are excluded.

<sup>48</sup> A 71.5-acre allotment must be accounted "large," so far as the cost of fencing is concerned, for it would have been only 39 percent more expensive per acre to fence than one of 132 acres (the average size for those between 100 and 200 acres). If the figure of 6 d. per foot of fencing mentioned above is used in the formula, the cost per acre for a square 12.7 acre allotment would be (as noted) about 59 shillings, for a 71.5-acre allotment 25 shillings, and for a 132-acre allotment 18 shillings.

percent of the total acreage of the village. Consequently, even if these acres could be bought at a price that gave the buyers a clear gain of as much as, say, 25 percent of the price that would have obtained under equitable conditions, the fruits of the expropriation would increase their total wealth very little. If the smaller landowners in Warwickshire held 14.5 percent of the village land, the larger held 85.5 percent. Supposing that all the small landowners sold out after fencing (which is incorrect) at the 25 percent discount (which is high), and that the only form of wealth large landowners held aside from their own land was the money needed to buy the land of small landowners at the discount (which is an understatement of their wealth), the net percentage increase in the wealth of large landowners arising from the forced sale would be  $(.25)(14.5)/[(85.5) + (.75)(14.5)]$ , or only 3.8 percent. It will be shown later that rents were doubled by enclosure. This increased value of the land of large landowners would have increased their wealth, calculated on the same basis, by  $(2.0)(85.5)/[(85.5) + (.75)(14.5)]$ , or 177 percent. The increase in wealth due to the greater efficiency of enclosed holdings (on which higher rents could be charged and paid) is over forty times that due to the partial expropriation of small landowners. In other words, however much the small landowners themselves were hurt by forced sale of their land, it appears most improbable that the opportunity for hurting them influenced to any substantial degree the rate of enclosure, much less that this opportunity was its sole purpose.

The introduction of a bill or the passage of an act to enclose was often delayed for many years inside and outside Parliament, and one might be inclined to take this as evidence that an enclosure inequitable to the small landowners was difficult to achieve. Quite the contrary, however; it appears more likely that the major source of delay was the adjustment of equity among the larger landowners; for example, the adjustment of the share to be allotted to the lay or ecclesiastical impropriators when tithes were commuted into land.<sup>19</sup> Under parliamentary procedures, the ordinary landowner was deprived of the veto he

<sup>19</sup> The point is sometimes made that the poor were made worse off by having to pay, as part of the assessment on all landowners, for the fencing of the impropriators' allotments. But their share in the land would be higher on that account, because the impropriators would in the absence of an allowance for fencing demand a higher share.

possessed under the common law, but the impropriators of the tithes and the lord of the manor were not. Because Parliament, especially the House of Lords, was anxious that the Church of England should suffer no wrong from an enclosure, the opposition of the impropriators was sufficient to stop a bill. The lords temporal in Parliament were equally attentive to the terms of commutation of mineral and other rights owned by the lords of the manors. Each possessing a veto, then, the major interests were set to bargaining over the division of the spoils, and it is more likely, therefore, that the opportunity for redistribution among the rich—rather than what was from the point of view of the rich a trivial opportunity for redistribution away from the poor—and the costs of delay springing from this opportunity help to explain the timing of enclosure.

### *The Benefits of Enclosure*

The discussion has so far considered only the costs of enclosure. There remain the benefits. Some historians of enclosure have attributed a part of its growing popularity to an increase in rationality, a new spirit of commercialism, or the like; that is to say, to a realization that there were indeed benefits to be had. To some extent, no doubt, men had to be taught that enclosure was beneficial, by witnessing successful enclosures in neighboring villages or by reading the arguments of improving pamphleteers; and to some extent, although this seems a good deal more doubtful, they may have had to be taught by events to value profitable transformations of their way of life. At some point, to account perhaps for phenomena that less speculative factors cannot explain, this hypothesis may have some use. Its use in any but this residual role is limited, however, by the paucity of its observable implications. It could conceivably be made more fruitful by specifying precisely how the spirit of commercialism or rationality spread, by region and by social class, for example. But in its present underdeveloped form it is consistent with any pattern of enclosure, and being consistent with any, is capable of being rejected by none. A hypothesis that cannot be put in jeopardy by facts is not an attractive one with which to begin.

It is sometimes argued, again, that a change in the relative price of, say, livestock and grain or of labor and land prompted

enclosure. This class of argument especially excites the imagination of economists, but it is flawed. In its most popular version, indeed, it has fundamental defects; it asserts that allocation was rigid in open fields (which, as was pointed out in the previous essay, is doubtful), and that therefore any change in prices that indicated a reallocation would set men thinking about enclosure as a way around the rigidity (which in half the cases does not follow, unless the allocation before the change was the best attainable, a premise that fits poorly with the initial one of rigidity).<sup>50</sup> A more sophisticated version asserts that the rigidity of open fields made a prospect of repeated changes in technique in the future a reason for enclosure, and that such a prospect had entered men's minds in the eighteenth century.<sup>51</sup> Still another asserts that the eighteenth century brought economies of scale unexploitable in open fields.<sup>52</sup>

The approach taken here is to suppose that the benefits varied from year to year and from village to village, and that when the benefits exceeded the costs—or, to acknowledge the importance of distribution, when they did for those who had the power to set the machinery in motion—a village was enclosed. In any one year after enclosure the social benefit from the enclosure was the value of the increased output achieved. That is to say, it was the product of the price of agricultural output and the increase in output. What motivated men to enclose was not, of course, the benefit for one year alone, but the expectation of a stream of yearly benefits; to explain the timing of an enclosure, therefore, the benefit, like the cost, must be discounted back to the year in which it was set in motion. A fall in the interest rate, by increasing the value of distant returns relative to near costs, would prompt enclosures. The prices relevant to the decision to invest are the prices expected to obtain in the future (not those that actually obtained—the two would be identical only if men's expectations were always fulfilled). It is supposed, then, that the

<sup>50</sup> R. H. Buchanan, for example, uses such an argument to connect the opening of trade with England with Irish enclosures in the eighteenth century, in his "Field Systems of Ireland" in Alan R. H. Baker and R. A. Butlin, eds., *Studies of Field Systems in the British Isles* (Cambridge, 1973), pp. 605, 618, and *passim*.

<sup>51</sup> This was suggested to me by Axel Leijonhufvud of the University of California at Los Angeles in private correspondence.

<sup>52</sup> Hermann Levy, *Large and Small Holdings* (Cambridge, 1911) put forward this argument, as did Leonard, "Inclosure," p. 237.

rate of enclosure was governed by the present discounted value of the net expected benefits, and that the capital value of the social gain is to be calculated from the present discounted value of the net actual benefits.

These are familiar notions. It is a commonplace, for example, that the decision to enclose hinged on expectations. Expectations on the course of future prices can be given a concrete representation by making them depend on statistics of present and past prices, on the reasonable assumption that this is the information farmers in fact used to assess their prospects. Past runs of wet or dry weather could be included as well, the test of their influence, as that of past prices, being how much they contribute to the statistical explanation of the timing of enclosure. It is a commonplace, too, that the prices of agricultural output are relevant to explaining the timing and that, in particular, their sharp rise during the Napoleonic Wars had much to do with the spurt in enclosure. It is perhaps less of a commonplace to emphasize that what matters is not the absolute rise in prices but their rise relative to the costs of enclosure. The benefits of enclosure and therefore the amount that men are willing to pay for their accomplishment may rise, but may nonetheless be offset by a rise in the costs from a general inflation of prices, or from an inelasticity in the supply of commissioners, lawyers, surveyors, and others who found much of their employment in enclosure. Indeed, the rise in the price of wheat, which is sometimes considered by itself sufficient to explain the enclosures of the Napoleonic Wars, is less impressive, although still substantial, when it is compared with the rise in other prices.<sup>53</sup> To use a fruitful analogy, the rate of enclosure depends on both demand and supply, not on demand alone.

Prices are one component in the demand for an enclosure, the increase in physical output another. If the loss of efficiency from the open field system were not so difficult to measure, it

<sup>53</sup> "Other prices" are meant in this case to stand as a rough proxy for the costs of enclosure. The model of investment used here is a knife-edge one, because it supposes that any excess of benefits over costs, however small, will inspire an enclosure. A more realistic model would admit that large excesses are more potent than small ones. If this emendation proves its worth in future statistical work, it will imply another: since £1000 of benefit net of costs is the same amount in real terms as £2000 of benefit net of costs if the general price level has doubled between the two, the benefit itself will have to be deflated by the general price level.



would be possible to specify the source and magnitude of the expected increase in physical output and to relate it to the varying conditions of soil, weather, major crops, and tenurial arrangements. Unfortunately, what is known directly about the loss of efficiency and the gain to be expected from eliminating it is only qualitative. It is known, for example, that, other factors held constant, enclosure for pasture was more beneficial than enclosure for tillage. Henry Homer's formulation in 1776 has not been greatly improved upon by later historians: "Land, which requires to be Kept in Tillage, is less incommoded by the Open Field State, than that which is fit for Pasture or Dairy. . . . These . . . Inconveniences which affect the Property of every Open Field . . . vary in Degree in almost every Parish, according to the Nature of the Soil, the Regulations or Bye-Laws which prevail, and other Circumstances."<sup>51</sup> The vagueness of this formulation would be no obstacle to quantitative analysis if there were statistics on the agricultural output of villages before and after enclosure, but in general there are not. Although yields per acre do appear to have increased during the eighteenth century, it is difficult to decide by how much, and still more difficult to allocate the increase in any detail to specific regions or times.<sup>52</sup>

The value of the increased output in a village, however, had to accrue in the first instance as income to its occupants, and this fact provides a way around the lack of information on output. An enclosure increased the value of all factors of production by increasing the output to be shared among them. Labor and capital were mobile, and therefore the increase in their productivity would reveal itself in an increase in their employment, not an increase in their price, for if labor and capital were paid more

<sup>51</sup> Homer, *Nature and Methods*, p. 8. Compare the similar emphasis put on the pasture-arable distinction by Conner (*Common Land*, p. 37), Chambers (*Nottinghamshire*, pp. 150-54), and Hunt ("Chronology," p. 270).

<sup>52</sup> There is wide disagreement on the magnitude of the increase, if "disagreement" is quite the right word to use for a difference of emphasis on an issue that all writers confess is very much in doubt. For wheat yields alone, Chambers and Mingay (*Agricultural Revolution* pp. 34ff) follow Phyllis Deane and W. A. Cole, *British Economic Growth 1688-1959* (Cambridge, 1961), pp. 62-75 and the earlier work by G. E. Fussell, "Population and Wheat Production in the Eighteenth Century," *History Teachers Miscellany* 7 (1929), in putting the increase at only 10 percent for the entire century. On the other hand, Ashton (*18 Century*, p. 51) follows the suggestion of M. K. Bennett, "British Wheat Yield per Acre for Seven Centuries," *Economic History* 3 (1935), 12-29, that the increase was a third in the second half of the century alone.

after an enclosure, more would flow into the village, and continue to flow until the previous wages and returns obtained. It is difficult to find evidence on the increase in the amount and value of employment of capital and labor after enclosure. For land, however, the situation is very different, both theoretically and evidentially. The value of land was made higher by the direct increase in its productivity arising from enclosure, and by the indirect increase arising from the larger amount of complementary labor and capital employed. Since land is an immobile factor of production, the higher value of it would reveal itself entirely in a rise in rents: clearly, land cannot flow from one village to another in response to a higher return. The rise in rent after an enclosure, therefore, can be used as an estimate of the increase in output attributable to the enclosure.

An economist might be inclined to object to the use of the increase in rent as an estimate of the increase in output on two grounds. First, it ignores the output spent in wage and interest payments to increase the employment of other factors of production, and would seem therefore to be merely a lower bound on the increase in output. So long as these other factors of production are in highly elastic supply to the individual village over the period during which the increase in rents is observed, however, the objection is irrelevant, because the payment to the increased factors is matched by their opportunity cost elsewhere. Output is increased in the enclosed village by the value of the fresh employment, but it is reduced elsewhere in the economy by the same amount, as these factors are withdrawn from their former employment. Only the increase in rent on land represents a net increase in the productive capacity of the economy.<sup>53</sup> Second, an economist might object on the grounds that the estimate ignores the effects of enclosure on the rest of the economy. Enclosures considered as a group, he might argue, increased the demand for labor and capital in the economy at large and increased the supply of agricultural products, inducing national movements in the prices of factors and products that would make the increase in rent a mere lower bound on the true increase in national income. Once again, however, the objection is irrelevant, in this case because enclosures are not being con-

<sup>53</sup> I am indebted to Axel Leijonhufvud for clarifying my thinking on this point.

sidered as a group when the increase in rent is measured. In each year only a trivial portion of the land of England was newly enclosed, however nontrivial was the result of sixty years of enclosure. Therefore, the increase in rent observed in the year or two after the enclosure of a village is trivially biased by the impact of all enclosures taking place in those years. The typical increase in rent is a good estimate of the typical increase in output.

What is significant about this reasoning is that the magnitude of the rise in rents after the enclosure of a village is comparatively easy to observe. The assessments for the poor rate and the land tax are relevant sources, as are the extant accounts of the landlords and farmers themselves. Contemporary pamphlets, manuals of farming practice, the country reports to the Board of Agriculture, papers in the *Annals of Agriculture*, and so on, estimate increases in rents even when they do not estimate the increases in output from enclosure or the loss of output from the open fields. The advice William Marshall, a well-known writer on agricultural subjects, gave in 1804 to those contemplating purchasing land is typical:

Among the circumstances which influence the marketable value of lands . . . their state with respect to inclosure is a matter of great consideration. Open lands, though wholly appropriated, and lying well together, are of much less value, except for a sheep walk or a rabbit warren, than the same land would be in a state of suitable inclosure. If they are disjointed and intermixt in a state of common field, or common meadow, their value may be reduced one third. If the common fields or meadows are what is termed Lammas land, and becomes common as soon as the crops are off, the depression of value may be set down at one half of what they would be worth, in well fenced inclosure, and unencumbered with that ancient custom.<sup>57</sup>

Other contemporaries, and later historians assessing their testimony, concur with Marshall in putting rents after enclosure at roughly double what they were before enclosure.<sup>58</sup> In short, the

<sup>57</sup> W. Marshall, *On the Landed Property of England* (1804), pp. 13–14 (italics deleted).

<sup>58</sup> The figure has long pedigree. In his *Book of Husbandry* (1598) Fitzherbert writes "by the assent of the lords and the tenants every neighbour may exchange land with another. And then shall his farm be twice so good in profit to the tenant than it was before" (quoted in Erle, *English Farming*, p. 65, spelling modernized). Over a century and a half later Homer gives a

increase in rent is known in a general way, can sometimes be ascertained in detail for individual villages, and can be used as an estimate of the increase in the value of output from enclosure.

The evidence of the increase in rent is not perfectly free of extraneous elements, and requires careful interpretation. Any fortuitous influence on rent from variations in the price of agricultural output occurring at the same time as an enclosure must be removed, although it is not difficult to do so. It is more difficult to correct for the influence of agricultural improvements made at the same time as an enclosure, but neither related to it causally nor included in its costs. The simplest solution would be to look only at the increase in rent in those enclosures that were not accompanied by extraneous improvements. This is, however, costly in its waste of evidence: a more economical solution would be to attempt to remove the influence of the improvements directly.

Still another difficulty is that rents before an enclosure might not measure the true value of the land because of long leases entered into during an earlier period of low agricultural prices. Without persistent, unanticipated movements in agricultural prices, one would expect the rents even on long leases to reflect economic rent in a rough way. Leases need not be literally annual for the fulfillment of this expectation, or at any rate so Smith, Ricardo, and the rest believed in using short leases as the basis of their analyses of English rural society in the late eighteenth century. During the Napoleonic Wars, however, there did occur persistent, unanticipated inflation. Since leases were annulled by enclosure, the increase in rent might to some extent reflect a mere adjustment of the rent to an appropriate level rather than any real increase in productivity. In other words, the enclosure would present an opportunity for the landlord to repudiate the bad wagers he had made in earlier years that prices would not rise.<sup>59</sup> The significance of this effect depends on

doubling of rents as a typical result of enclosure (Homer, *Nature and Methods*, p. 64). Citations giving this order of magnitude of increase could be multiplied indefinitely. Compare Chambers and Mingay, *Agricultural Revolution*, p. 85.

<sup>59</sup> In a period of falling prices, of course, the effect is reversed. The rent before enclosure would be higher than the true value of the land, the change in rent would therefore be an understatement of the true rise in its productivity, and the landlord's incentive to promote an enclosure would be attenuated.

the length of leases in a village subject to an enclosure and the course of prices in the years preceding it. If long leases were common, an allowance should be made for their effect in the explanation of the rate of enclosure. The cycle of enclosure during the inflation of the Napoleonic Wars and the subsequent deflation, in short, may have been to some extent a product of the opportunity enclosure provides for the redistribution of income between a tenant with a long lease and his landlord. But as long as the prevalence of long leases can be estimated, the adjustment in the reasoning is not difficult to make.

With these reservations, then, the observed increase in rent can serve as an estimate of the increase in output. It can play the same role in the analysis of the demand side of enclosure as the costs will play in that of the supply side. In other words, its variation can be related in a statistical way to variations from year to year in prices and interest rates, and from village to village in the factors influencing the potential increase in output; just as the variations in the cost of enclosure can be related to the cheapening of parliamentary procedures and to differences in the sizes of villages. The complete model would bring the two together and isolate the causes and consequences of enclosure.<sup>60</sup>

### *The Benefits Net of Costs*

Some of the foregoing information can be used in a brief and crude experiment that may illustrate the promise of the argument as a whole: let us ask the question, using money magnitudes typical of the midpoint of the enclosure movement, what was the order of magnitude of the increase in national income attributable to enclosures? If rents doubled on the 1.1 million or so acres of land enclosed after 1700, assuming as a low estimate that they earned typically a rent of 7 shillings an acre before

<sup>60</sup> There is a peculiarity of the model that is worth mentioning here. Once a village is enclosed it cannot be enclosed again. It permanently drops out of consideration. If one arrayed villages from the most to the least suitable for enclosure, the most suitable would be selected first, and thereafter only conditions (of price, interest rates, etc.) still more favorable to enclosure would in fact result in one. As the array of villages is, as it were, used up, the conditions for an enclosure become progressively more stringent. To use another analogy, the model—and the reality to which it refers—works on a ratchet principle.

enclosure (this before the inflation of the Napoleonic Wars), the increase in the value of agricultural output would be around £4.9 million each year.<sup>61</sup> Only opportunity costs need be subtracted from this total (although they affect the rate of enclosure, bribes necessary to get an agreement to enclose from recalcitrant landowners and from parliamentary officials do not detract from its social benefit), and on the basis of Martin's estimates these may be put at around £2 an acre. If they were put higher it would matter little for the results, because to convert this capital sum into a stream of income comparable to the yearly increase in rent it must be multiplied by an interest rate. Conceding that the rate on consols, typically well under 5 percent, is a riskless rate and therefore too low, one might still doubt that the relevant rate would be much above 10 percent. The 1.1 million acres enclosed, then, would result in a stream of income foregone of  $(£2)(1.1 \text{ million})(.10) = £2.2 \text{ million}$  each year. If, therefore, one had the temerity to ignore the many necessary qualifications in view of the argument of this essay, the net gain to national income could be put at around £2.1 million a year. Considering that the components of the calculation were chosen to yield a lower bound, this is a respectable order of magnitude for a mere shift in the distribution of property rights, some 1½ percent of national income (England including Wales, which is not included in the numerator) and 3½ percent of agricultural income in 1770.<sup>62</sup> To put the matter another way, the return to enclosure was fairly high: an expenditure of 40 shillings an acre yielded an increased rent to the landlord of 7 shillings an acre in each year following, for a rate of return of about 17 percent per year.<sup>63</sup> And to put it still another way, relevant to the analysis in the previous essay of the choice between open and enclosed

<sup>61</sup> There is no clear consensus on what was, in fact, the typical rent before enclosure. Chambers and Mingay (*Agricultural Revolution*, p. 85) use a figure of 7 shillings for a comparable period. One would want rents on land in open fields, whereas this estimate refers to all land. It is biased upward by including enclosed (and therefore presumably more valuable) land, but biased downward by including rough pasture land and waste.

<sup>62</sup> The income estimates, based on Arthur Young's, are given in Deane and Cole, *British Economic Growth*, p. 156.

<sup>63</sup> In this form the calculation has a long history. For example, Slater, *English Peasantry*, p. 263, summarizing Arthur Young's calculations in 1799; Tate, "Cost of Parliamentary Enclosure," p. 265; and, most recently, G. E. Mingay, *English Landed Society in the Eighteenth Century* (London, 1963), p. 183.

fields when the costs of moving from one to the other are to be neglected, a village was roughly 13 percent more productive in an enclosed than in an open state; the increase in output was about 7 shillings an acre on land in 1770 with an output of about 50 shillings an acre.<sup>61</sup>

Whether or not these crude calculations can be improved upon by the more refined ones proposed earlier remains to be seen. The refinements require more information, particularly a usable sample of the enclosure histories of a good number of villages, complete with their topography and soil types, their size, their tenurial arrangements, and estimates of the cost and benefits of their enclosures. The constraints on the drawing of such a sample are many, for the records are often incomplete even when they have survived. What can be claimed at this point, to use an apt metaphor, is that the ground has been cleared, to some degree plowed and harrowed, and once it is seeded and cultivated the harvest of historical insight can be great.

<sup>61</sup>The output is the Deane and Cole estimate of agricultural income divided by 24 million acres. Agricultural income is relevant because agriculture used few inputs from other sectors of the economy: income will be much the same as gross output. The inclusion of Wales in the income biases it upward, and the estimate of productivity change downward, but probably relatively little; Wales was poor and small. The reported figure is simply

$$7 / \left[ \frac{(50 + 57)}{2} \right].$$