Part I

Economy and Society in Town and Country

Chapter One

England: Land and People

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Culturally, socially, politically and, above all, economically, medieval England was rooted in the land. In 1086 probably three-quarters or more of all income came directly from the land and four centuries later, at the close of the middle ages, the equivalent proportion undoubtedly remained well over 60 per cent. Nevertheless, land was more than a simple factor of production; title to land conferred status, power, wealth and obligations. Feudal lords, whether lay or ecclesiastical, were land lords in a very real sense and they valued their estates for the standing and influence these bestowed and for the recreational amenity they provided as well as for the incomes that they generated. Yet for no one, bar the monarch, was proprietorship absolute. Under the system of land tenure introduced by William the Conqueror, all land was ultimately held from the king in return for homage, service and payment. Tenants who held in chief from the crown in turn subinfeudated land on similar terms to lesser lords, who might further subinfeudate their estates to others. The complex hierarchy of proprietorship thereby created was mapped onto the land via the manorial system. Manors comprised land, tenants and jurisdictional rights in an almost infinite variety of forms and combinations. Many of the tenantry, who actually occupied and worked the land and paid rent to do so, were servile as well as subordinate. Status and tenure were inextricably interlinked. Labour, like land, therefore, was not yet freely owned as a factor of production. For the medieval peasantry, whether free or unfree, the significance of land lay primarily in the livelihood to be derived from it and the security against want that it provided in an age without institutionalized welfare. Relatively few were wholly landless and within the countryside those who were generally ranked amongst the most vulnerable in society.

Agriculture was the very foundation of the national economy and throughout the medieval centuries, and long after, performed a trilogy of key functions. First, and most obviously, agriculture fed the population, both urban and rural, non-agricultural and agricultural. Second, it reproduced and sustained the animate sources of draught power – the horses and oxen – employed throughout the economy. Third, it supplied the manufacturing sector with organic raw materials: timber, wood and charcoal; textile fibres from both plants and animals; dye plants and other industrial

crops; furs, pelts, skins and hides; fat and tallow; wax; grain (for brewing) and straw for thatching and a host of other humble purposes. For agriculture to fulfil this trilogy of functions required most of the land, the bulk of the labour force, much of the capital and a great deal of the management talent available within the national economy. How efficiently these were exploited depended upon many factors, institutional as well as environmental, cultural as well as economic, and exogenous as well as endogenous.

No closed economy could develop beyond the limits imposed by the output and productivity of its agricultural sector. Yet for small countries like England agricultural development was itself contingent upon the wider market opportunities bestowed by the economy becoming more open. Of course, England had never been a completely closed economy and it became less so as the middle ages advanced and a greater international division of labour became established through the growth of trade and commerce. Until late in the fourteenth century England's principal comparative advantage lay in the export of unprocessed primary products – wool above all, plus hides, grain, firewood, tin, lead and coal. These were exchanged for other primary products (timber, wax, hides and fish), certain industrial raw materials, such luxuries as wine and furs, and manufactured goods. This pattern of trade, with its pronounced agricultural bias, reflects the relatively undeveloped state of the European economy at that time. The core of that economy remained located in the Mediterranean whence it was linked by overland trade routes east to Asia and north to Flanders and thence England. England, especially outside of the extreme south-east, thus occupied a relatively peripheral location within the wider European economy and consequently was less urbanized and supported a smaller manufacturing sector than more advantageously located economies such as Flanders and Italy.

By the close of the middle ages, in contrast, England was adding value to its agricultural exports by processing much of its wool into cloth, inanimate power was being harnessed more fully to industrial processes, and a growing share of the profits of trade were accruing to denizen merchants. Advances in geographical and scientific knowledge were also transforming the country's location, as the Atlantic was opened up as a commercial alternative to the Mediterranean and a direct maritime link was at last established with the East. From these developments much would subsequently stem. Expanding international trade and commerce coupled with fuller utilization of inanimate power sources and greater usage of imported and inorganic raw materials would release England from too exclusive and narrow a self-sufficiency. Ultimately this would lead to industrial revolution. Nevertheless, in the more geographically circumscribed and economically and technologically less sophisticated world of the middle ages, the growth of non-agricultural populations and activities remained contingent upon the sustained expansion and diversification of national agricultural output. Never again would the country be so wholly dependent for food, raw materials, fuel, draught power and exports upon its own agricultural sector. Verdicts upon the overall performance of the medieval economy therefore tend to hinge upon how adequately that sector stood up to the considerable demands placed upon it. Hitherto, those verdicts have been predominantly negative.

For M. M. Postan, and those who have subscribed to his 'population-resources' account of economic developments, long-term demographic and economic expansion were not indefinitely sustainable on an agrarian base without higher rates of

investment and more developed forms of technology than those attainable under feudal socio-property relations. According to this view the acute land-hunger, depressed living standards and heavy famine mortality of the early fourteenth century were the price paid for a century or more of headlong population growth. Moreover, the crisis was rendered all the more profound by a failure of agricultural productivity, both of land and labour. For the alternative Marxist school of thought, articulated most forcibly by Robert Brenner, the failure of agricultural productivity was more fundamental than the growth of population and was an inevitable consequence of the exploitative nature of feudal socio-property relations, which deterred both investment and innovation. For both Postan and Brenner nemesis was the price paid for expansion; they differ primarily in their diagnoses of the root cause.

More recently, however, there has been a fuller appreciation of the international dimensions of the early fourteenth-century crisis and with it a shift towards explanations that are less narrowly agrarian. Nor were feudal socio-property relations exclusively malign. Lords were rarely as rapacious and serfs as oppressed and exploited as has often been represented. Rather, it was the territorial and dynastic ambitions of militaristic kings and nobles that proved most damaging by fuelling the explosion of warfare that characterized the fourteenth century. War, by increasing risks and driving up costs, helped induce the trade-based economic recession that is now recognized as an important component of the period. Taxation and purveyance depleted capital resources and siphoned off potential investment capital. Commodity markets and capital markets were both disrupted. As market demand contracted so employment opportunities withered and population was forced back upon the land. Given this deteriorating economic situation it is easy to see why historians have relegated the climatic and biological catastrophes of famine, murrain and plague to essentially secondary roles. Yet this fails to do justice to the magnitude and uniqueness of this sequence of environmental events. By any standard these were major exogenous shocks which through their impact transformed the status quo and thereby altered the course of development. Indeed, a mounting body of archaeological evidence suggests that the climatic and biological disasters of the period were themselves interconnected in ways that have yet to be unravelled. The exogenous dimensions of the crisis are thus ripe for reassessment. This rethinking of the period is likely to continue as more evidence is assembled and developments in England are interpreted within a broader geographical framework and wider historical context.

Challenges and Dilemmas

All agrarian-based economies, such as that of pre-industrial England, had to contend with five long-enduring dilemmas, each of which was capable of thwarting progress and precipitating crisis. The first of these dilemmas was a 'tenurial dilemma' of how most effectively to occupy the land and on what terms. It was landlords who by controlling tenure regulated access to land. The terms upon which land was granted to those who worked it determined the number, size and layout of the units of production and, accordingly, the nature of the labour process (servile, hired, familial). Tenure likewise determined the 'rent' paid for the land and the form that this took, typically labour, kind or cash. Efficient forms of tenure were those which delivered the best returns to land and the labour and capital invested in it. Tenure, however,

was institutionally determined and characteristically slower to reform than economic circumstances were to change. Not unusually, it was tenurial inertia that frustrated fuller and more efficient use of the land.

Medieval tenures were rooted in local custom and manorial jurisdictions and could vary with dramatic effect from manor to manor, with far-reaching demographic and economic consequences. Some manors boasted substantial demesnes which might be managed on behalf of the lord or leased to tenants, others lacked them; on some manors the bulk of tenants held by customary tenures of one sort or another, on others free tenure prevailed; some tenants were burdened with rent and owed heavy labour services to their lords, many others owed fixed money rents that no longer reflected the full economic value of the land; on some manors lords insisted on the immutability of holdings and opposed any attempts to subdivide or engross, on others a lively peasant land market prevailed and holdings were constantly changing in number, size and composition. By 1300, on the evidence of the *inquisitiones post mortem*, more tenants held by free than by unfree tenure, more paid a sub-economic than a full rack rent, and there were many more small holdings than large. These traits were more pronounced on small manors than large, on lesser estates rather than greater, and on estates in lay hands rather than those in episcopal and Benedictine ownership. Such diverse tenurial arrangements were the source of much economic inefficiency but were neither quick nor easy to change. They were also the stuff of much agrarian discontent, which occasionally flared up in direct conflict between tenants and landlords. Tenurial reform was a major challenge, especially at times of acute population pressure. Legal impediments could retard progress and there were often political and humanitarian obstacles to be overcome. Change was generally most easily implemented when land was in relative abundance, as was the case throughout the fifteenth century.

Second, there was an 'ecological dilemma' of how to maintain and raise output without jeopardizing the productivity of the soil by overcropping and overgrazing. Medieval agriculture was organic and although there was much sound experience and lore on how best to work the land there was no scientific knowledge *per se*. Medieval agricultural treatises stressed best-practice financial and management arrangements and only at the very close of the middle ages was there a renewal of scientific interest in plants and animals, stimulated by the writings of Columella, Pier de' Crescenzi and Palladius. Then, as now, the key to sustaining output lay in maintaining the nutrient balance within the soil, especially the three essential nutrients of nitrogen, phosphorus and potassium. Scarcity in any one of these would inhibit plant growth. The nutrients removed in harvested crops consequently needed constant replenishment. The techniques available to medieval husbandmen in order to achieve this included crop rotation, sowing nitrifying courses of legumes (peas, beans and vetches), fallowing, alternating land between arable and grass (ley husbandry), dunging, manuring and marling. All required effort and organization, which were most likely to be applied wherever land was scarce and labour abundant.

Paradoxically, it was cheap land and dear labour that were most likely to lead to a 'slash and burn' approach to the soil. The same circumstances could also result in the kind of 'tragedy of the commons' that arose from poorly policed common property rights, whereby individuals pursued self-interest to the detriment of the common good. The hypothesis that arable soils tended to become exhausted has appealed to

a number of medieval historians, although there is as yet little unequivocal evidence to support the hypothesis. There are certainly several well-documented cases of falling yields, but whether this was because of depleted soil fertility, less favourable weather, increased plant disease (especially rust infestation), reduced labour and capital inputs or a change in husbandry methods has proved hard to establish. Moreover, non-economic factors – especially war and the heavy taxation and purveyancing that went with it – could destabilize agro-systems by draining them of the capital inputs – manpower, seed, draught animals – required for their maintenance. There are also several clear examples of very intensive and demanding systems of cropping that successfully delivered a sustained high level of yield. Rather, if the land suffered it is more likely to have been the pasture than the arable. There was a natural temptation to overstock – to the detriment of animals as well as pastures – and systems of sheep-corn husbandry widely used to maintain arable fertility effectively did so by systematically robbing pastures of their nutrients. Much grassland may thereby have degenerated into heath, which in lowland England is rarely a natural climax vegetation. Maintaining the ecological status quo therefore tended to be selective and required both vigilance and skill.

Productivity also lay at the root of the third dilemma, namely the 'Ricardian dilemma' of how to raise output without incurring diminishing returns to land and labour. The diminishing returns to land came from bringing inferior land into production as the population rose. The diminishing returns to labour arose once the incremental application of labour to land began to drive down first the marginal then the average productivity of labour. Such diminishing returns, once initiated, proved difficult to reverse. Excess population became entrapped on the land, depressing rural incomes and thereby investment, and frustrating further growth of the non-agricultural sector to the detriment of the economy at large. This scenario could only be postponed or avoided by maximizing the productivity gains that accrued from the division of labour (itself a function of the size of the market), adopting more efficient forms of labour process which raised output per worker in agriculture (e.g. replacing servile labour with hired labour and family farms with capitalist farms), and by investing in labour-saving technologies. A necessary corollary was the occupational and geographical migration of labour out of agriculture and off the land, to which there could be considerable resistance by those most directly affected. Maintaining or changing the economic status quo incurred high social costs; the only difference was the nature of the costs.

Closely related to this Ricardian dilemma was a fourth dilemma – the 'Malthusian dilemma' – of how to prevent the growth of population from outpacing the growth of agricultural output. Pre-industrial populations were capable of growing at up to 1.5 per cent per annum, but agricultural output and national income rarely sustained growth rates in excess of 0.5 per cent. Large-scale emigration was one solution to this dilemma, but it was contingent upon the availability of suitable destinations and the means of reaching them. The middle ages were not without such opportunities and in the twelfth and thirteenth centuries south Wales, the lordship of Ireland, the royal burghs of Scotland, and north Wales successively attracted significant numbers of English settlers. This exodus from England is likely to have been disproportionately male and, to judge from its impact upon the Celtic lands of the west, probably numbered some tens of thousands of migrants. As with later episodes of mass

emigration, female marriage rates may have fallen in England for want of sufficient male partners. Any reduction in marriage and the formation of new households will have helped curb fertility and thereby slow or even halt the continued growth of population. In the early modern period fertility rates would vary quite significantly with economic opportunities in a process of homoeostatic adjustment but, for want of hard evidence, whether such preventive measures formed part of the medieval demographic regime can only be conjectured.

Mortality rates, in contrast, plainly varied a good deal and were certainly capable of acting as a positive check on population growth. Background mortality, for instance, was likely to rise whenever a general deterioration in living standards resulted in reduced standards of nutrition and hygiene. It could also rise and fall independently of living standards according to the incidence and morbidity of disease. Thus the thirteenth century seems to have been a relatively healthy period for all its falling living standards, whereas the fifteenth century was comparatively unhealthy notwithstanding greatly improved living standards. Migration could also redistribute population from low- to high-mortality locations, such as malaria-infected marshland and congested and insanitary towns, both of which recruited significant numbers of in-migrants during the twelfth and thirteenth centuries. Most dramatic of all, harvest failure could trigger a major subsistence crisis, resulting in a surge of deaths from starvation and famine fevers. The Great European Famine of 1315–22 rates as the most severe such crisis in recorded English history and although some communities subsequently made good their demographic losses it is unlikely that the medieval population as a whole ever recovered to its pre-famine maximum. For Postan, the Great Famine rather than the Black Death was the key watershed demographic event.

Any failure of subsistence highlighted the fifth dilemma – an 'entitlements dilemma' – of who shared in the fruits of production and on what terms. There were, of course, several different ways of securing the means of subsistence, notably through direct production, gift exchange and market purchase. Individuals were, however, far from equally endowed in their access to these means and any deficiency was bound to be highlighted at times of acute scarcity. Typically, the bulk of famine victims comprise those with the weakest economic entitlement to obtain food and those who, by dint of the crisis, have forfeited whatever entitlement they once had. Such victimization could only be prevented or mitigated by the adoption of welfare measures designed either to protect the entitlement of the most vulnerable or compensate for that loss of entitlement for as long as the crisis lasted. Historically, that has meant evolving appropriate institutions and strategies and distinguishing between those deserving and undeserving of assistance. In the middle ages there was as yet no concept that these were the responsibilities of government. Rather, trust was placed in family support, Christian charity and guild organizations, inadequate though these invariably proved when times were hard. Not until the close of the period, at a time when the entitlements dilemma was at its least acute, were the foundations laid for the emergence of a more community-based system of welfare support administered through the parish.

The acuteness of these dilemmas and the measures adopted to cope with them varied across space and over time. Over the course of the middle ages the waxing and then waning of population, development of commodity and factor markets (in

land, labour and capital), expansion and contraction of towns and cities, growth of proto-industrialization and progressive redefinition of socio-property rights and associated transformation of labour processes all made a material difference to the severity of the challenge to be met and the precise nature of the response. Liberation from these dilemmas was beyond the capacity of pre-industrial societies; only the transformation of the entire socio-economic system through an 'industrial revolution' could achieve that. Rather, it was a case of developing strategies for coping and preventing the 'worst-case' scenarios from happening. The measure of success is not, therefore, whether these dilemmas were resolved but how effectively they were contained given the levels of knowledge and technology prevailing at the time. Because all five of these dilemmas were closely interconnected, that required progress across a broad front. The 'solutions' did not lie within agriculture alone. Moreover, the scale of the challenge could be greatly magnified by environmental instability, both physical and biological.

The exogenous risks of harvest failure and disease – both of animals and humans – were not constant over time and need to be separated from the endogenous risks inherent to the socio-economic system as a whole. Environmental shocks were autonomous, although the socio-economic context within which they occurred shaped both their impact and the response. Thus, dendrochronology identifies two major episodes of severe climatic abnormality as having taken place during the middle ages. The first – from 1163 to 1189 – occurred at the threshold of a century or more of demographic and economic expansion, whereas the second – from 1315 to 1353 – marks the onset of a century and a half of contraction and stagnation. Plainly, the context within which these shocks occurred was all-important in determining whether subsequent demographic and economic developments were positive or negative. That they should have happened is not necessarily an indictment of the socio-economic system they affected, for few such systems could have withstood them. Whatever their effects, the environmental disasters that wrought such havoc in the fourteenth century cannot in themselves be explained by the theories of Malthus, Marx or Ricardo. To all intents and purposes they were accidents. Disentangling non-economic causes from economic effects is in fact a dilemma for historians of this period, all the more so because environmental factors clearly exercised a profound influence.

Sources of Agricultural Change and Patterns of Response

Any change in the size and structure of a population directly affected both the demand for agricultural produce and the supply of agricultural labour. Between 1086, when England was a relatively underpopulated country with probably just over 2 million inhabitants, and 1300 the population at least doubled to probably some 4.5 to 5 million inhabitants. By 1377, however, the combination of famine (in 1315–22, 1330–1 and 1346–7), war (with Scotland, France and the Gaelic Irish) and plague (in 1348–9, 1361–2, 1369 and 1375) had reduced the population by 40–60 per cent to 2.5 to 2.75 million inhabitants. Thereafter, numbers seem to have drifted downwards to a mid-fifteenth-century minimum of less than 2 million and there was no sustained revival of demographic vigour until the second quarter of the sixteenth century when the population may still have been little greater than in 1086. What

drove this prolonged expansion and then dramatic contraction of the English population over the period 1086–1540 is as yet imperfectly understood, but it is plain that it had profound repercussions for the agricultural sector. Nor were these always as simple and direct as has sometimes been supposed.

Agricultural producers responded to the rise and fall of population much as they would do to subsequent demographic cycles. First, and most conspicuously, land was either brought into or withdrawn from agricultural use. The process, which has been extensively documented, was geographically highly selective and tended to be most conspicuous at the environmental, locational and political margins. In the most extreme cases it was accompanied by wholesale settlement colonization or abandonment. Although landlords acted both as colonizers and depopulators, it was individual peasant farmers who were most active in bringing land into or taking it out of cultivation. The new religious orders of the age, especially the Cistercians, also made an active contribution to the reclamation process through a combination of superior organization and the labour of lay brothers. Examples of agricultural expansion include widespread fenland and marshland drainage; the piecemeal reclamation of upland areas; and the recolonization of Yorkshire and other wasted areas in the north. Examples of subsequent agricultural retreat include the abandonment of much reclaimed coastal marshland, especially in Kent and Sussex; the desertion of farms, hamlets and villages in many environmentally and economically marginal locations – the edge of Dartmoor, the sandy and infertile Breckland of East Anglia, the stiff, cold clay soils of the midlands – and the withdrawal of settlement from the contested lands of the Scottish border. Yet, contraction did not exactly mirror expansion. The net effect of first advance and then retreat, over the period 1086–1540, was to bring about a profound transformation in the local and regional distribution of population due to differential rates of natural increase and decrease and significant inter-regional migration. The country's population map was substantially redrawn and in the process the balance of land-use was profoundly altered.

More important than changes in the agricultural area were changes in the use to which land was put, for there was never much land which yielded no agricultural output whatsoever. Even the most unimproved wastes generally supported some livestock. Thus, during the era of population growth land-use in general became more intensive. Arable, the most intensive land-use of all, expanded at the expense of pasture and wood. By 1300 in excess of 10 million acres may have been under the plough. But even at the height of the medieval ploughing-up campaign there was at least as much grassland as there was arable, for much reclamation of marshland, low-lying valley bottoms and upland was for pasture rather than tillage. The area of meadow, so essential for the production of hay, was thereby greatly enlarged, particularly in Yorkshire, which after Lincolnshire became England's most meadow-rich county. Around England's upland margins many a pasture farm was also brought into being. The Pennine Dales, for example, became threaded with seigniorial and monastic vaccaries. Where lordship was weak there was often much squatting on and reclamation of former common pasture and 'waste', as in the Arden area of Warwickshire and many parts of the north of England. Although the advance of the plough may have left many individual holdings and localities deficient in pasture, land-use within the country as a whole remained more pastoral than arable. This found expression in the development of different agrarian economies and the inter-regional exchange

of animals and animal products. It was largely to service that trade between upland breeders and rearers and lowland consumers that the growing number of seasonal fairs was brought into being.

Everywhere, during the twelfth and thirteenth centuries, there was much felling of woodland, to the extent that some parts of the country became virtually treeless. What remained was carefully protected and intensively managed. Coppicing became the norm in many parts of lowland England as the most effective means of maintaining sustained yield woodland and, as fuel costs rose, so coal began to be more widely exploited as an alternative. By the close of the thirteenth century Newcastle was supplying coal to ports up and down the east coast. Yet although by this date the land of England was being more fully and intensively exploited than ever before, a variety of mostly institutional obstacles meant that much agriculturally underexploited land nevertheless remained. Considerable areas, for example, had been set aside by monarchs and magnates as royal forest and private hunting grounds and as such could not readily be brought into more productive use. There were also substantial amounts of common pasture and waste. True, these did yield a range of agricultural products, but rates of productivity were bound to remain low until more effective means of management and exploitation could be put in place. In most cases the latter were contingent upon enclosure, which first began to have a big impact in the late fifteenth century, thereby initiating the long and fitful process by which common pastures, commonfields and common rights were extinguished.

After 1349, during the prolonged post-plague era of population decline and stagnation, many of these land-use changes were reversed. Meadows and rich marshland grazings deteriorated as drainage systems and flood dykes were neglected. Improved pasture reverted to rough pasture, scrub and eventually woodland, and many a coppiced woodland was left to run wild. The dendrochronological record testifies to a widespread post-1350 regeneration of woodland. With a greatly reduced population to feed there was neither the need for so much arable nor the labour force to till it, hence the arable area shrank. It contracted most wherever cultivation was least rewarding, typically on the lightest and most infertile and the stiffest and heaviest soils as well as where landlords were most reactionary and oppressive. It was this process which underlay most lowland village desertion, with one in ten villages in the south midlands disappearing in this way as a single substantial (often seigniorial) pasture farm replaced a mixed-farming community. The decay of such communities generally took place gradually and the *coup de grâce* was usually only delivered at a relatively advanced stage, more typically in the fifteenth than the fourteenth century. As a process, it progressed furthest where land offered a better return as grass than as tillage and where the power of lordship promoted the voluntary or involuntary removal of population. Because these land-use changes were reinforced by changes in settlement they proved remarkably enduring in effect. In much of lowland England a more rational pattern of land-use was brought into being. In particular, heavy clayland, with its high cultivation costs and poor returns, was converted to grass. Such land-use changes further reinforced the redistribution of rural population.

These processes of land-use substitution were directly associated with corresponding changes in the agricultural product mix. Some historians have assumed that more arable meant less livestock, and vice versa, but it was not as simple as this and there was no simple lineal relationship between the two sectors. Arable production

could only be successfully expanded if it became more closely integrated with the pastoral production upon which it depended for draught power and manure. The key to output success lay in the closer integration of arable and pastoral production on the same land. Thus, as the arable area expanded there was a corresponding growth of arable-based mixed-farming systems characterized by fallow grazing and fodder cropping. Features of such systems were the substitution of horses for oxen, off-the-farm replacement of working animals, cattle-based dairying, the sty feeding of swine and the employment of sheep as walking dung machines as well as producers of England's most important raw material. Paradoxically, it was in the arable east of England that non-working animals were present in the greatest relative numbers and flocks and herds were demographically most specialized. In these ways the pastoral sector became more productive of energy and food. Corresponding changes in the crop mix trended in the same direction and allowed a greatly increased population to be accommodated on the land. Increasingly, grain grown for bread and pottage replaced that grown for malting and brewing, since the latter yielded a far lower food-extraction rate. Likewise, the cheapest and coarsest grains – rye rather than wheat and oats rather than barley plus peas and beans for pottage – gained relative to their more costly and refined alternatives. This helped guarantee the supply of food to those with the most limited purses, at some sacrifice of their dietary preferences.

In these ways the output of affordable foodstuffs grew by far more than the expansion of the agricultural area (an estimated 100–150 per cent gain in processed grain kilocalories compared with a 75–80 per cent increase in the arable area), thereby greatly qualifying the Malthusian prediction that the expansion of food supply could not match the expansion of population. Once the pressure of population was removed the product mix changed in the opposite direction, as the population became better able to indulge its preference to consume meat rather than dairy produce, bread rather than pottage (especially the more refined types of bread), and greater quantities of higher-quality ale. Since the production of meat and brewing grains was more land extensive than the production of milk and bread grains, the contraction in the agricultural area was similarly less pronounced than the contraction in population (an estimated 20 per cent reduction in the arable area compared with a 50 per cent loss in processed grain kilocalories). Articulating these developments were relative shifts in product prices and the costs of land, labour and capital.

The rise and fall of population altered the relative costs of land and labour and, to a lesser extent, capital. As a result those factors of production most in abundance were substituted for those that were in greatest scarcity. Population increase during the twelfth and thirteenth centuries promoted a process of intensification as increasing quantities of labour were lavished on the land. Hence the growing emphasis upon tillage, upon fodder-fed livestock, upon closely managed hay meadows and coppiced woodlands, and upon the closer integration of arable and pastoral husbandry. Conversely, after 1349, as labour became scarcer and costlier and land relatively more abundant, so producers adopted production strategies which made less use of labour and more use of land. In other words, agriculture became more extensive in character. Thus there was a retreat from the most intensive methods of production, especially those dependent upon such labour-intensive tasks as systematic manuring and marling, multiple ploughings, weeding and fodder cropping. Although the land

ceased to yield as much as before, labour became more productive and far better remunerated. Since livestock are more land- and less labour-intensive to produce than crops, pastoral husbandry gained relative to arable. Partly for the same reason, sheep – the most extensive of livestock – gained relative to cattle, leading ultimately to Thomas More's famous lament that 'sheep do eat up men'. In fact, by the close of the middle ages England had become a land relatively empty of people but full of animals and the average Englishman enjoyed a far more carnivorous diet than for centuries before or after.

The more that farms, localities, regions and the country at large exploited their respective comparative advantages, the more contingent the whole process became upon the development of trade and commerce. No medieval farm was fully self-sufficient either in the consumption requirements of the household or the diverse inputs required to maintain agricultural production. Seed, manure, fodder, hay, replacement animals, tools and implements, building materials, building skills, extra labour, additional land and capital for investment were all purchased in one way or another as required. Surpluses were exchanged or sold. Many lived at a subsistence level but they provided for their subsistence by participating in the market. Geoffrey Chaucer's poor widow and her two daughters in the *Nun's Priest's Tale* are a clear if fictional example. Great landlords alone possessed a sufficiently large and broad portfolio of resources to insulate themselves from the market and practise total autarky, yet even they were impelled into market participation by their innate tendency to overproduce and desire for the good things that money could buy. Lords in a ten-county area around London *c.*1300 sold on average just under half of the net output of their demesnes. The remainder was disposed of either on the manor or on the estate. When lords opted to run their estates like integrated firms with large numbers of internal transfers they were taking conscious account of the higher transaction costs likely to be incurred by market exchange. Prices thus increasingly shaped the decisions of producers irrespective of whether they bought or sold. The medieval countryside was a commercialized place and it tended to become even more so with the passage of time.

Domesday Book testifies that the requisite infrastructure of towns, markets and fairs required for the conduct of trade was already in place throughout southern England by 1086. Thereafter, that infrastructure was extended into northern England and the conquered and colonized lands of Wales and the lordship of Ireland. Throughout England it also became progressively elaborated through the establishment of further chartered and unchartered trading places, the rising number of trading places providing a crude index of the growing volume of market transactions. Lords were especially active in 'founding' boroughs, markets and fairs by obtaining grants of the requisite charters from the crown. A thriving borough or market could bring them welcome revenues, enhance their prestige and facilitate the conversion of tenant surpluses into cash rents. Chartered boroughs, markets and fairs were entitled to impose tolls upon those who used them but they also provided traders and dealers with speedy justice. Informal markets were cheaper but riskier places in which to operate. Commerce was further facilitated by the improvement of the country's transport infrastructure. Thanks to private enterprise, most river crossings had been bridged by 1300 and at those too wide to be bridged ferries operated. Bulky agricultural products travelled more cheaply by water than by road, hence at riverine and

coastal entrepots there was substantial investment in wharfage and storage facilities. Drovers, carters, boatmen and shipmen were all available for hire and an array of mongers, dealers and hucksters grew up who serviced the trade in agricultural products. Commercialization advanced as knowledge and experience of market exchange grew and confidence in markets increased. The crown encouraged the process by maintaining an adequate supply of sound coin. Between 1086 and 1300 there was a threefold increase in the real supply of coinage per capita.

Where the growth of commodity markets led the development of factor markets in land, labour and capital followed. From a relatively early date labour was widely bought and sold throughout the medieval economy, so much so that by 1300, on R. H. Britnell's estimation, wage labour may have accounted for about a fifth to a quarter of the total labour expended in producing goods and services within the economy at large (family labour providing the lion's share of the remainder). Markets in land and capital faced more significant institutional obstacles and therefore developed somewhat later and more unevenly. Such markets were a prerequisite for the growth of economic efficiency by facilitating the reallocation of resources. Nevertheless, markets *per se* did not necessarily deliver progress and prosperity; rather, they expedited change whether for better or worse. They created new opportunities but also introduced new risks and penalties. Wage earning may have enabled more people to be supported but those thus dependent could find their livelihoods jeopardized when employment contracted, wage rates fell and food prices rose. Significantly, real wage rates sank to their medieval nadir during the agrarian crisis of 1315–22. Nor do such rates tell the full story, for with reduced harvests and less purchasing power employment shrank.

Historically, one of the most positive stimuli to agricultural development has been the growth of concentrated urban demand, provided that, as in England, towns exercised neither monopolistic nor coercive control over their supply hinterlands. Large towns created opportunities for greater specialization and intensification which, in turn, stimulated technological innovation and structural change. Other things being equal, the greater the scale of urban centres, the greater the potential for agricultural change and progress. The extent of urban hinterlands was linked exponentially to the size of the cities they served: the stronger the gravitational pull, the wider the territorial impact. Within those hinterlands the products produced and the intensity of their production were structured by cost-distance from the market.

London alone among medieval English cities attained a size sufficient to influence land-use and agriculture across a wide area. It could already boast a population of approximately 20,000 at the time of Domesday and two centuries later it had attained its medieval temporal peak of approximately 70,000 inhabitants. At that time Paris had, perhaps, 200,000 inhabitants and the great constellation of Flemish cities comprising Bruges, Ghent, Ypres and the many lesser towns around them a combined population of at least 250,000. The demand of all three of these urban concentrations for food, fuel, draught power and raw materials impacted to some extent upon agricultural producers in England. Indeed, in eastern Kent their respective hinterlands overlapped, driving up economic rent and stimulating the development of exceptionally intensive and productive systems of husbandry.

In normal years London drew its grain provisions from a hinterland of approximately 4,000 square miles, which extended furthest east and west along the artery

provided by the Thames. Faversham was the leading grain entrepot downstream of the city and Henley the principal entrepot upstream. Within London's broad supply hinterland the crops produced and intensity of their production varied with cost-distance from the metropolis. Thus, oats and rye – both cheap and required in great quantity – were produced closest to the city, malted barley at an intermediate distance, and wheat – the grain best able to bear the costs of transport – at the greatest distance. Specialist zones of hay production and firewood production can also be recognized. Livestock and their products tended to be brought from even greater distances via overland rather than riverine and estuarine supply routes. In 1317, for instance, at the height of the worst harvest failure on record, the king ordered his sheriffs to procure essential provisions for the royal household at Westminster. Hay, one of the bulkiest of commodities, was to be obtained from the counties closest to London – Middlesex, Essex, Hertfordshire, Surrey and Sussex. Grain, better able to withstand the costs of carriage, was to come from a much wider geographical area, comprising Kent, Surrey, Sussex, Hertfordshire, Essex, Suffolk, Norfolk, Cambridgeshire and Huntingdonshire (in the last two cases presumably shipped to London via King's Lynn). Finally, livestock were to be procured from a wide scatter of inland counties and thence, presumably, driven overland to Westminster. Most of this group of counties were at a considerable distance from the city – Cambridgeshire and Huntingdonshire on the fen edge (a major pastoral area), plus Hampshire, Wiltshire, Gloucestershire and Somerset (all counties relatively well provided with permanent pasture).

The year 1317 was abnormal: at this stage in the city's development probably only a fifth of the country was regularly engaged in making some contribution to the provisioning of the city. In addition, there were the provisions sent overseas to neighbouring continental towns and cities, and the wool exported in quantity to the great cloth manufacturing cities of Flanders and Italy. Few parts of the country were therefore wholly untouched in some way or other by concentrated urban demand. For most of England, however, that demand was relatively remote, with the result that low rather than high levels of economic rent tended to prevail. While that was the case extensive agricultural systems with their low levels of land productivity were bound to predominate, especially in inland districts remote from navigable rivers. Without stronger economic incentives, adoption of more intensive and productive husbandry systems was unjustified.

From the early fourteenth century, concentrated urban demand contracted everywhere. By 1500 London's population had fallen by 25 per cent to about 55,000. Its provisioning hinterland contracted accordingly and, within that hinterland, levels of economic rent fell. The structure of urban demand also changed, as urban per capita incomes rose. Fifteenth-century Londoners wanted more meat, white bread and ale brewed from malted barley than their thirteenth-century predecessors. For agricultural producers that meant a process of adjustment that was often difficult. The former major grain entrepot of Henley declined. Old specialisms, such as rye in the lower Thames valley, fell into abeyance and new specialisms and sources of supply arose, notably the production of malting barley in the vale country north of the Chilterns. London butchers obtained their fat animals from graziers in the midlands where pastoral husbandry was in the ascendant. There can be little doubt that had London been larger the necessary provisions would have been forthcoming and the incentives to specialize and intensify would have been felt across an even greater area.

This is demonstrated by the ease with which the city re-expanded in the sixteenth century, quadrupling in size within the space of a hundred years and thereby becoming an even greater catalyst of agricultural change.

For areas economically penalized by remoteness from major centres of demand one solution was to turn to manufacturing. In particular, the cheap labour that was consequent upon cheap land and low living costs could be used to produce cloth for sale in distant markets. Textiles had the great merit that labour costs accounted for the bulk of the finished price while their high unit value meant that they were well able to bear the costs of transport. Until the fourteenth century few rural areas successfully diversified in this way and with a few notable exceptions the mass production of cloth was largely confined to the towns. Thereafter, however, 'proto-industrialization' took strong root in many parts of the countryside, where the greater cheapness of rural labour and the fact that it was not hidebound by guild restrictions offered real competitive advantages. The cloth industry was further encouraged by the export duty on wool, which gave English producers a further cost advantage over foreign competitors. From a modest start these industries eventually went from strength to strength, transforming the localities within which they grew.

Those areas which proved particularly fertile for the development of proto-industry offered cheap labour with the relevant indigenous skills, an absence of tight manorial and other institutional controls, and ready access to land so that there was no upper limit on the supply of small holders seeking by-employment. As these rural industries grew, so they in turn became important sources of demand for raw materials and foodstuffs and a further source of agricultural change. Earnings in industry attracted migrants and stimulated relatively high levels of fertility, with the result that in demographic terms these were among the most dynamic regions. Tax records show that between 1334 and 1524 the textile-producing regions of East Anglia, the south-east and, above all, the south-west all gained in wealth and population relative to most of the rest of the country. Areas which had formerly been among the least developed now became active and prosperous participants in the widening orbit of commercial exchange. They became the suppliers of many of the cheap, mass-produced trade goods upon which the continued growth of the metropolis and its commerce were in part founded.

This combined emergence of metropolitan demand and rural industry, and attendant accumulation of capital in the hands of native merchants, was a late medieval phenomenon. So, too, was the nascent emergence of the capitalist agriculture which in future centuries would keep feeding the metropolis, provisioning the expanding manufacturing areas and producing the industrial raw materials, whilst providing, in return, a market for urban goods and services and rural manufactures. This creation of capitalist agriculture was contingent upon a redefinition of property rights combined with structural change in the units of production.

Whereas the rise and fall of population and expansion and contraction of cities were cyclical, evolution of the law of property was lineal. The population may have been little larger in 1540 than 1086, but its relationship to the land and the terms upon which the latter was occupied had been transformed by developments in property law. So, too, had personal status. Freeholders and their proprietary rights were the

first to benefit from the development of the common law as enforced in the royal courts. From the late twelfth century this placed them increasingly beyond the bounds of seigniorial jurisdiction and greatly enhanced the desirability of freehold tenures. Much of the reclamation of the period was undertaken by freeholders and in the north and west lords used free tenure as a bait to attract colonists. Since freeholders in effect paid fixed rents, rising land values during the long thirteenth century encouraged subdivision, thereby further increasing the supply of freeholdings. By 1300 on lay manors free tenants probably outnumbered customary tenants by approximately two to one. As labour now was an abundant rather than scarce commodity lords increasingly realized that hired labour gave a better return than customary labour and it certainly incurred lower supervision costs. Customary services were therefore increasingly commuted for money rents. Servility, of course, endured and serfs continued to be denied access to the royal courts but prudent landlords, such as Ramsey Abbey, realized that there was more to be gained by cooperating with their customary tenants than by coercing and exploiting them. Almost imperceptibly the old customary tenures were being diluted and transformed.

Following the demographic collapse of the mid-fourteenth century the pace of tenurial change accelerated and became irresistible. Tenants were able to play one lord off against another and in an increasingly mobile world many preferred to forsake the manors of their birth rather than live any longer under the yoke of serfdom. The bid by the peasantry in 1381 to have serfdom abolished for good may have failed, but thereafter as an institution it proved unsustainable. With land in relative abundance and good wages to be earned outside agriculture, tenants would no longer take holdings on the old servile terms. Customary services, too, were performed increasingly grudgingly and inefficiently. Although labour was again scarce, attempting to enforce servile status now proved counterproductive to lords. They fared better with free tenants and hired labour. Personal servility was not abolished, it lapsed, and had effectively gone by the mid-sixteenth century. Tenure ceased to be related to personal status and those who held former customary land, often by some form of copyhold tenure or as tenants at will, were no longer stigmatized as unfree and debarred from the royal courts. Meanwhile there was a significant increase in leasehold as lords progressively withdrew from direct management of their demesnes. The difficult second quarter of the fourteenth century seems to have precipitated the first flurry of leasing and the Black Death then initiated a further spate. Nevertheless, for the next thirty years, buoyed up by a post-catastrophe inflationary price rise and backed up by the enforced wage restraint of the Statute of Labourers, direct management enjoyed something of an Indian summer. It was only from the last quarter of the century, as prices fell, labour costs soared and customary services decayed, that lords started leasing out their demesnes *en masse*, either entire or piecemeal. By the mid-fifteenth century it was only home farms directly engaged in provisioning the seigniorial household and demesnes for which no suitable tenant could be found that were still in hand.

Through this process approximately 25 to 30 per cent of all arable land was transferred to the tenant sector and landlords became the rentiers that they were henceforth to remain. Much tenant land that had reverted to lords was also converted to leasehold. Then, over the course of the late fifteenth and early sixteenth centuries, legal developments effectively extended proprietary rights to leaseholders and copyholders and eventually enabled them to defend their titles in the common law courts.

These courts enforced manorial custom against lords and eventually, towards the end of the sixteenth century, capped the entry fines that lords could demand of heritable copyholds. Lordship remained a power in the land but its most arbitrary powers were effectively curbed. From the mid-fifteenth century tenants of all sorts enjoyed greater security both of tenure and of wealth and most, *pro rata*, paid less rent. They were therefore able to retain a larger share of the profits of their own labours and had a stronger incentive to reinvest in their holdings, except when discouraged by slack demand and low prices. In those parts of eastern and southeastern England where a peasant land market had long been established there were now fewer obstacles than ever before to the *inter vivos* conveyance of land. In fact, most manorial courts here became *de facto* little more than a register of copyhold land transfers. In parts of central, southern and western England, in contrast, where an active market in customary land had never developed, lords retained their ancient right to grant out land and tenants were prevented from benefiting from the sale of land held by copyhold.

Tenants like lords also sought ways of circumventing customary rules of inheritance through the transfer of land during their own lives, if need be on their deathbeds, to their chosen heirs. Customary rules of inheritance only applied by default in cases where tenants had made no alternative arrangements. Then, from 1540, testamentary bequests of land gained legal standing and freehold tenants and holders of heritable copyholds who made wills gained full control over the descent of land and property (leasehold interests had always been bequeathable). Depending upon their circumstances, some chose to divide their property, but more preferred to pass it on intact, having provided for younger children in other ways. For those tenants with the means and the will, the way was opened to the energetic engrossing of farms. Nor was this something that landlords any longer opposed. During the fifteenth century when landholding was a mixed blessing, wage rates were high and alternative employment relatively easy to find, numbers of tenants opted out of landownership altogether. Others seized the opportunity to accumulate land. Herein lay the origin of a new class division within the countryside.

Institutional and economic factors were all important in determining how far this dichotomy between landlessness and engrossing progressed, but it was sufficiently well established by the early sixteenth century for renewed population growth to reinforce rather than reverse the process in most lowland mixed-farming districts. The scene was set for the emergence of capitalized yeoman farms and a wage-labouring, cottage-occupying proletariat. Once holdings grew above 24 hectares in size they became increasingly dependent upon the employment of additional hired labour, now liberated from servitude and an increasingly mobile factor of production. On farms of 30 hectares or more hired labour generally exceeded family labour. This represents a transformation of rural class relations from those that had prevailed at the climax of medieval demographic and economic expansion at the opening of the fourteenth century, and with it a transformation of the fields and farms which comprised the units of production. Except in areas of proto-industry and in areas of former forest and common waste where squatting was rife, the plethora of tiny peasant holdings was a thing of the past. Long gone, too, was the substantial demesne with dependent customary tenants supplying labour services. As successful tenants accumulated land and consolidated strips and parcels, so piecemeal enclosure began to convert

land held in common to land held in severalty. These processes were not universal and they certainly did not proceed at a uniform pace. So much depended upon intensely local circumstances that adjacent manors often developed in entirely different ways. The roots of these differences and of the profound changes that were eventually effected nevertheless both lay in the middle ages.

Continuity, Change and Crisis

In 1520, as in 1086, agriculture still occupied a majority position in the national economy. Three-quarters of the population of approximately 2 million continued to derive its living from the land and three-quarters of the remainder lived on or close to the land while making its living from essentially non-agricultural activities. Only 6 per cent of the population lived in towns with 5,000 or more inhabitants, almost half of them in London. The economy as a whole remained pre-industrial and underdeveloped. Nevertheless, progress there had certainly been. The population had undergone significant geographical redistribution. London, although smaller than in 1300, was of enhanced political and economic importance and on the threshold of renewed vigorous growth. English merchants were handling a greater share of overseas trade and thereby accumulating mercantile capital. The growth of protoindustry was generating employment, transforming local and regional economies and adding value to English exports. Commercial exchange had become more sophisticated and the commercial infrastructure more mature, with fewer more developed central places. Facilitated by changes in property rights, factor markets in land, labour and capital had grown up alongside the older established commodity markets, thereby offering the possibility of a more efficient allocation of economic resources. With the recent discovery of the Americas and opening up of the Atlantic and the maritime routes to the East, England's relative location was also significantly improved. Ocean-going ships were larger, more manoeuvrable, could carry more, sail further and be navigated with greater precision. England was poised to gain from a significant growth in maritime trade and commerce.

Against these achievements the advances which had been made in the techniques and tools of agriculture seem modest. Introduction of the rabbit in the twelfth century had helped turn poor soils to profit, until by the fifteenth century it had so acclimatized itself as to become a pest. Windmills, a technological breakthrough of the late twelfth century, harnessed more inanimate power to the processing of foodstuffs, especially in areas deficient in water power, and by the first half of the fourteenth century accounted for approximately a quarter of all milling capacity. Likewise, from the twelfth century progressive substitution of horses for oxen enhanced the application of animate power to haulage and traction. By 1300 road carriage was dominated by horses and they were almost universally, if very selectively, used in farmwork, especially on peasant holdings. In particular, horses were a key component of the new integrated and intensive mixed-farming systems that were evolving in the most progressive and populous areas. Meanwhile, the first post-classical treatises on agriculture offered advice to landlords on estate management at the very time that the advent of written accounting was providing a more effective way of monitoring costs and estimating profits. Thanks to significantly improved methods of construction introduced and developed during the thirteenth century, the fixed capital stock

of agriculture in the form of barns and other farm buildings was also greatly enhanced. In a related development in the fifteenth century, importation of stud animals initiated a slow improvement of livestock breeds. The principal field crops nevertheless remained much as before: systematic seed selection and the introduction of root crops, ley grasses and a whole range of new horticultural crops all lay in the future.

In the sixteenth century both the crops grown and animals stocked and the techniques of their cultivation and management were much the same as those that had prevailed in the thirteenth century. Nor did Elizabethan yeomen achieve significantly better results than their medieval forebears. Within Norfolk, a county in the vanguard of change, early seventeenth-century crop yields were much the same as those of the early fourteenth century. The medieval best standard of excellence was not decisively bettered until the early eighteenth century. Nationally, by 1640 a slightly larger population may have been fed from a slightly smaller arable area than in 1300, but the differences were not great. There had been no fundamental transformation in the agricultural resources of the country. Worse, as the renewal of population growth in the sixteenth century revealed, the old dilemmas had not been overcome.

Raising agricultural output without jeopardizing the fragile productivity of the soil would continue to present problems until the advent of clover and root crops in the late seventeenth century helped guarantee the effective recycling of nutrients. Even then, it took time to adapt the new crops and associated systems of cultivation to the specific site requirements of individual farms. Earlier the much vaunted convertible husbandry may have delivered an initial productivity boost, but these gains proved difficult to sustain once the initial store of nitrogen had become depleted. In the sixteenth century, as before, producing more from the land required effort, vigilance and lavish inputs of labour and/or capital. When early modern farmers managed to raise yields they did so with essentially medieval methods. The results came slowly and they were hard won. There was a very real risk, therefore, that the Ricardian dilemma would resurface and diminishing returns would once more be incurred. Brian Outhwaite believes that re-expansion of the tillage area resulted in precisely this. From the late sixteenth century, falling real wage rates and mounting rural underemployment imply that there was similar downward pressure upon labour productivity. Once again living standards fell as they had done during the second half of the thirteenth century. In fact, by the early seventeenth century the purchasing power of a building craftsman in southern England was worse than it had been in the darkest days of the early fourteenth century. Once more, inefficient systems of land tenure were trapping excess population on the land and as land values again rose ahead of rents so in some parts of the country there was an irresistible temptation to subdivide holdings into ever smaller and more fragmented units. For as long as these inefficiencies persisted in the allocation of land there would be disincentives to specialization and investment and the structural shortcomings of the economy would persist. In direct contrast to the earlier situation, however, the historiographic verdict passed on sixteenth- and seventeenth-century agriculture has been more positive than negative. Indeed, for some this was a time of agricultural revolution. Such a view is hard to reconcile with the re-emergence of an entitlements problem.

The last subsistence crisis of the middle ages had occurred in 1438. Thereafter England was more or less free of famine for over a hundred years. But the spectre of famine had not been banished. From the late sixteenth century dearth and famine became recurrent, especially in proto-industrial areas in the north dependent upon grain purchases. Without a curtailment of fertility and large-scale emigration to Ireland and North America the problem would have been much worse. As in the half-century or so before the Black Death, the Malthusian dilemma remained as real as ever. On this occasion it was contained by a combination of preventive and positive checks, although the latter were again in large part autonomous. Mass poverty, too, had resurfaced, fed by the proletarianization of labour, growth of proto-industrialization and inflation of urban populations. Destitution had been relocated socially and geographically, it had not gone away. The establishment of a national poor law and emergence of a concept of moral economy merely represented new ways of dealing with the entitlements dilemma, which in certain respects had grown more, not less, intractable. In so far as there was progress it was in the creation of an infrastructure to cope with the problem.

The ending of the middle ages therefore brought no clean break with the past. The dilemmas which had dogged the agrarian economy persisted, and many of the same strategies were employed to deal with them. Nor were the outcomes in terms of living standards and entitlements very much different. Population growth drove down living standards in the late sixteenth and early seventeenth centuries as it had done in the late thirteenth and early fourteenth centuries and would do again in the late eighteenth and early nineteenth (spectacularly so in Ireland). Ostensibly, there is little here to justify the Whiggish and Marxist disposition to stress the 'backwardness' of all things medieval and 'progressiveness' of subsequent periods. Nor do recent reassessments of medieval technological change support such a view. For Joel Mokyr medieval technology 'eventually transformed daily existence. It produced more and better food, transportation, clothes, gadgets, and shelter. It was the stuff of Schumpeterian growth' (Mokyr, 1990, p. 56). Pessimistic accounts likewise represent the disasters of the early fourteenth century as an indictment of the period as a whole, as though the achievements of the twelfth and thirteenth centuries count for nought. Yet given the magnitude of the problems with which all pre-industrial agrarian economies had to contend, what is remarkable is that medieval agriculture coped so well for so long, rather than so badly. Dilemmas may not have been resolved but they were contained.

Great resourcefulness was shown in rising to the challenges of demographic, commercial and urban growth. By 1300 English agriculture was feeding a national population of at least 4.5 million and supplying it with fuel and raw materials. Without apparent strain it was provisioning a metropolis of approximately 70,000 inhabitants together with at least a dozen other urban centres with populations of 10,000 or more. Had there been stronger demand-side incentives more might have been achieved; that there were not was for structural reasons not exclusive to agriculture. At this climax of economic and demographic expansion as much as 10 per cent of agricultural production may have been exported, amounting to between 6.5 and 8 per cent of GDP. Via trade, English wool and other commodities were exchanged for a range of more land-extensive imports – Welsh and Scottish cattle, Baltic fur, wax and timber, and Gascon wine – which effectively served as

land substitutes. In due course such a strategy would come increasingly to the fore. Similarly, the basic strategies for raising agricultural output during the twelfth and thirteenth centuries – expanding the agricultural area, intensifying land-use and changing the product mix – would be re-employed in later centuries. Naturally, knowledge improved and technology advanced with the passage of time, but progress was evolutionary rather than revolutionary and the middle ages was a formative first stage in that long and difficult process.

That it was subsequently possible to achieve so much was because there were firm foundations to build upon. It was during the middle ages that a fully fledged commercialized economy was brought into being. By the period's close commercial values and commercial knowledge permeated the countryside. The contribution of the pre-plague period was to create an infrastructure of trade and exchange, the contribution of the post-plague period to rationalize and reconfigure it. Regional and inter-regional mercantile networks were strengthened at the expense of more localized patterns of exchange. The number of central places declined but the functions and influence of many of those that survived were enhanced. In the aftermath of the Black Death proto-industry took root and started to deliver significant economic gains by converting primary raw materials into manufactures: all of England's principal textile-producing districts can trace their origins back to the fifteenth century, as can the midland metal industries. Perhaps most critical of all, the legal redefinition of property rights opened the door to significant changes in the ownership and occupation of land and the separation of personal status from tenure.

Gone for good by the close of the middle ages were the old servile customary tenures and, with them, much of the jurisdictional authority of lords (to the further advantage of royal justice and the state). Thenceforth, landlord–tenant relations became more contractual and less customary and leasehold began to become the landlords' favoured tenure. From the fifteenth century landlords themselves became active as both engrossers and enclosers and employed these processes to create fewer, larger and more capitalized farms. More importantly, peasants themselves exploited the markets in copyhold and freehold land to build up their holdings. This 'peasant route' to agrarian capitalism – initiated during the later middle ages when it was easy to accumulate land – was propelled by changed attitudes to family, land and worldly possessions which ensured that the processes of engrossment and consolidation mostly continued unchecked despite the resumption of population growth and renewal of pressures to subdivide in the sixteenth century. In direct contrast to the thirteenth century, population growth was now translated into the creation of virtually landless cottage subtenures rather than the fragmentation of direct manorial tenures. Herein lay the origins of a new agrarian socio-economic order characterized by substantial copyhold and yeoman farmers who worked their capitalized holdings with a combination of family labour, live-in hired servants and casual waged labour. This type of labour process when applied to relatively substantial holdings seems to have been capable of delivering levels of labour productivity superior to those obtaining on either the large seigniorial demesnes or small peasant holdings of the middle ages. Indeed, comparing 1520 with 1086, it is the production units that changed most, in their size, their layout, the terms upon which they were held and the values and aspirations of those who held them. Once initiated, these contrasts would become increasingly marked.

Nevertheless, there was more to agricultural progress than tenurial reform alone. As the middle ages demonstrate, the entire economic, social, institutional and cultural context within which agriculture operated also needed to change. Because the process was so complex and contingent upon developments taking place simultaneously on so many fronts and at a variety of different scales, from the individual holding to the state and the wider commercial world beyond, it is small wonder that progress was so drawn out and uneven. There were many different constraints and obstacles to be overcome. What these were and how adequately they were resolved await further enquiry. Institutional factors – lordship, manors, field systems, the law – were clearly important. So, too, was how the market operated, what it did, and how it reallocated risks and entitlements. In a hazard-prone and market-dependent world the setbacks could be dramatic. Within the limits set by available knowledge and technology, much was nevertheless achieved during the demographic and economic upswing of the twelfth and thirteenth centuries. In the long run, reversals, both relative and absolute, were unavoidable. Indeed, the latter were themselves crucial to the initiation of those processes of rationalization and restructuring which ultimately allowed the establishment of that new and potentially more productive relationship between land and people from which so much subsequent agricultural development would stem. The middle ages thus constitute a formative first stage in the protracted and fitful process by which England eventually achieved agrarian and economic transformation.

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