

[Talk given to local history society at Grimsby, Lincolnshire, England on 27.9.2002]

by Alan Macfarlane

## **‘The Making of the Modern World’**

### **Preliminaries**

- thank for inviting me, introduce Sarah
- my previous visit about five to six years ago, and talked about ‘The Savage Wars of Peace’, just before its publication
- this is a chance to reflect on subsequent work beyond that; share with you further travels. That was like Cook’s first voyage. Since that, four more voyages, which I can only briefly sketch in.
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- the common theme of the explorations; the child-like question I first asked in Clio (Sedbergh School) with my teacher Andrew Morgan.
- The question of how and why the modern world, a compound of capitalism, individualism, industrialism, democracy and many other features, emerged and why it did so in western Europe is one I have pursued for all of my adult life. A brief account of the stages in this journey of exploration is given in the origin introduction to SWP, printed below.<sup>1</sup>
- Our world is peculiar, unexpected, unforeseen in many ways. How, against all the odds did it occur and establish a new kind of civilization?

### **Voyage one: the Savage Wars of Peace**

SWP seeks to explain in some detail how the two islands of England and Japan broke out of the normal tendency whereby rising population absorbs increased resources and then overshoots to create a crisis through the intersection of war, famine and disease. This is what I called the Malthusian trap. It is a trap which does not absolutely destroy a civilization, but inhibits and undermines it. The solution to the question of to why England and Japan early escaped from the Malthusian constraints turned out to lie in a combination of chance factors, in particular islandhood. Since finishing the book in 1996 it has become increasingly clear that the Malthusian trap is only one part of the story. Its power cannot be understood without looking at politics, law, social structure and knowledge systems. So in a series of subsequent books I have tried to look at the escapes from parallel traps, which combined in the past to make the Malthusian one so deadly.

### **Voyage two: the political and social foundations: Riddle of the Modern World**

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<sup>1</sup> A longer and more detailed account of the attempt to solve some of these problems is given on [www.alanmacfarlane.com](http://www.alanmacfarlane.com)

In *The Riddle of the Modern World: Of Liberty, Wealth and Equality* (Palgrave, 2000), I looked at the work of three great thinkers who asked the same central question as that which lay behind SWP. This question is how was it possible to escape from a world of war, famine, disease and poverty into one of relative liberty, wealth and equality. Montesquieu, Adam Smith and Tocqueville all gave answers which help us to understand how England and then America escaped from a series of traps as vicious as that outlined by Malthus. This is the normal tendency for increased resources to feed not only into growing population and hence war, famine and disease, but also into increased social inequality and political centralization and authoritarianism. These three authors outlined the way in which it was possible for something to occur which avoided the almost universal tendency which they had observed in every preceding civilization in history. They produced answers to these difficult questions by employing a wide and broad comparative method which placed Europe, Asia and America alongside each other so that they were able to note what was common and what different. So they provided a coherent story of the political and social under-pinnings of that material and demographic transformation described in SWP. Thus *Riddle* can be read as another part of the attempt to explore how our world came into being.

### **Voyage three: Making of the Modern World**

Even at the end of *Riddle*, however, there were several unfinished arguments. One concerned the peculiar case of England and the nature of the bonds that hold people together in a capitalist civilization. Montesquieu, Smith and Tocqueville had pointed to the peculiar legal and social system in England, in particular its development of extensive associations or ‘civil society’ as it would not be called. Yet none of these authors had a sufficient knowledge of English history to be able to explore exactly how or why England had developed in this peculiar way. In *The Making of the Modern World; Visions from West and East* (Palgrave, 2002), I explored this theme through an examination of the greatest of English historians, F.W.Maitland (1850-1906). I considered his work as a contribution to political philosophy and social history rather than as legal history. Maitland explained with great clarity when and why English society, polity, family system and law diverged from continental systems. In his later work he outlined the origins of civil society and modern liberty through the elaboration of the device and concept of the Trust.

While Maitland outlined a satisfying answer to how our modern world emerged, I felt it would also be valuable to look at the answers provided by these European thinkers from outside. How plausible were their ideas when regarded from a non-European civilization? Since Japan is the alternative civilization described in SWP, it seemed appropriate to take a Japanese thinker, and in the second half of *Making* I analyse the life and work of the greatest of modern Japanese social thinkers, Yukichi Fukuzawa (1835-1901). Fukuzawa recognized the central essence of what thinkers from Montesquieu to Maitland had stressed, that is the combination of tensions and balances which created the dynamism and openness of Britain and America. He explained how this system worked and helped his countrymen to import many of its institutional underpinnings in education, commerce, clubs and elsewhere. So he helped to provide the right context for the importation of western science and technology. Within a generation, Japan had moved from being a relatively weak agrarian civilization on the edge of China to becoming the first industrial nation in

Asia, powerful enough to defeat both China and Russia at war. If ever there was a demonstration of the accuracy of a set of social theories, this was it.

### **Conclusion to the first three voyages**

So between 1996 and 2000 I tried to understand how some nations have escaped from two further traps which feed into the Malthusian one, the political (authoritarian centralization) and the social (hierarchical inequality). One further major trap remained unexplored however. This was alluded to right at the end of *The Riddle of the Modern World* in the following way. ‘There is still a large gap in the explanation of how the transition to the modern world has occurred. Overcoming the Malthusian trap is part of the story, and I have tried to provide a theory to explain how that happened. Partially overcoming political, religious and social predation is another part of the total picture and this book [Riddle] has provided a theory as to how that may have occurred. Yet there is a third trap which needs consideration. In order to complete the picture we need a thorough examination of the conditions which lead certain societies to go through an industrial revolution, and others an industrious one, some to go through a wisdom revolution and others through a knowledge (science) one. Or, put in another way, why did technological and scientific growth occur so spectacularly and rapidly in western Europe between about the twelfth and nineteenth centuries and why, during the same period, did it slow down, cease and even partially regress in other civilizations which had previously been far more “advanced” than Europe?’<sup>2</sup>

### **The fourth voyage: The Glass Bathyscaphe**

Over the last few years, working with Gerry Martin, I have been trying to explore this last part of the puzzle. It is what one might call the Mandarin trap, in other words the tendency for knowledge systems to become more rigid and conservative with time. It is rather similar to the other three addressed above. Resources and wealth accumulate as a result of chance or invention. This not only feeds into population growth and political and social inequalities, but it also puts more power into the hands of the intellectuals. It tends to increase the control of the lay and clerical forces who guard the thought systems of a civilization. There is a very strong tendency towards conservatism, a looking to the past and the known truths, amongst the literate. The past is littered with examples of different examples of this tendency; the Christian Inquisition, the Brahmin control of thought in India, the Confucian education system, the dominance of mullahs at certain periods in Islamic civilizations. Religious purity, social status and political expediency all tend towards suppression of intellectual innovation.

Yet we know that, counter to this normal tendency, at some period between about 1200 and 1700 a radical break in systems of thought did occur. A number of revolutionary shifts in method and substance came about to which we attach rough labels such as ‘The Renaissance’ and ‘The Scientific Revolution’. An open system of understanding and representing the world was instituted, or re-instituted. This, in turn, was to provide the foundation for the new biology, chemistry, physics and medicine without which the escape from the Malthusian, political and social traps described in the earlier volumes could not have triumphed or been sustained.

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<sup>2</sup> Macfarlane, *Riddle*, pp.293-4

To understand how and why this had happened is indeed a daunting task, to which many have devoted their lives without conspicuous success. How could one approach such a vast subject, the revolution in western paradigms of knowledge that led to the divergence of Europe from all other civilizations? Furthermore, if one did find parts of an answer, how could one present one's findings in a brief and comprehensible form? Gerry Martin and I decided to focus our analysis on part of the problem, an exemplar or typical case and one which seemed to lie at the heart of any solution to the question of what happened to shake Europe out of its tendency towards the dogmatic slumber of which Kant spoke.

In a short book on the social history and effects of glass, we describe the great divergence between an increasingly glass-saturated western Europe and an increasingly glassless world outside Europe.<sup>3</sup> We suggest that while glass alone is obviously not a necessary and sufficient cause for the transformation of the quality of reliable knowledge. Yet it did have an amazing effect. It created a revolution in human systems of knowledge when conjoined with some of the other demographic, political and social elements outlined in previous volumes and also the inheritance of tools of thought and accumulated information which flowed through Islam from Asia and the Ancient World. It allowed a major shift in vision and confidence.

Glass made a new science and technology possible by providing the new instruments: microscopes, telescopes, barometers, thermometers, vacuum flasks, retorts and many others. At a deeper level it literally opened people's eyes and their minds to new possibilities and turned western civilization from the aural to the visual mode of interpreting experience. In the appendix to the book we examine twenty famous experiments which have changed our world, chosen at random. Fifteen of them could not have been performed without glass tools. Putting it in another way, the collapse of glass manufacture in Islamic civilizations and the fading away in India, Japan and China made it impossible that they could have had the type of knowledge revolution that occurred in western Europe.

The following sciences would not have existed without glass instruments: histology, pathology, protozoology, bacteriology, molecular biology. Astronomy, the more general biological sciences, physics, mineralogy, engineering, palaeontology, vulcanology and geology would also have been very different. Without clear glass there would have had no gas laws, no steam engine, no internal combustion engine, no electricity, no cameras and no television. Without clear glass we would not have had the visualization of bacteria, little understanding of infectious diseases which is at the centre of the medical revolution since Pasteur and Koch.

Without the chemistry which depended crucially on glass instruments we would have had no understanding of nitrogen and so no artificial nitrogenous fertilisers. Much of the agricultural advance of the nineteenth century would not have occurred without glass. There would have been no knowledge of the moons of Jupiter and no obvious way to prove that Copernicus and Galileo were right. We would have no understand of cell division (or of cells), no detailed understanding of genetics and

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<sup>3</sup> The book was published in 2002 as Alan Macfarlane and Gerry Martin, *The Glass Bathyscaphe: How Glass Changed the World* by Profile Books in Britain, and as *Glass: A World History* by Chicago University Press in the U.S.

certainly no discovery of DNA. Without spectacles a majority of the population in the west over the age of fifty would not be able to read this article.

So glass is both a giant and unforeseen accident and at the same time it follows a predictable pattern of movement round a triangle: deeper knowledge, innovation, multiplication of innovated artefacts which lead back to further knowledge. The movement round this triangle was confined to one region yet it was powerful enough to make the world we live in. It could only do so, however, as part of that package of demographic, political and social patterns outlined in the other books described above. If the modern world is like a garden barred by a combination lock, then unlocking the gate requires the accidental coming together of a series of different numbers which could neither be designed nor left entirely to chance.

### **The fifth voyage: Green Gold, the Empire of Tea**

Yet even at this point, the quest was not over. Returning to the most puzzling question behind SWP, the strange improvement in health in England and Japan in the early modern period, I have had further thoughts.

Part of my explanation in SWP for this previously unexplained change was that the introduction of tea was a primary factor behind the hitherto unexplained fall in mortality in eighteenth century Britain. Hence tea drinking allowed the industrial and urban revolution to occur for the first time.<sup>4</sup> The television series which featured the argument spurred a publisher to ask my mother (a tea manager's widow) and I to write a general book on the history and effects of tea.<sup>5</sup> Research for that book has deepened my conviction that the link between the transition from agrarian civilization to our modern industrial world does, indeed, to a considerable and surprisingly large extent hinge on the huge accident of tea drinking. The theme is explored in the new book which also contains a wider survey of the effects of tea on health. To my considerable surprise, recent work on the medical effects of tea suggests that a number of other diseases may also be influenced by tea drinking. These include several touched on in SWP, including malaria, influenza, bubonic plague and various skin and eye diseases. It has also been suggested with some evidence that tea drinking may lower the incidence and effects of many degenerative conditions which I did not deal with such as gout, stone, arthritis, teeth decay, heart attacks, strokes and various cancers.

It is worth singling out one of these for further comment. One of the most striking yet puzzling findings in SWP was that malaria seems to have more or less disappeared in Japan between the fourteenth and seventeenth century. Likewise, in Britain where malaria had been a serious endemic ailment in the seventeenth century, it seems to have receded rapidly after about the first third of the eighteenth century in England and southern Scotland.<sup>6</sup> For example, writing at the start of the nineteenth century, Thomas Place noted that 'The ague [malaria], too, had its victims in large numbers. Towards the close of the seventeenth century, nearly one in forty, of those who were buried in London, are stated to have died of this disorder, which is now but seldom heard of, and kills nobody. Even those counties, where it was most prevalent and most

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<sup>4</sup> SWP, 132-153.

<sup>5</sup> To be published in 2003 as *Green Gold: The Empire of Tea*, by Alan and Iris Macfarlane.

<sup>6</sup> SWP, 196

fatal, are comparatively free from it, it being confined to much smaller spaces...'<sup>7</sup> I put forward various theories which experts have suggested in the past to account for this disappearance: better irrigation and land drainage which reduced the number of stagnant pools where mosquitoes breed, changes in livestock rearing which altered the relations between mosquitoes, livestock and humans; mosquito netting in Japan. None of these is satisfactory as a total explanation, even when they are united.

In light of the fact that some early writers from the seventeenth century argued that malaria could be cured or decreased in its effect by tea drinking, as well as the exact correlation between the growth of tea drinking and the decline of malaria in both these islands, it would seem worth re-examining this topic. It is known that certain plants contain substances that are effective against malaria, for instance the Neem tree in India and Artemisia in China, as well, of course, as cinchona bark or quinine. Perhaps there is something similar in the tea camellia. It would certainly be worth further research. For instance, an epidemiological study might confirm whether after the introduction of tea drinking into Assam after the 1880's, or into India from the 1920's, the levels of malaria declined even without spraying or netting. Or whether countries which are tea drinking, such as China or Japan have lower incidence than those without tea. Even within a population, for instance Sri Lanka, there are considerable differences in the incidence of malaria; does this coincide at all with the incidence of tea drinking? It would be very good to see whether experiments showed any effects of tea on malarial parasites.

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Although I hardly dealt with China in SWP, in so far as I did so, I assumed that it more or less conformed to the Malthusian 'crisis' model of high mortality (epidemic and periodic) and high fertility through young age at marriage for both males and females. Recent research has suggested that my assumptions were wrong. In particular the work of James Lee and his associates suggest the following characteristics of Chinese demography over the period from say 1700 to 1900.<sup>8</sup> Mortality was usually fairly low, roughly in line with that in England or Japan; famine and subsistence crises were not widespread; marital fertility was lower than that in Europe and roughly in line with Japan; while women married very young (in their early teens), men married late (in their late twenties or later) and many never married at all; female infanticide rates were very high, averaging between ten and twenty per cent of all livebirths. In this re-appraisal, Chinese demography turns out to be different from both Europe and Japan, but certainly not a simple high-mortality and high fertility regime.

In the context of health, what is particularly interesting is the low mortality rate. Like Japan, much of the best land in China was densely populated and there were very large cities. As in Japan or later eighteenth century England there is the intriguing question of how mortality, particularly that caused by water-borne diseases, was kept

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<sup>7</sup> Francis Place, *Illustrations and Proofs of the Principle of Population* (1822:1930), 251

<sup>8</sup> James Z. Lee and Cameron D. Campbell, *Fate and fortune in rural China: Social organization and population behavior in Liaoning 1774-1873* (Cambridge, 1997) and James Lee and Wang Feng, 'Malthusian Models and Chinese Realities: The Chinese Demographic System 1700-2000', *Population and Development Review* (25:1), 1999. See also William Lavelly and R. Bin Wong, 'Revising the Malthusian Narrative: The Comparative Study of Population Dynamics in Late Imperial China', *Journal of Asian Studies* 57, no.3 (August 1998).

in check in a situation where we would expect there to be increasing problems of dysentery, typhoid and other ailments. In *Green Gold* we have widened our argument, suggesting that the spread of tea drinking in China from the eighth century onward may be an important factor in the rise of the T'ang and Sung Empires by allowing dense population without serious water-borne disease. This, we argue, may be due not only to the universal use of boiling water in China, but also because of the anti-bacterial substances in the tea. If, as we suggest in the same book, tea may also inhibit a range of other diseases, including influenza, malaria and possibly even bubonic plague, as well as common diseases such as strokes, heart attacks and cancers, the reason for the surprisingly good health of the Chinese population may be connected to tea drinking in a much more dramatic way than merely the boiling of water.

Certainly this was the opinion of the Chinese themselves. As we quote at some length in *Green Gold*, both the Chinese themselves from the eighth century onwards, and the missionaries and diplomats who visited China from the sixteenth century, believed that the longevity and healthfulness of the Chinese was largely to be accounted for by tea drinking. Just to quote one among many examples, in a herbal by Li Shih-chen, published in 1578 but thought to contain material from a much earlier period, Li stated that tea would 'promote digestion, dissolve fats, neutralize poisons in the digestive system, cure dysentery, fight lung disease, lower fevers, and treat epilepsy. Tea was also thought to be an effective astringent for cleaning sores and recommended for washing the eyes and mouth.'<sup>9</sup>

A further way in which further work on tea drinking fits into the theses advanced in SWP is also worth mentioning. There is a good deal in the book on work, on the immense toil of pre-industrial life. In order to sustain the dense populations of Japan and China, very intensive wet rice cultivation was necessary, often on a very meagre diet without much protein or even much vegetables. In *Green Gold* it is suggested that tea drinking, by providing extra energy through the effects of caffeine on human muscle co-ordination and endurance, may have played an important part in making such agriculture possible. Furthermore, it is known that green tea contains high levels of vitamin C, and it may also contain enzymes which help the body to extract the maximum of this vitamin from fruit and vegetables (and help, among other things, to reduce scurvy). All of this is an important part of the health environment explored in SWP, just as the stimulating effects of the caffeine in tea, combined with the energy in sugar, we argue, are crucial to understanding what happened when enormous demands were put on generally ill-nourished workers during the British industrial revolution.

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Since completing the book in the summer of 1996 I have learnt one more thing about tea which alters one argument in SWP. As noted, I argued that the polyphenols in tea destroyed harmful bacteria in water, for example those associated with dysentery and typhoid. This added to the effects of boiling the water to make tea and reduced water-borne disease. Yet I remained puzzled when I wrote the book as to how tea drinking by the mother could have protected breast-feeding infants, for one of the most striking

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<sup>9</sup> Jill Anderson's *Introduction to Japanese Tea Ritual* (1991), quoted in Bennet Weinberg and Bonnie Bealer, *The World of Caffeine* (2001), p.36.

facts about the sudden decline in water-borne dysentery in the middle of the eighteenth century in England was that it occurred not only among those who drank tea for the first time (mothers and fathers), but equally among infants in their first months. Trying to understand this, I suggested in the book that the link was a negative one. The mother was less likely to have dysentery so her nipples and hands and clothes would have fewer harmful bacteria. So the infant would be less likely to get the disease.

Later, a doctor explained to me that what a mother eats or drinks will almost immediately be passed on to the infant. As a result the anti-bacterial polyphenols in the tea will pass easily into the mouth and stomach of the baby. Hence the tea drinking of the mother could well have given the breast-fed infant direct extra protection. This would explain why it was both maternal and infant mortality from water-borne disease that simultaneously declined in tandem. It is yet another argument against feeding infants with dried milk products in those many societies which suffer so terribly from water-borne infections.

### **Conclusion to the five voyages**

So a further part of the answer to the question of how the modern world came about is now in place. During the last five hundred years one civilization, and then others which have copied it, have, at least temporarily, deviated from the normal tendencies and traps which halt the increase in the wealth of nations.<sup>10</sup> The Malthusian link between production and reproduction has been weakened. The almost inevitable connection between increasing wealth and increasing political and social predation has been partially suspended. The powerful tendency towards intellectual rigidification has been temporarily lifted by developments in the methods of generating and transmitting accurate knowledge about the world.

This is not, of course, to say that these tendencies will not re-assert themselves in the future. What has happened was the result of chance rather than design and there are plenty of examples of reversals. Not least among them are that in the middle of the twentieth century most of the nations on earth, including most of those in Europe, as well as China, Japan and Russia, were governed by people who were explicitly trying to destroy the liberty, equality and openness which earlier thinkers had believed to be so valuable. History has certainly not ended. Indeed, many of the tendencies, for instance the continued massive onrush of population, the spread of new and old diseases, the spending of huge quantities of money on weapons and aggressive 'defence' systems are all too obvious.

It is my hope, however, that this inter-connected set of volumes, of which SWP is one essential pillar, will give a broad outline some of the dangers which history reveals to us and the underlying patterns and tendencies which have again and again caused infinite misery and the collapse of civilizations. James Riley in his review of SWP suggests that other nations were not in a position to emulate the English or

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<sup>10</sup> It is a failure to analyse these normal tendencies, and hence to see the peculiarity of the deviations from them, which is among the reasons for the failure of interesting books such as David Landes, *The Wealth and Poverty of Nations* (1998) or Jared Diamond *Guns, Germs and Steel* (1997) to provide a convincing account of the development of civilizations.



Japanese model which allowed an escape from agrarian poverty.<sup>11</sup> This is obviously true of the eighteenth and even much of the nineteenth century. But we now live in a different world where ideas, technologies, cultures and social systems can move very quickly. It does not seem beyond the bounds of human creativity and rationality to be able to learn a little from our past and to build on this knowledge a safer, wealthier and more just future, based on an understanding of what those structural tendencies are which we must avoid, and how they have successfully been evaded from time to time.

### **Epilogue: the account and the log: the life of an author**

So the republication of the book in paperback form gives me the opportunity to create an unusual set of materials. The central text is the 'stand-alone' book which you have in your hands. This is a retrospective and edited account of an adventure or exploration, the published account of the voyage of discovery written after it was finished. Alongside this there is a web-site which contains various contextualizing materials. It contains a fuller account of why and how the book was written in the very moment when the search for solutions was in progress. If one carries on the metaphor, they are the diary or log of the voyage as it happened, interspersed with various tentative plans and sketch maps of possible ways to go. There are also descriptions of a number of the paths down which I strayed and on which I found curious facts, but which were finally left out of the final published account. Finally, to give some sense of the author and his search, there are twelve short film extracts. In these I pursue the puzzles narrated in the book on location in Japan, Nepal, Australia, Venice and England. More widely, the whole adventure is, as described, but one voyage which fits in with the others to understand the inter-linked nature of the unlikely escape into the modern world. – see [www.alanmacfarlane.com](http://www.alanmacfarlane.com)

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<sup>11</sup> For the review, see [www.alanmacfarlane.com](http://www.alanmacfarlane.com)