Introduction

Eurocentric models of historical change

European historical methodology has understandably been profoundly marked by the growth of capitalism, but it is doubtful to what extent models derived from Europe's highly specific experience are applicable to other parts of the world. Historians attempting to interpret Asian history find themselves wrestling with such intractable categories as 'feudalism' or 'peasants' which, despite their reassuring vagueness, rarely seem to fit the case exactly. Evading the issue entirely, one long-standing Western tradition recognises the essential 'otherness' of Asian societies by attributing to them a timelessness and unchanging quality encapsulated in the concept of the Asian Mode of Production. Others, recognising that all societies change eventually, and faced with the necessity of accounting for such awkward facts as the development of commerce and commodity production in pre-modern India and China, or industrialisation and the emergence of capitalism in Meiji Japan, have preferred to think of Asia as following basically the same path as Europe, but less successfully and less rapidly. Thus Marxist historians in China and Japan categorise a vast span of Chinese history (from about 200 BC to 1911 or 1949) as feudal, with 'sprouts of capitalism' emerging intermittently during the past four or five centuries but withering before they bore fruit (see Grove and Esherick 1980; Brook 1981). Non-Marxist historians too, especially when explaining the failure to develop capitalism (or the contrary in the case of Japan), usually measure off Asian societies point for point against a European model of development, to see where they are lacking (Elvin 1973; Tang 1979; Yamamura 1979; Jones 1981).

Both of these methods are essentially negative, the one denying the occurrence of any significant change, the other obscuring the specificity

of non-European societies. If we look only for what is typical of Europe, the significant features of a less familiar society may simply escape our notice. Over the last four centuries European society has been completely transformed, and advanced capitalism has accustomed us to a breakneck pace of change. By comparison it is not surprising that Asian societies seem to have stood still. Yet where adequate documents exist it is not difficult to show that in Asian societies too the forces of production were expanded and relations of production transformed – though not always in the way one might expect. The difficulty lies in accounting for the nature of such changes: if the dynamics of change differ from those we have identified as operating in European history, then it is not surprising that our traditional models fail adequately to interpret change in non-European societies, or even to acknowledge its existence.

While it is easy to appreciate that eurocentric models will generally prove inadequate to explain the evolution of non-European societies, it is not so easy to construct appropriate alternatives. One important obstacle is our failure (in the main) to recognise the relativity of our conception of technological progress. Changes in technology are clearly one key to explicating economic history, though of course there is considerable debate as to the exact degree to which technological development determines, affects, or is simply an expression of changes in the social formation. But what exactly constitutes technological development? Here all our doubts seem to evaporate. Philosophers like Gehlen (1965) and Habermas (1971) have pointed out the immanent connection between the contemporary evaluation of technology and the 'rationality' (in the Weberian sense) that prevails in capitalist society. To be more specific, in a society where relatively scarce and expensive wage-labour is the basis of production, technical progress is largely evaluated in terms of efficiency in replacing labour. Yet this highly specific model of technological advance is generally presumed to be universal in its application. Although one can easily envisage situations in which different criteria might apply, little attempt has been made to hypothesise alternative paths of technological development or to examine the social and economic implications of such differences.

If we consider the case of agriculture, we find that technological progress is generally construed as a sequence from primitive tools like digging-sticks or hoes to more complex instruments like ploughs or harrows, culminating in the mechanical sophistication of tractors, combine-harvesters and crop-spraying aeroplanes. To this one would add the application of scientific methods to such agricultural procedures as crop selection, nutrition and weeding, resulting in the laboratory breeding of new crop strains with desirable characteristics, and the

industrial production of chemical fertilisers, herbicides and pesticides. 'Progress' seems to lie chiefly in the increasingly efficient substitution of alternative forms of energy for human labour. Now labour-saving changes in agriculture have three possible effects: first, they may enable the same number of workers to bring larger areas of land under cultivation; secondly, they may enable the same area to be cultivated by fewer workers, thus liberating the surplus labour for some other employment; and thirdly, they may allow the same area of land to be more intensively cultivated without increasing the number of workers.

The first type of change is of particular importance where land is plentiful and labour scarce, as it has been in much of the New World; it is not surprising, for example, that it was in underpopulated Australia and the United States, as the world market for wheat expanded in the later nineteenth century, that the reaper-binder and the combine-harvester were developed (Jones 1979). The second type of change is important where labour is in high demand, scarce and expensive, as was the case in Europe in the early stages of the development of capitalism. As Boserup (1981: 99) says: 'There was usually keen competition for scarce labour [between agriculture and manufactures], and most often agriculture lost in this competition. Nothing could be more inappropriate than to characterise the European economy in this period as a labour surplus economy. On the contrary, one of the most serious problems in the period of pre-industrial urbanisation in Western and Central Europe was insufficiency of food production, due not to shortage of land, but to shortage of labour.' In fact in the early stages of the 'Agricultural Revolution' demands for labour generally grew, as cropping frequency increased and as techniques became more intensive in response to the greater demand for agricultural produce (Chambers 1967). At first the greater demand for agricultural labour could be accommodated by population increase, but as industrialisation advanced and the competition for labour grew, it became both necessary and (given advances in engineering and design) possible to develop labour-saving agricultural machinery such as the multiple-furrow plough, patent seed-drills, threshers and so on.

Changes of the third type are particularly valuable where land is in short supply; they do not necessarily displace labour but may increase its effectiveness by eliminating bottlenecks or performing tasks more thoroughly. The substitution for hoeing of deep ploughing with horses in nineteenth-century Japan, and the twentieth-century introduction of hand-tillers and transplanting machines are instances of this (see chapter 2).

But in similar situations of land shortage and abundant labour – such

as are characteristic of most regions where rice is intensively farmed – a fourth type of technical change is equally important, namely changes which increase both land productivity and labour demands. In areas such as the Yangzi Delta or Java, the introduction of high-yielding and quick-ripening crop varieties was extremely valuable because it not only increased the yields of a single crop but also permitted multi-cropping; by the same token it increased the number of operations and the quantity of labour required (which does not necessarily mean that the productivity of labour was reduced). Where rural populations are dense and opportunities for alternative employment few, technical changes which absorb labour and reduce agricultural underemployment are preferable to those which increase output at the cost of reducing the labour force. Advances of this fourth type, while frequently dependent upon highly skilled labour, do not necessarily require mechanical sophistication; indeed it is not unusual for agricultural implements to become simpler as cultivation techniques become more sophisticated and productivity rises (Boserup 1965).

Certain economists (Hayami and Ruttan 1979: 6) have characterised technological changes which produce the first or second effects just described as *labour-substitutes*, while those of the third and fourth type are essentially *land-substitutes*.

It is clear, then, that the development of agricultural techniques may take more than one direction, and that this will probably be significantly influenced by such factors as population density, demands for labour in other sectors, tenurial relations, or cropping patterns, to mention but a few. If technological changes are introduced rather than developing spontaneously, then it is crucial to ensure that they are of the appropriate type. Introducing labour-saving machinery in a poor country which is heavily overpopulated is bound to lead to economic problems and social upheavals, as the literature on contemporary development makes abundantly plain. Nevertheless, just as international banks and Third World governments alike have been dogged in their conviction that the development of heavy industry is an essential prerequisite for more general economic development (a belief which Lenin was perhaps justified in holding but which hardly applies to most nations today [Dumont 1983–4: passim]), so the majority of agricultural ministries and development agencies working in Asia have aimed at the 'modernisation' of local agriculture along lines with which, it is true, we are familiar from the experience of Western Europe and the New World, but which in many respects seem incompatible with prevailing conditions in East Asia and elsewhere.

An alternative model?

A significant difference between the technical development of Western grain-farming (described in appendix A) and Asian rice cultivation, which has important implications for socio-economic change, is that while wet-rice agriculture has enormous potential for increasing land productivity, most improvements are either scale-neutral and relatively cheap, or else they involve increasing not capital inputs but inputs of manual labour (see chapter 5). It has often been assumed that this implies a corresponding reduction in the productivity of labour, but this is not necessarily true. Where a transition from broadcast sowing to transplanting, or from single-to double-cropping is made, the increases in yield will certainly outstrip concomitant rises in labour inputs. The additional labour requirements are spread out over the year, and for most tasks household labour suffices to run a wet-rice smallholding. But even small farms will usually have to exchange or hire labour to cope with the bottlenecks of transplanting and harvesting, and farmers within a community will often agree to stagger planting and harvesting so that effective rotas for labour exchange or hire can be established; like the demands of irrigation, this is an important factor in creating a spirit of communality within rice communities (Liefrinck 1886; Embree 1946; Takahashi 1970; Bray and Robertson 1980) – which is not to say that individualism and conflict are absent, as we shall see in chapter 6.

The inconspicuous, low-cost nature of many improvements to wet-rice cultivation, and the association of highly productive techniques with a form of tenurial relations, namely smallholding, regarded by many as backward, have contributed to the image of Asian economies as historically stagnating and resistant to change. Yet there is an abundance of evidence to show that great progress has been made over the centuries in increasing the productivity of rice-land. Furthermore, the development of rice agriculture has often been accompanied by the growth of commercial cropping, trade and manufacture, as well as by significant changes in the relations of production.

The significance of a model of development for rice economies

There is good historical evidence to suggest that the dynamic underlying the development of the forces of production in wet-rice societies is very different from that manifest in the European transition from feudalism to capitalism. The model of technological and economic progress accepted

as generally valid is directly derived from the Western experience (see appendix A): it postulates the superior efficiency of large units of production, culminating in the rationality of modern capitalism. But in Asian agriculture the historical trend was towards not larger but smaller units of production – are we then to conclude that Asian agriculture stagnated or became increasingly inefficient as time went by? If we take as our yardstick the isolated examples of late nineteenth-century China or contemporary Java, with their dense and impoverished populations and cripplingly subdivided landholdings, we might perhaps be justified in such a conclusion. But a broader historical perspective forbids such a view. How would such an interpretation account for medieval China or eighteenth-century Japan, where changes in farming techniques did reduce the size of holdings but were accompanied by spectacular increases in agricultural productivity and in commercial and manufacturing activity? And how would we explain contemporary events in East and Southeast Asia, where the incursions of advanced capitalist technology have failed to modify basic patterns of land tenure and rural production?

The universal pretensions of our Western model of technological and economic progress have been strengthened by various scholars' claims to find 'feudal relations', 'sprouts of capitalism', or other elements of European social formations in non-European societies. But the recognition of these superficial resemblances often serves to obscure more fundamental and determinant differences. Reams of paper have been covered in the attempt to explain Song China's failure to develop capitalism, because historians have identified in Song society certain features believed to have contributed to the development of capitalism in Europe. If such phenomena as the high level of scientific and technical knowledge, the existence of a free market in land, or the advanced development of commercial institutions are taken in isolation from the relations of production, then the problem seems valid enough. But if we situate them in the context of Song China's economic base and the general dynamic of expansion of the forces of production, then we see that 'China's failure to develop capitalism' is simply a red herring, distracting us from a more thorough and fruitful examination of the specific characteristics of China's economic evolution. An obsession with classifying India as 'feudal' or 'non-feudal' has, as Mukhia (1981) shows, similarly diverted attention from India's specific path of historical development. Political scientists have identified Japan as the single nation in Asia to conform to the Western model of transition from feudalism to industrial capitalism, yet profound dissimilarities between Japanese and Western capitalism continue to puzzle them. Such mysteries are unlikely to be solved until it is recognised that the

superficial similarities between Japan and Europe mask differences deeply rooted in the productive forces.

Clearly the role of the technological base in determining overall social change must not be overestimated. A model based on technical dynamics alone cannot account for the political, institutional and external factors which have played such a crucial role in shaping the Asian nations. Yet despite their many cultural and political differences, I hope to show that societies which depend for their subsistence on wet-rice cultivation have in common a basic dynamic of technical evolution, which differs from the model of progress derived from the Western experience, and which imposes very different constraints upon social and economic development. A basic model of this nature serves an important purpose: it not only focuses our attention upon specific characteristics of non-Western societies but situates them in an evolutionary rather than a static framework. It should thus enable us to supersede the image of Asia as unchanging, as a Europe *manquée*, and help us to explicate the history of Asian societies in their own terms. Last but not least, it should provide fresh and perhaps constructive insights into contemporary processes of change in Asia.

The first three chapters of the book are an investigation of the technical means by which rice cultivation has been intensified and levels of land- and labour-productivity raised. The first chapter considers the potential of the rice-plant itself; the second looks at ways in which land use is developed by rice-farmers and the scope for rationalisation and mechanisation; the third is a study of water control, an essential feature of any developed rice technology. The fourth chapter makes a distinction between 'mechanical' technologies, like that of European agriculture, and 'skill-oriented' technologies such as rice cultivation; from this perspective it looks at rice cultivation as a basis for more general economic development and diversification, with particular reference to its links with petty commodity production and rural industrialisation. The fifth chapter considers the issues involved in the planned development of rice economies, taking as its point of departure a historical evaluation of the relative efficacy of capital and labour inputs in improving rice technology. Rice societies are a paradoxical combination of individualism and communalism, and the sixth chapter looks at how technological development affects relations of production; is a socialist reorganisation of rice production beneficial and stable, and to what extent has the impact of capitalism resulted in a shift towards capitalist farming and the differentiation of the peasantry?