## THE IMPORTANCE OF THE ESCAPES

We can now see how the 'normal' or Malthusian tendencies with respect to population came to be reversed in West and East. In hunter-gatherer societies, population is held in check mainly through the control of fertility, through prolonged lactation, infanticide and other methods. In tribal societies fertility tends to rise, as does mortality. We have moved from a low to medium pressure regime. With peasantries, both death and birth rates rise to those levels of crisis mortality and perennial mortality, combined with maximum fertility, which we term a high-pressure regime. In 'modern' societies we return to the situation of hunter-gatherers, but even more so. Population is controlled by rigorous birth control, which balances the very low mortality.

It used to be part of the accepted wisdom that the sequence was merely a two-fold transition and one which occurred first in western Europe towards the end of the nineteenth century, taking the classic form:

**Figure 1.**

We can see that this is misleading in several respects. Firstly, it omits the earliest phase, the long period dominated by hunter-gatherer societies. This would alter the pattern to the following:

**Figure 2.**

The second correction is to the so-called 'transition' period. The idea of the delayed fall in fertility, appropriate enough to describe what happened in many Third World countries with the rapid fall in mortality caused by medical developments, peace, new crops and so on, is not satisfactory as a picture of the cases I have examined. Mortality began to fall for all of the many reasons outlined above, but fertility was also controlled almost simultaneously. There might be a short delay, such as that which allowed a doubling of population in early modern England and Japan, but it was only momentary.

A further correction would be that there were in fact **two** demographic transitions. Indeed the first may not have been a transition at all. In order to see this we need to superimpose the English/Japanese pattern on the 'normal' demographic transition model (as amended):

**Figure 3**

The first 'transition' was a negative one and hence very difficult to discern. It consisted of the fact that very early, by the twelfth to fourteenth centuries in each case at least, the rates had stabilized at a far lower level than is normal in agrarian societies. The Japanese rates were even lower than the English. Thus, to a certain extent, the demographic transition to controlled mortality and fertility may already been achieved in the medieval period. In relation to England, xxx asks 'Do the origins of the early modern low-pressure, fertility-dominated system lie in the socio-economic consequences of the 1315-17 famines and the Black Death, and did the system take shape as the market economy developed?'[1] The economic demographer Hayami writes that 'we hold that the decisive turning point...heralding the start of Japan's "modernity" occurred in the late sixteenth and seventeenth centuries rather than after the Meiji Restoration and the industrialization which followed.'[2] The second drop, from middling to very low levels, which occurred in the later nineteenth and early twentieth century, important as it was, occurred after both countries had achieved their economic break-through.

The reasons for this unusual pattern of death and birth rates have been the theme of this book. We have seen how war, famine and disease, the major causes of high mortality in most human societies, were kept under control and how the situation improved with time. Though none of these was eliminated entirely, the level of each was a good deal lower than those experienced in the majority of agrarian societies. We have seen some of the economic advantages of this situation and the benefits in terms of human happiness are obviously just as great.

Such advantages would have been wiped out if the fertility rate had been permanently high and indeed, as Malthus saw, mortality would finally have had to rise to match such high fertility. We have seen some of the mechanisms which kept a balance between economic resources and fertility levels. In England these were largely concentrated on marriage, in Japan they covered all stages of the reproductive process, from biology through to abortion and infanticide. The essentiality 'modern' concept that people needed to control their fertility, that maximum child-bearing could be costly and harmful, was already present. The fertility and mortality regimes were inextricably linked. It is not difficult to see how low mortality allowed and encouraged low fertility, but there may have been influence the other way. As Wrigley suggests, for example, 'In one sense, therefore, the low level of death rates in early modern England was the gift of the marriage practices of the day.'[3] Furthermore, both mortality and fertility were the result of pressures which acted on them both. Landers considers the

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[1]Various, Review symposium(xerox),167.

[2]Hayami, Transformation(xerox),pp.5-6.

[3]Wrigely, Death (xerox), 145.

possibility that there 'existed in that region a mortality regime which had been engineered by the social customs which themselves exercised such a strong influence on fertility levels and thus indirectly upon mortality.'[4]

The implication of this new model is considerable. It begins to be possible to speculate on whether the peculiar demographic structure of England, which preceded its peculiar economic development, could be one of the causes, rather than consequences, of the break-through into industrialization.

The possibility that this might be the case at a European level was argued as early as 1959 by Krause. He suggested that the European demographic pattern was an important factor in explaining the industrial revolution, using as his method a contrast between the European and Asian family and demographic patterns. In Europe, the late marriage and high proportion never marrying, relatively low fertility and mortality rates, the absence of crises, the family limitation, all led to a population growth rate which made population grow more slowly than the economy and hence allowed capital accumulation. All of these patterns were reversed in 'Asia' and this made the industrial revolution difficult or impossible there.[5]

Some similar suggestions were tentatively put forward in a well-known article by John Hajnal in 1965. He suggested that 'In the European pattern a person would usually have some years of adult life before marriage...It is a period of maximum productive capacity without responsibility for children; a period during which saving would be easy. These savings...might add substantially to the demand for goods other than food etc. required for immediate survival. In this respect delayed marriage may be similar to income inequality in stimulating the diversion of resources to ends other than those of minimum subsistence...' Hajnal then asks "Could this effect, which was uniquely European, help to explain how the ground-work was laid for the uniquely European 'take-off' in to modern economic growth?"[6]

At first these were hunches, based on preliminary work. On the basis of analysis of aggregate and reconstituted parish register data, the suggestions have been developed most forcefully by Wrigley and Schofield, first in earlier books and articles[7] and most recently, and in detail, in **The Population History of England**. Let us examine the arguments.

As a result of their work we know that England escaped from the 'high-pressure' world where population was held back by the 'positive checks' at least two centuries before the industrial revolution.

[4]Landers(ed.), Fertility,178.

[5]cf Krause, esp. 536-7

[6]in ed. Glass, p.132

[7]Past and Present, 37, 66; Population, 140

This demographic peculiarity, including the propensity both to hold population constant over a period of three generations while wealth conspicuously grew, and then to allow very rapid population growth as labour was demanded, was very different from the situation in the majority of agrarian societies. Since England was also the country which accumulated enough wealth and technological sophistication to industrialize nearly a hundred years before anywhere else in Europe, Wrigley and Schofield suggest that 'it is natural to wonder how far the peculiarities of the English marriage system, whose operation caused the fluctuations in fertility, may have served to initiate or facilitate the economic changes, that culminated in the industrial revolution.'[8]

We may consider three types of argument that have been put forward to suggest how an unusual demographic pattern could have had beneficial economic effects. The first considers the question of saving, investment and growing wealth. Part of the argument was summarized by Spengler. 'If a population is growing slowly, the bulk of the savings which it generates can be devoted to increasing capital per head, thereby easing directly the pressure of population upon land and facilitating the growth of non-agricultural enterprises.'[9] Change, 92)

This beneficial effect seems to have been felt in England. The country avoided the normal tendency of channelling its economic growth into increased population, and hence falling into the Malthusian trap. 'Over-rapid population growth in relation to food production formed the Achilles' heel of the traditional world.'[10] In the hundred and fifty years before industrialization, the population remained more or less stationary while the economy grew. 'During this period, therefore, there was no renewed population pressure to check whatever beneficial effects might flow from rising real wages, which may be presumed both to have increased the volume of demand and to have changed its structure.'[11] The vital component was the delay in the fertility response. While it was important that there be a relation between economic growth and population, for instance that the increasing need for labour in the later eighteenth century be met, it was equally important that it not be met **too quickly.** If population grew as soon as the economy improved, one would be back in the Malthusian world. Thus '...the fact that there were wide slow oscillations in fertility which broadly mirrored the real-wage fluctuations but with a time lag of about 40 years is of the greatest interest...'[12] Thus 'the unusual length of this benign period' was essential. 'A regime in which the demographic response to changed economic circumstances was faster might well

[8]Wrigley, Population History, 43

[9]in ed. Glass, Change, 92

[10]Population History, 466

[11]p.439

[12] Wrigley and Schofield, Population History, 438.

have experienced much greater difficulty in acquiring a sufficient momentum of growth and change to take advantage of a conjuncture of other factors and so permit an industrial revolution to take place.'[13]

The timing of the balance of population and economy and in particular the slowness of the reaction between resources and population was the key. Evidence suggests that agricultural and other improvements meant that 'the early modern English economy was capable of sustaining a population growth rate of about 0.5 per cent per annum without depressing real wages, and, equally significant, that a zero rate of population growth was associated with an annual rate of growth of about 0.5 per cent.'[14] Instead of soaking up this growth potential in constantly expanding the population, there was a pause of about 150 years while the 0.5 per cent growth occurred. During this period the increasing wealth was not put into expanding the population but into the capital infrastructure needed to create the basis of the first industrial revolution. Some of the effects of stationary population while wealth increased were noted in relation to another case by Thomas Smith: 'the resulting rise in per capita income tended to expand the consumption of goods produced by secondary and tertiary industry, increase the division of labour, encourage the development of more complex and specialized commercial and financial institutions, and call forth more innovative entrepreneurs, more saving, and more investment.'[15]

Everything lay in the exact balance, or timing. It was essential that there be a delay in the feed-back relationship. The English system was one 'capable of achieving a balance between population and resources, but it is perhaps misleading to describe it as an equilibrium system since one of its most striking features was the remarkable slowness of response between economic (real-wage) and demographic (fertility) changes... England displayed what might be termed dilatory homeostasis, winning the war of adjustment, but doing so by employing a strategy appropriate to yesterday's circumstances.'[16] In other words, after the rapid growth of the later sixteenth century, the economy hit difficulties in the early seventeenth century. The fertility rate dropped into line with the relatively low mortality. For three generations fertility was low, mortality was relatively low, and population was balanced.

Those three generations were ones where each year the economy was growing at roughly 0.5 per cent. By the end of that period, in the 1720's, England had become the richest country, **per capita**, in the world, having overtaken its main rival, Holland, and having outstripped its predecessors in Flanders, northern Italy, the Baltic the German cities and elsewhere. At this point, the build-up of its economy was such that despite the growth of labour-saving devices and the start of the application of steam

[13]Wrigley and Schofield, Population History,p.439

[14]Population History, 409

[15]Smith, Nakahara, 4

[16]Population History, 451

power, this very expansion needed extra hands. Only then was the break taken off fertility; the mean age at first marriage dropped by three years, the proportion of women marrying rose from 75 per cent to 95 per cent, and the population began to grow faster than anywhere else in Europe and possibly the world.

This rapid growth of population, when it could be supported and was needed, was an equally important part of the pattern. As Boserup, among others, pointed out some time ago, economic development may in certain conditions be made easier, or even precipitated, by population growth.[17] For example, increasing population density may reduce transportation costs and encourage technological innovation.[18] Thus the fact, which we have already noted, that England was notable for having the most rapid population growth in all of Europe between 1550 and 1820 is equally important. As Chambers argued 'population change instead of producing periodic retardation, as it is assumed to have done through Malthusian crises, may itself have been a factor behind continuous growth in England at least from the Middle Ages.'[19] The essential point seems to be the timing. A period of growth, followed by a lull, followed by another burst, and all conditioned by internal economic pressures, seems more propitious than a pattern of continuous high fertility, periodically cut back by 'crises' of various kinds.

A second way in which rates of population growth affects the economy is through the age structure. 'Potential productivity per capita in a population depends markedly upon the size of the fraction of the population that is of working age.'[20] A population with relatively low fertility and mortality and little rate of population growth will have an age structure which is very different from the child-dominated age pyramids of most agrarian societies. Whereas in many of these, up to half the population are aged under 15 15, the demographic pattern in England ensured that the majority of the population were in the most productive ages from 15 to 50. The period immediately before industrialization 'appears particularly fortunate in its age structure...[21], which led to a "lower consumption/production ratio.'[22] More

[17]cf Boserup, Conditions; Population and Technology

[18] Boserup, Scarcity (xerox), 390

[19] Chambers, Economy, 18

[20]Spenger, in ed. Glass, Change, 93

[21]Population History, 444

[22]p.448

specifically, 'Generally speaking the younger the population the greater the proportion of consumption that is directed towards agricultural produce. Thus the respite in the pressure of demand for agricultural produce was reinforced by the relatively old age structure of the population..From the point of view of the non-agricultural sector of the economy, the years 1626-96 stand out as the period in which the age structure of the population was most favourable to demand...'[23] Or as Thomas Smith noted, the lower fertility of England 'had other advantages as well. It kept the ratio of workers (aged 15-65) to total population relatively high - perhaps around 60 percent, as compared to 50 or 55 percent in many developing countries today. Moreover, much less in the way of new capital was required annually to provide goods and services for additional population.'[24]

There were also other economic effects of the patterns of mortality and fertility, not the less important for being somewhat intangible. Adam Smith was very aware that confidence, predictability and optimism are needed to make possible the investments and planning which underpin capitalism. There is an enormous difference between living in a high-risk environment, such as that in almost all the world before the later eighteenth century which suffered from the 'crises' of war, famine and epidemics, which were constantly disrupting physical plant and intellectual schemes and confidence, and a society where mortality is roughly under control and 'crises' have largely been eliminated. It is difficult to over-estimate such a change, though it is one that tends to be overlooked by demographers and economic historians. One aspect of it is touched on by Helleiner when he writes 'Perhaps only a society freed from the fear as well as from the material and spiritual consequences of sudden death was able to achieve that high rate of intellectual and technical progress without which high population growth could not have been sustained.'[25] Or again, Slack notes that 'Like other disasters, therefore, like famine or civil war itself, plague undermined any assurance men might normally find in family and friends, business and property, or even in government and nation.'[26] This is a theme to which I shall return in chapter 37.

The theory that the unusual economic development of England was somehow intimately linked to its peculiar demographic pattern is difficult to prove one way or the other. But the probability of there being a strong association is made greater if we examine a second case, namely that of Japan.

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[23]Population History, 449

[24]Smith, Nakahara, 4; for some detailed figures comparing Europe and the developing world, see Spengler ed ed. Glass, Change, 93-6 and Walter, Famine (xerox), 283

[25]quoted in Livi-Bacci, 107; cf Mokyr, Lever, 155 who quotes Boulding to a similar effect

[26] Slack, Plague, p.19

At a general level, the similarity between the Japanese and the English population pattern and the link between this and industrialization has been noted by a number of observers. E.L.Jones wrote that 'Japan provides, intriguingly enough, a comparison rather than a contrast with Europe...', for instance in its demographic pattern which 'was remarkable for its outline similarity with late preindustrial Britain' despite the fact that 'there was only the slenderest connection with Europe...'[27] The fact that the Japanese on the eve of the most impressive industrialization in Asia had a demographic pattern with many similarities to England on the eve of its similar unique emergence is now obvious. '...Japan embarked upon industrialization with a high rate of internal geographical mobility; high urbanization ratio; a relatively low mortality rate; and a relatively low, though slowly rising, birth rate. The similarities to the population patterns of England just prior to industrialization are striking, and these population patterns probably played a considerable role in Japan's rapid industrialization.'[28]

Of course, as has already been noted, one should not fall into the trap of thinking that all that was needed was stationary population, and economic growth would automatically follow. What was needed was the **right** combination, in time and in space; a halt when a halt was needed, growth when growth was needed. The spurts of growth in the sixteenth century and from the middle of the eighteenth century were probably just as important as the lull of three generations.

The same point has been made for Japan by Hayami. He disputes the suggestion of Nakamura and Miyamoto that the major factor was simple population control which 'tended to cause per capita output to rise'[29] Nakamura and Miyamoto had argued that, in contrast to Ch'ing China which had experienced a huge population increase during the seventeenth and eighteenth centuries, 'Japan's basically "stagnant" population created relatively higher per capita income, paving the way for Japan to industrialize successfully and achieve high economic growth.'[30] What Hayami has noted is that at certain times and places, population growth and economic growth are compatible. Thus he stresses that 'economic development and population increase in Tokugawa farming villages went hand in hand: population stagnancy was definitely not a precondition of economic development.'[31] While this was true in the seventeenth century, it was even more true in the rapid growth phase of the later nineteenth century. Here, during the years 1872-1885, the population grew fastest in those areas of eastern Japan where it

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[27]Miracle, 157

[28]Kodansha, Population,223

[29]quoted in Hayami, Population, 289

[30]4 ami, 289

[31]Population, 315; cf also 316

had failed to increase much between 1822 and 1846. These were the areas where there was now a rapidly growing demand for labour, 'in which sericulture, silk reeling, and textile industries were the most developed.'[32] The process was exactly like that in the textile areas of Lancashire and Yorkshire in the later eighteenth century, where a relaxation of the preventive check on fertility encouraged the growth of a labour force for the burst of industrialisation.[33]

Since this is such an important topic, let us examine in a little more detail the theories put forward in two important works in this field, that of Thomas Smith and of Hanley and Yamamura. As Smith writes, 'For the hypothesis that low population growth over a protracted period was essential to subsequent industrialization, Japan is a strategic case.'[34] What we find, he argues, is the same positive relationship between population growth and economic growth. 'From the early eighteenth century until the middle of the nineteenth, approximately the last half of the Tokugawa period, the output of the country grew slowly but steadily, while the population remained nearly unchanged.'[35] 'Trade, industry, and farm output were all expanding during this period, while overall population growth was almost nil...[36] The result was that Japan experienced 'an extended rise in per capita income prior to industrialization'[37] The pause in population between 1721 and 1846, 'gave every percentage gain in output for over a century an equivalent percentage gain in per capita income.'[38] Smith has described in great detail a phenomenal growth in by-employments in the Japanese countryside from the seventeenth century onwards. But, as he says, 'The income effect of the growth of by-employments would seem to depend therefore, along with the amount of their growth, mainly on demographic behaviour.'[39] He believes that 'by-employments are among the most important means available of increasing per capita income in preindustrial societies',

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[32] p.303

[33] cf Goldstone, Demographic (xerox)

[34] Smith, Nakahara, 4

[35] Native, 16

[36] Smith, Sources 213

[37] Nakahaa, 4

[38] Smith, Native, 16

[39] Smith, Native, 96

but this is subject to two conditions. The first is that 'they must not be expanded at the cost of agricultural production' and secondly 'an increase in total output must not result in a proportionate increase in population.'[40] He believed that, against all of the Malthusian predictions, these conditions were met. Hence 'The combination of factors that held the population in check for this long in the face of expanding output - especially after the previous rapid growth - is one of the more important mysteries of Japanese social history.'[41] It is a mystery to which we shall return.

The most sustained analysis of the relation between population and economic growth in Japan is that of Hanley and Yamamura. They believe that 'our study, combined with the work done on preindustrial England, demonstrates that population control prior to industrialization may be a crucial element in the ability to industrialize at all'[42] They claim that 'all evidence points to a remarkable similarity with pre- and early industrial population trends in Europe and no similarity at all between Tokugawa Japan and the other nations of Asia today...this similarity with the other industrialized nations prior to industrialization may well provide one of the keys to Japan's success after the Meiji Restoration.'[43]

The actual connections and causal links drawn are roughly the same as those to which Wrigley and Smith drew attention. Firstly, there is rising wealth, but roughly stationary population during the pre-Meiji period. This gives people greater disposable wealth to spend on the products of the burgeoning craft workers in the huge cities and in the countryside. 'Our model suggests that, since both the total output and per capita income were rising during the second half of the Tokugawa period, the economy was able to generate both the capital required for industrialization and sufficient demand for new products during the crucial first decades of industrialization.'[44] The virtuous spiral had started. Technological and other improvements increased productivity and wealth increased. People spent this new wealth on products, which again increased productivity. They did not spend it on increasing the number of people. 'Once the trend toward a rising living standard was initiated, these commoners - now able to accumulate capital needed for improving the efficiency of land and labour and to support the market activities expanding by their increasing demand for goods - were even more motivated to improve their level of life.'[45] As they say, nothing succeeds like success. For instance, 'By forgoing large

[40]Smith, Native, 96

[41]Smith, Native, 16

[42]Economic, 333

[43]Economic, 318

[44]Economic, 28

[45]Economic, 330

families, the people of Okayama were able by the mid-nineteenth century to enjoy the luxuries of travel for pleasure and of imitating the life-style of townsmen.'[46] This was the world of relative affluence and saving which Malthus had commended so forcefully.

A second effect of the demographic pattern was the propitious age structure. The authors notice that the age composition of Tokugawa Japan 'differed from the underdeveloped nations of today but was similar to the preindustrial European populations.'[47] Thus 'we can conclude with reasonable certainty that for the last two centuries of the Tokugawa period 60 percent, often 70 percent, of the rural population was in the age group that contributed most to the economy...'[48] As they comment, 'This is high even compared to Europe...'[49] Its age ratio was maximally geared to economic productivity and very little was spent on young children who then died at an early age.

The over-all effect of this unusual pattern was that, in the precarious build-up to rapid economic growth, gains in productivity were not eaten up by runaway population. People became conspicuously richer but did not invest their growing wealth in children. Thus it is noted that the 'remarkable fact is that the overall population appears to have remained at roughly the same man-land ratio throughout the Edo period.'[50] This in itself would not at first seem to be so remarkable when we remember that the area of cultivated land doubled in this period. Yet the curiosity becomes apparent when we add further facts. These are the huge growth in cities and towns and the improvement of productivity in land, as well as a growth of crafts and manufactures. Thus while the land-person ratio remained roughly constant, the population was conspicuously richer at the end than at the beginning and this wealth was widely spread through the population.

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[46]ibid, 266

[47]Economic, 312; cf. also p.262.

[48]Economic, 310

[49]Economic, 317

[50]4:26