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Eric Jones

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Eurasia

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Chapter 1

Environmental and social conjectures

We could have left man out, playing the ecological game of 'let's pretend man doesn't exist'. But this seems as unfair as the corresponding game of the economists, 'let's pretend nature doesn't exist'. The economy of nature and the ecology of man are inseparable. . .

Marston Bates

EUROPE did not spend the gifts of its environment 'as rapidly as it got them in a mere insensate multiplication of the common life'. This phrase from H. G. Wells (in *Men Like Gods*) sums up the quality of Europeanness. Nevertheless Europe became successful enough biologically to stand third in population in the world after China and India in 1500 and to do proportionately better than they in the period 1650–1850. In total biomass, that is including the weight of domestic livestock, its rank even in 1500 might have been a very close third indeed. Probably the energy output of its population was above third place. In the *very* long term Europe was economically more successful still. Despite considerable fluctuation, the real wage tended to be high since at least the thirteenth century, compared with India even in the twentieth century (Krause 1973:169). And in its eventual, simultaneous achievement of both biomass gains and real income growth, Europe stood quite alone.

European economic history is a special case of the economic history of all Eurasia, where over three-quarters of the world's population lived and still lives. We may therefore conveniently contrast Europe with the older polities and vaster economies of China and India, the other large societies of the world. Oriental civilisations struck Europeans as monumental and grand. Much of the apparent grandeur was a compound of imposing works of civil engineering and luxury for the court circles. Mechanical engineering lagged. The standard of living of the mass of the people languished. This condition is most easily accounted for by

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[More information](#)

political mechanisms which devoted tax revenues to massive public works and an easy life for the élite. Overall these societies were not rich in the sense of high average real incomes, the dimension in which Europe was to surpass them. Late Manchu China with a population of some 400 million still supported only seven-and-a-half million non-producers, fewer than two per cent of the population (Stover 1974:16). This two per cent élite however consumed in the 1880s twenty-four per cent of the national product (Stover and Stover 1976:110). For comparison, Le Roy Ladurie (1979:87) suggests that almost fifteen per cent of the forty million people in France, Germany and Britain at the start of the fourteenth century had already risen above peasant status and were supported by the peasantry.

Europeans commanded more working capital per head than Asians, mainly in the form of livestock. As a corollary they ate more meat and livestock products, so far as the archaeological or literary evidence can tell us. They brought more draught animals to bear on their fields than the Chinese and stronger, better-fed ones than the Indians. By medieval times Europeans also disposed of more energy in the form of water power. They used more timber per head and were usually able to smelt more charcoal iron. It is true that about A.D. 1100 iron output *per capita* in China had been twenty per cent higher than it was in the Europe of 1700, but that phase had not lasted. The rice region of China, containing two-thirds of her population, became a great cleared zone. Further, Europeans came to achieve, by means of international trade, a marked degree of substitution for resources which were becoming scarce in the developing parts of the continent. When the domestic output of charcoal from coppice woodland proved inadequate in late preindustrial times, and the continued expansion of iron production was threatened, 'metropolitan' western Europe, notably Britain, was able to import iron from areas of more extensive forest and abundant ore, such as Sweden, Petrine Russia, and finally the American colonies. By 1750 the Americans were producing fourteen per cent of the world's iron. The coke-smelting of iron on a production scale was then just about to begin, doubling the already massive trade additions to the resource base which had rescued Europe from the scarcities afflicting the remainder of Eurasia. The area that

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Excerpt

[More information](#)

had been acquired in consequence of the Discoveries had actually reduced Europe's man-land ratio, at a time when this ratio was rising elsewhere. China and India both had three times the European population density in 1500, even before the post-Columbian reduction of Europe's effective density. Neither China nor India was in a position to import timber or iron or other raw materials or food.

The distribution of income in Europe was unusually equal, that is to say not equal at all but with a flatter Lorenz curve than obtained in Asia. This was reflected in the sense of dismay with which many early European travellers reported on the depths of poverty among the masses and the heights of prodigality among the rich that they came across in Asia (Lach 1970 vol. 11:827). The splendours of Asian courts, the religious and funerary monuments and hydraulic engineering works, the luxury goods and skilled craftsmanship seemed merely to testify that political organisation could squeeze blood out of stones if the stones were numerous enough. 'Century after century', writes Harris (1978:172), 'the standard of living in China, northern India, Mesopotamia and Egypt hovered slightly above or below what might be called the threshold of pauperization', according to fluctuations in population density, while 'western observers have always been astonished by the static or stationary nature of these ancient dynastic systems'.

European travellers in early modern times were aware of the advantages of their own civilisation, though some were too easily thrilled by the magnificence of oriental courts. Commentators in the seventeenth century were clear that a higher standard of living was enjoyed by a majority of Europeans, not simply the rich, who could indeed hardly match their Asian counterparts for conspicuous waste. Ordinary Europeans had better clothing, more varied food, more furniture and more household utensils, above and beyond the requirements of compensating for their chilly climate (Hajnal 1965:131). The gulf between East and West may have been widened by industrialisation but was not caused by it. Preindustrial societies had long been dissimilar, not only culturally but in characteristics of first concern to economic historians and development economists, the structure of investment, and the level of *per capita* income and the mechanisms determining it.

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Excerpt

[More information](#)

6

EURASIA

For most of its history Europe had been culturally a backwater of Asia. By late preindustrial times, however, Europe had the edge over other parts of the world in education and literacy, which are both correlates of investment and consumption. Europe experienced ahead of the other continents the prolonged and widespread process of development that eventually blurred into industrialisation. While there is no proven connection between *very* long-term well-being and the final mushrooming of growth, we may assume that, slight though it was by modern standards and distorted by distributional peculiarities, it was not a handicap. We shall need to consider its causes and implications. In this chapter we look at the ecological individuality of Europe for ways in which it may have influenced the special performance of the economy.

Europe was not, by Asian standards, a lush habitat. Large social groupings emerged there much later than in the warmer parts of Eurasia. Civilisations had long been rising and falling in warm latitudes, although they appear to have been springing up farther and farther north. Such explanation as the literature offers for this shift is essentially climatic (Gilfillan 1920; Lambert 1971). On the one hand it correlates mean temperature and the output of human energy, and on the other it claims that in warm regions man was subject to a build-up of endoparasitic infestation which caused each society there to reach a plateau of attainment and then stagnate. Northern winters, in contrast, prune deleterious organisms as they lie in the soil and water. Ploughing also exerted control over soil parasites, while it was the Iron Age plough that first brought up enough soil nutrients to produce a good yield in northern areas where rain occurs throughout the year and there is little evaporation.

Asia was not so favoured. Consider China. During the Southern Sung period, when agriculture and settlement were shifting south, schistosomiasis and other worm infestations were first described, in a text of 1264 for example (Elvin 1973:186). Faeces discharged into water made China the world reservoir of lung, liver and intestinal flukes and the Oriental schistosome, all serious causes of chronic illness (Polunin 1976:127). Human excreta were used as a fertiliser, and soil-transmitted helminth infestation was an occupational hazard for the farmer. According to Han

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Excerpt

[More information](#)*Environmental and social conjectures*

7

Suyin (1965:390) there was ninety per cent worm infestation among children in Peking in the early twentieth century and worms were visible everywhere on paths and alongside buildings. A 1948 source ascribed twenty-five per cent of deaths to faecal-borne infections. The aggregate weight of liver parasites in Chinese bodies is estimated as equivalent to the combined weight of two million human beings; in 1960 ninety per cent of the rural population (i.e. eighty per cent of the total) were said to be infected with tapeworms; and one-third of all deaths were reported to be caused by this helminthian worm infestation (Borgstrom 1972a:108). Anti-social customs apart, this was the penalty for a dense population operating irrigation agriculture in a warm climate, with inadequate sources of fertiliser. Endoparasitic infestation on the resultant scale may well have impaired human energy, holding down output in China and in the other Asian and Near Eastern homelands of civilisation. In consequence the gap in effective manpower between Europe and Asia was probably much narrower than population figures would suggest. Combined ill-health, heat and malnutrition in the tropics have been shown to cut labour productivity per man by up to eighty-seven per cent, besides raising absentee rates (Harrison 1979:604).

McNeill (1976) has claimed that Chinese populations learned to live successfully in warm, wet lands and are better adapted to microparasitic infestation than Europeans. The one population moved up a disease gradient, the other, by moving north from the Mediterranean lands, moved down such a gradient. It is not clear that this rules out the debilitating effects of the endemic worm infestation among the Chinese and the peasants of the Ganges valley and the Nile delta, who also worked in warm, standing water and where, at any rate in India, public defecation is prevalent. It is consistent with a vulnerability on the part of Europeans to intermittent epidemic shocks, because of their lack of adjustment to diseases endemic in Asia. McNeill (1976:138–41) finds that epidemics kept the island populations of Britain and Japan low until the Middle Ages, but whether or not this applies to the whole of Europe *vis-à-vis* mainland Asia is uncertain. There were certainly epidemics in Asia too. It is possible that there was a different time-trend, and if so this might be important for the

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difference in developmental history. With demographic growth at the end of the Dark Ages and the northward shift in the centre of gravity of settlement, medieval Europeans may have first endured and then adjusted to epidemic disease, whereas India is said (Davis 1951:42) to have experienced the equivalent phase of severe epidemics only after 1700 when her trade contacts were opened.

Comparison in terms of the physical productivity of the soil is unfavourable to Europe. The oriental alluvial river-basins were more productive of plant life. In the Middle Ages, and in some parts into the eighteenth century, seed–yield ratios for the principal cereals of 1:3 or 1:4 were all that Europeans achieved on their sown arable, which is to say that if the area always being rested fallow is included the yield would be lower still. Even at remote periods of prehistory the seed–yield ratios of the oriental river-basins are reported to have been far higher than this (Herodotus 1954:92, 308; Slicher van Bath 1963:18, 172–7; Russell 1967:96, 179). The great contrast with Asia stands revealed by the difference in population densities. In Egypt in the first century B.C. the density was around 725 persons per square mile. In China in the early twentieth century it was 183 persons per square mile in Shansi province in the north, 554 per square mile in rice-growing Chekiang in the south. These figures are to be set against those for the most densely populated part of Europe, the province of Holland, which in the sixteenth century A.D. still had only ninety-five persons per square mile. It might seem that different kinds of social organisation may have been responsible for these differences in settlement density and hence in available labour, which in turn accounted for the variation in yields. Nevertheless the observables of temperature, soil moisture and the deposition of minerals and silt, all correlates of plant growth, were initially widely different and seem a major cause of the differences in population densities. The very impracticability of hydraulic agriculture freed a fraction of European energies for other purposes. The rainfall farmers of Europe might be fewer in number than the farmers of China and India, but the former spent less time on all aspects of farmwork than the latter spent on water control work alone (Russell 1967:97).

More interesting than the differences in population totals and

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Excerpt

[More information](#)*Environmental and social conjectures*

9

density was the European persistence in maintaining a relatively high consumption of draught animals, livestock products and woodland products, all of them heavy users of land in competition with the growing of cereals. By sowing every spare acre with grain, as was done in the river-basins of the Orient, a larger population could have been supported. Europe's human crop was not maximised. The political consequences of a society with a huge, manipulated peasant mass were avoided. The customary view of these consequences derives from Karl Wittfogel, *Oriental Despotism* (1957), a study of the long-standing relationship between irrigation agriculture and the political régime in China. The needs of constructing and co-ordinating big hydraulic works are depicted as having given rise to societies of hordes of peasants dragooned by repressive élites. Harris (1978:173–4) cites examples of ruthlessly organised building projects where the numbers of workers were clearly too large to have organised themselves on a voluntary basis, like a village fête. The instances demonstrate a difference in kind between the social control exerted in vast, centralised polities and the social control in the decentralised society of Europe. The latter had no joys to offer like the building of part of the Grand Canal of China around A.D. 600 by a population of five-and-a-half million, guarded by 50,000 police inclined to exert fierce retribution on families who withheld labour. Reportedly more than two million men were 'lost' (Russell 1967:99). Of one million labourers conscripted at the start of the seventh century to build the Great Wall over half are said to have died on the job (Dawson 1972:62). In contrast Stonehenge, Avebury, and Silbury Hill (the largest artificial earthwork in Europe) do not seem overwhelmingly massive. Their construction cannot have required or destroyed labour on anything like the scale of the Great Wall. The debates about the manner of their making do not preclude the use of seasonal task forces over many years, indeed the postulated sledging of the Stonehenge sarsens over frozen land from Fyfield Down positively calls for this.

We ought to beware of accepting too readily that Ancient and Oriental societies permanently exerted the organising rigour of modern command economies. In reality rather little, or at any rate intermittent, coercion may have been needed to cream off what little fat there was on the peasantry and thus clip the margin

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[More information](#)

for investment. The large surviving monuments of Antiquity, which are the touchstone of belief in a draconian past, are not necessarily fair evidence of any particular political organisation. The vision of slaves toiling under the whip to raise the Pyramids may be misleading, or it may refer to only certain régimes of the past. Kaplan (1963) points out that from Egypt to China and beyond, great monuments may have been erected in the slack seasons of the year. There is little evidence that they involved great armies of workers at any one time and they may have taken generations to complete, with labour forces voluntary and motivated by religion. Stover (1974) also paints a much less directly coercive picture of hydraulic agriculture in China than does Wittfogel. Harris's (1978) modification of the Wittfogel thesis derives oriental despotism from the organising of workers to create new irrigation works, but only in times of pressing population growth. Reports from Manchu China suggest that repair work rather seldom required co-ordinating over whole river systems and was often inefficiently carried out by local administrators. This abolishes the need to envisage permanent slave states. Some more subtle means may have been what kept the bulk of the people poor.

Yet whatever modification we make to hypotheses about the origin of the great works of the East, they must reflect societies capable of centralised rallying power above that displayed in the Europe even of the Crusaders. Europe simply never matched the observed examples of the conscription of peasant labour for state projects. Harris (1978:90–1) observes that the six most likely regions of pristine state development (Egypt, Mesopotamia, India, China, Mexico and Peru) all featured circumscribed zones of production which presented 'special difficulties to villages that might have sought to escape from the growing concentration of power in the hands of overly aggressive redistributor war chiefs'. European agricultural society was able to avoid a comparable history of authoritarianism – a kind of political infantilism – by virtue of an open-ended productive environment of forest land and rainfall farming.

On the face of it, the absence of major frontier movements from India or China in search of *Lebensraum* is surprising. For long periods they remained to all intents and purposes closed

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Excerpt

[More information](#)*Environmental and social conjectures*

11

economies, though in the historic period China undertook a great interior colonisation of southern river valleys and forests. Neither India nor China pushed settlement far into central Asia, admittedly a less productive area than the coastlands. On the contrary they were, as Rome had been, at the receiving end of invasions begun by small populations from the steppes, only five million strong or four per cent of the Asian total at the start of the Christian era. So far from occupying the steppes, the military technology did not exist that, at an acceptable cost, could protect settled zones from nomad attack. Western Europe was reasonably free from that menace.

Initially Europe had been settled from Asia. In Mesolithic times hunters and gatherers had occupied the coasts of Europe while the deciduous forests of the interior remained largely uninhabited (Clark and Piggott 1965; Waterbolk 1968: 1100–1). The Mesolithic communities were unable to switch from hunting and fishing to farming because suitable ruminants to domesticate did not occur in the continent. Agriculture had its beginnings in western Asia, where domesticable ruminants and suitable pasture grasses for them did exist, and was brought to Europe by Neolithic arrivals during the sixth millennium B.C. These immigrants created an environment around themselves in which farming might take place by clearing woodland, particularly light woods on ridge tops, and transporting with them livestock, cereal crops, pasture grasses and a whole living entourage, not all of it intentional or desirable. They brought for example the weed species of open, beaten ground.

This early Neolithic settlement was based on communal systems of full villages. House types and ethnographic parallels suggest that, from the end of the fifth millennium B.C., there was a shift away from communal villages to a system based on the extended family. The new arrangement was better adapted to settling a frontier in virgin forests which became less and less like the steppes as one moved north-west. House plans changed again at the end of the third millennium. They went from long rectangular buildings 100 feet long to less than half that length. Ethnographic comparisons suggest that this was the archaeological expression of a shift (completed by the middle of the second millennium) from a society of extended families to one of nuclear