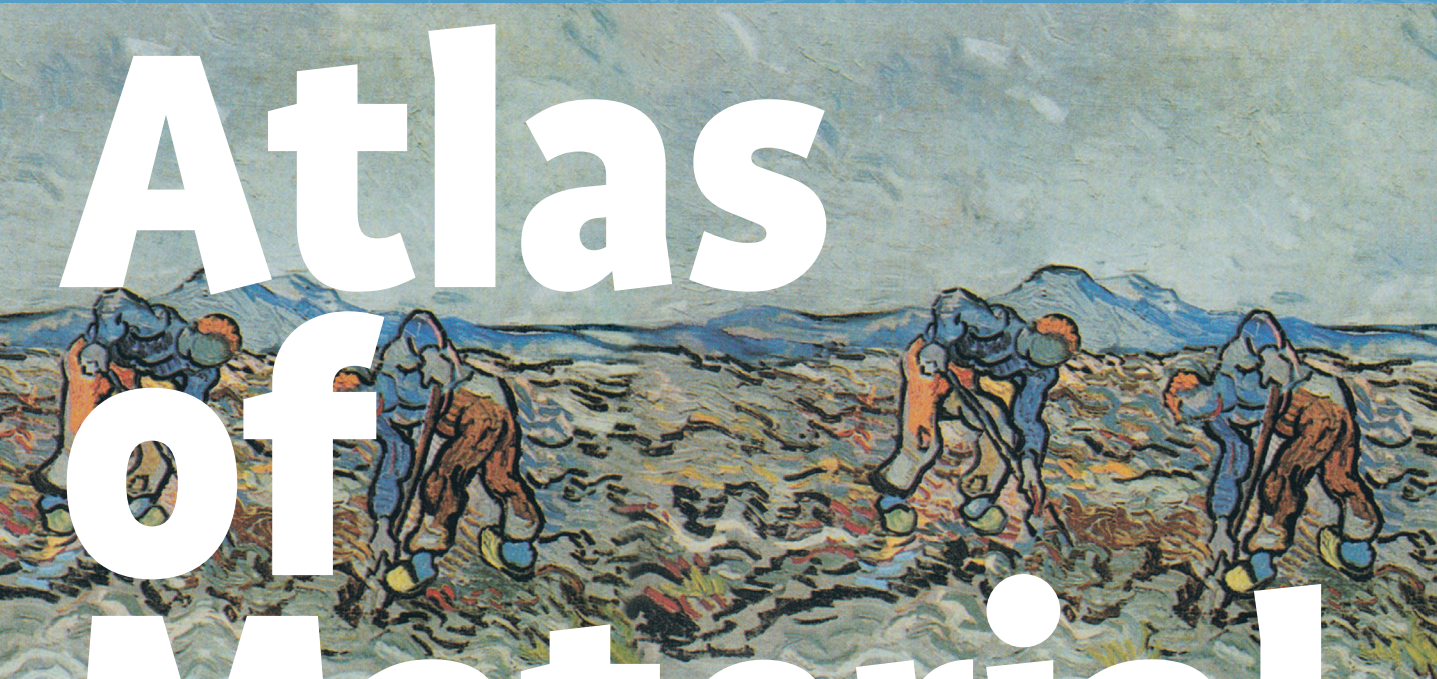


Peer Vries | Annelieke Vries



Atlas of Material Life

**NORTHWESTERN EUROPE
AND EAST ASIA,
15TH TO 19TH CENTURY**

LEIDEN
UNIVERSITY PRESS

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A BRIEF INTRODUCTION

In a world where in principle more than enough information is available, one needs a good reason to publish yet another book. Some explanation of why we wrote this one is not superfluous. The conviction that this could become a useful book is an outcome of Peer's experience in teaching global history. He has done so at several universities for more than twenty years with a focus on the early modern period and on economic history. Students as a rule looked interested and often even enthusiastic. But what always struck him, even with the interested and enthusiastic students, was that they were quite fond of discussing big topics like the Great Divergence, the modern-world system, globalisation, the impact of slavery and so on and so forth, but were often almost completely ignorant of the most basic facts concerning the societies that were being discussed. What was their (relative) size? How many people were living there? At what age did those people marry, or die? What were their main sources of energy? What did they eat? How did they provide for their sustenance? How intense were those intercontinental contacts that global historians like to focus upon? How many people actually migrated from one continent to another? How many people were enslaved in Africa and transported to the Americas? How large were the bullion flows from the Americas that speak so much to the imagination and where did they go? How long did it take to travel by ship from Amsterdam to the New World or to Canton or Batavia? How big was intercontinental trade as compared to the GDP of the trading nations involved? By far the majority of the answers he got when asking such basic questions at the beginning of class were wrong, many of them very wrong. Most students had no or only a fairly distorted idea

of ordinary life in pre-industrial societies. Actually, so he found out, you cannot really blame them. It is anything but easy to find the relevant information. It is very often simply not there in the numerous introductions *to* or syntheses *of* global history. Apparently, it is assumed that students and other people interested in global history no longer need to be informed about such 'trivialities'. Often the type of data presented in this book is not referred to at all. If it is, it tends to be more or less tucked away and not systematically presented.

This book is intentionally descriptive, intentionally focused on just presenting easily accessible, basic data. Its goal is to *show*, not to *prove* and we hope it will be used as a reference book. It is the result of an effort to chart what is known or at least scholars think they know about what we consider to be the most important aspects of material life in several parts of the world in the early modern era. It does so by presenting and contextualising basic facts, where possible via maps, tables, graphs, figures and charts. For practical reasons - otherwise they would become so extended and complex as to crowd out the text - references to maps, tables, graphs, and figures are always to the source from which we, sometimes with minor necessary adaptations, took the information. That need not always be the primary source. We decided as much as possible to refer to relatively easily accessible texts and opt for relatively easily readable presentation. The text is meant as a first introduction, not the final say. The reader interested in the original, 'final source' can always look that up via the reference we give. We cannot emphasise enough that our 'data' are meant as a first introduction. As with all historical information, one has to check *how* they have been constructed and on what information and

what arguments they are based before seriously using them. Maps based on generally available, 'open' information have no reference to a specific source. They have been shaped by Annelieke on the basis of such information. The text as such is not annotated because that would disrupt its text-book-like character. As in all historical texts, the decision about what in the end can count as a fact is the authors' and can as such of course be challenged. The extended bibliography provides ample information for one to try to do that.

Those maps, tables, graphs and figures are indispensable core ingredients of the message of this book which for that reason is called an atlas. They have all been kept as simple as possible to give out clear messages and are presented in a uniform style in order to facilitate comparisons. They have all been designed and produced by Annelieke, who therefore should with good reason be considered co-author, with Peer being responsible for 'the content' while she took care of 'the form' which means that she also took care of the overall layout of the book. In order to make the information easier to digest all measures and weights are standardised. The text does not present a tight argument. It does, however, try to explain how material life (in pre-industrial societies) functioned by showing the basic mechanisms by which it was determined and that set, as Braudel puts it 'the limits of the possible'. It wants to show the 'nuts and bolts' of pre-industrial economies. The analysis of countries from different continents, moreover, enables us to show that different societies, notwithstanding their shared constraints, could opt for quite different trajectories.

As atlases do, this one tries to chart what we consider to be the main 'areas' of its object. Each of the nine chapters may be consulted separately (therefore some things may be referred to several times) like one need not and usually will not read an atlas in its entirety from the first to the last page. This of course is not meant to suggest that reading the book in its entirety would not make sense.

The focus, as already pointed out, is on the material aspects of life. That is not a value judgement, although we do think that global history could do with more materialism. It is rather a matter of expertise, as Peer has been an economic historian for almost his entire career. The emphasis, however, is also pragmatic. Even with its specific restrictions, the topic is already large enough. Covering all aspects of life would lead either to superficiality or to a very thick, unmanageable encyclopaedia. Besides, we are not sure whether making a similar atlas would at all be possible if it had to deal with the less material aspects of life as well. At several instances we use i.e. copy or paraphrase fragments of Peer's earlier work. It would be extremely inefficient in a textbook like this one not to use the relevant material text one has already written. So, certainly, there is an amount of 'self-plagiarism' - a silly concept anyhow - in this text.

The period covered is from roughly the fifteenth to roughly the second half of the nineteenth century. Geographically the focus is on Western Europe, first and foremost (Great) Britain and the Dutch Republic, and on East Asia, more specifically China and Japan. Why this period and why these regions? To a large extent the reasons, again, are fairly pragmatic. This is the period and these are the regions for which we hope to have built up a certain expertise. Peer did so out of his interest in the Great Divergence, a topic at the centre of many debates in global economic history that leads one almost inevitably to focus on roughly the early modern period and the nineteenth century and on certain countries. Almost without exception scholars have placed the Great Divergence in the eighteenth or nineteenth century which has turned the early modern era into the favourite period in which to look for its preconditions. When it comes to countries, the selection of Great Britain is obvious, as it was the first industrial nation and thus the place where the Great Divergence first materialised. For those who are acquainted with the Great-Divergence debate the selection of China

too cannot come as a surprise. For reasons that, as a matter of fact, are increasingly *less* obvious to us, China happens to be the favourite ‘sparring partner’ of Great Britain in debates about why modern economic growth originated there and not somewhere else. That means that the country has the advantage of being relatively well researched. The fact that it, in contrast to e.g. ‘India’ at the time, was a united polity is an extra advantage. The second country in Europe that receives privileged attention is the Dutch Republic/ the Netherlands, another highly advanced European economy that plays an important role in debates on the Great Divergence and on economic development more generally. On top of that there will be frequent references to other parts of Europe, to put information regarding Great Britain and the Dutch Republic/ the Netherlands in context and perspective. The fourth country to figure prominently is Japan, which is an interesting case-study because it was the first non-western country to industrialise - even though that process started only in the last third of the nineteenth century - and as such also plays, or in any case should play, a big role in the Great-Divergence debate. The text should not be read as a contrasting comparison of North-western Europe versus Eastern Asia. As any reader can see for himself next to several striking resemblances the two ‘western’ countries as well as the two ‘eastern’ countries also often exhibit surprising differences. What is compared in this text are four countries rather than two world regions.

Incorporating more countries than those selected here would have led in our view to a ‘thin description’, in which the *historical* context and thus the *historical* meaning of the information provided would disappear. The information provided in this atlas in the end is meant to facilitate a better understanding of historical configurations, not to function as a data-base for theory building. The atlas, to put it in social-science jargon, is more case-oriented than variable-oriented. The main focus on ‘only’ four countries, at least so we hope, enables

the atlas’s user to keep a ‘sense of the whole’ and to get a picture of what life was like in concrete places and at specific times. It is not intended to be encyclopaedic. But, of course, everyone, in the context of research as well as in teaching, can try to fill in the boxes for countries that are not taken on board here. In trying to do so, even people with the relevant expertise would have to admit that we often, in particular for many parts of the world outside Europe, simply do not have sufficient data to do what we did for the four countries that now hold centre stage. Taking the entire world on board would lead to an atlas with (too) many blanks and even more speculative figures than this one already contains. Too much is still unknown and uncertain. A lot in all probability will never be known and never be ‘certain’, as relevant and trustworthy sources are non-existent.

The period covered begins with the extension and acceleration of intercontinental contacts during the Age of Exploration, with some excursions into what for Europe is called the Late Middle Ages. It ends in the long nineteenth century, at somewhat different moments depending on the circumstances in the country discussed and on the subject. For Great Britain, the first industrial nation, our analysis basically stops in the 1850s, the moment when the economic Ancien Regime had come to an end and the impact of the Industrial Revolution had become such that the entire national economy had changed character. For the Netherlands, the successor state of the Dutch Republic, where industrialisation took off more than half a century later than in Great Britain, our coverage stops a couple of decades later. In Japan, the phenomena we tend to associate with industrialisation started only with the Meiji Restoration 1868. The country’s take-off into modern economic growth as a rule is considered to have taken place sometime between 1890 and the beginning of World War One. The focus here will be on the Tokugawa era (1603-1868) but there will be several excursions into the Meiji era that lasted until 1911 and very

exceptionally even into the period after World War One. When in that same year, 1911, Qing rule in China came to an end, the economy of that country was still to a very large extent pre-industrial. Here coverage stops with the fall of that dynasty. For all the countries, when it is considered helpful for covering a specific phenomenon, the text occasionally goes further back in time and for example refers to developments in Song China or take on board more recent phenomena e.g. Japan's empire building until the 1930s. Often the text's chronology has to adapt to the chronology of the data used and thus to be rather flexible. It actually cannot be otherwise because the phenomena charted here simply do not have a strict year-to-year or even decade-to-decade chronology.

The chapter dealing with the Great Divergence is somewhat different from the preceding ones. Whereas information in the first eight chapters of the book focuses on the situation in the early modern period roughly from the end of the fifteenth century until the end of the Napoleonic Wars, that certainly mark the end of an era, at least in European history, chapter nine primarily and almost exclusively refers to the situation in the long nineteenth century, the period in which economic divergence between countries really became 'great'. The information it contains is meant to illustrate two things: the huge impact of the emergence of modern economic growth in economies that had been 'pre-industrial' and the great gap that emerged as a consequence of the fact that only a small part of the world began to experience that kind of growth.

Undoubtedly Peer's personal convictions and preferences will have shaped the text. But he has done his best to be *sine ira et studio* and does not explicitly discuss and evaluate explanations of the origins of modern economic growth and of the Great Divergence. He has already done that at many occasions and in many publications.¹ He leaves it

¹ The reader is referred to the Bibliography for the most important of those publications.

to the readers to construct their own explanations using material provided here. We hope that makes our compilation also and in particular valuable in the context of teaching. In that respect it will certainly be helpful that the atlas is systematically comparative. Whenever possible the four selected countries are juxtaposed. Where that is considered relevant and possible, data for other (European) countries are added. This comparative approach does not, as the reader will have ample opportunity to see, exclude attention to global interconnections. Far from it, exchanges of whatever kind receive ample attention.

In writing the text of this book I (Peer) have clearly stood on the shoulders of giants. The history of the world before the Great Divergence first and foremost was the history of agriculture and of rural society. Two scholars whose work I read as early as the 1970s had a big impact on me, to wit Wilhelm Abel and Bernhard Slicher van Bath. In my view their work is still the best introduction into the 'logics' of pre-industrial, agrarian economies. Their emphasis on agriculture and on 'structural constraints' also attracted me in the work of Annales-historians like Emmanuel Le Roy Ladurie and Pierre Goubert and in Norman Pounds' three volumes on the historical geography of Europe from 450 to 1914. That I have been inspired in writing this book by the work of Fernand Braudel, needs no further clarification. Over the years I have become more interested in the role of energy in pre-industrial economies and have begun better to appreciate its fundamental importance. In that respect I learned a lot from the work of Anthony Wrigley, Paulo Malanima and of course Vaclav Smil. Anthony Wrigley's work provided me with the distinction between (advanced) organic economies and fossil-fuel, mineral-based economies that like Jack Goldstone's concept of 'efflorescences' helped me in bridging the conceptual gap between Malthusian stagnation and modern economic growth. The book that inspired me to start

studying the Great Divergence already before it was known as such, was Eric Jones's, *The European Miracle*. Long before Kenneth Pomeranz, Jones had already paid ample attention to the role of geography and ghost acreage in global history. That I have been inspired and motivated by Pomeranz is too obvious to need further mention. My focus on the importance of the role of the state in economic life, a topic that is also dealt with in this 'materialistic' book, is the result of more than two decades of close contact with Patrick O'Brien. One book, finally, that very much inspired me to try to write this one, when it comes to general approach, purpose and design, is Carlo Cipolla's, *Before the Industrial Revolution*. I hope I have managed to follow in his footsteps while making this book more global.

Inevitably many questions will pop up with regard to the trustworthiness and meaning of the information provided in this book. It cannot be emphasised enough that we are dealing here with estimates, sometimes even guesstimates. We realise that full well. The impression of precision that many of the figures may provide is certainly misleading. We use them in our atlas not because we think they indeed are very precise and can or even have to be taken at face value but because they seem to be the best approximations we have, or in any case approximations that figure prominently in debates amongst economic historians. One may certainly doubt their absolute value but we think they might be informative when it comes to trends and relative orders of magnitude. Apart from 'editorial' changes, because of what we think would be the best way to present them, we copy them from our sources out of respect for those sources. But we urge our readers to only use them to get a sense of orders of magnitude and not as absolute i.e. precise values. Even the best approximations we offer are no more than approximations, some of them very shaky, especially those for China, and they have to be considered as such. Readers who want

to use data they find in our book to make scholarly claims have to go back to their original source to find how they have been constructed and to decide for themselves how trustworthy and solid they think they are. To undertake such source criticism in this very book with so much data is impossible and if it were possible, would entirely destroy its readability. In order to reach clarity and readability, referencing and assessing have been kept to an absolute minimum in the text, as it would in an atlas. But we want to emphasise that the figures we present are, like all figures, debatable. Not just because they as a rule are based on all sorts of snippets of information from a basically pre-statistical period in which a well-organised and well-informed central state bureaucracy that could and wanted to take care of national statistics was lacking or only just emerging, but also because it is far from certain that they actually provide the kind of information they are supposed to provide. To what extent are prices in the economies we focus upon in this book like prices in an all but fully commodified market economy like the one we are living in now? Do they really indicate levels of scarcity? And even if they do: how can we compare prices and the things they were paid for over time? How can we measure GDPs of economies in a distant past and how can we compare them in something like 1990 international dollars that are supposed to correct for differences over time and between places and give purchasing power parity? That is, if we actually can? These are fundamental questions that should be asked more often.²

We are dealing here with fundamental issues that therefore have to be addressed more than cursorily in this introduction, in order to not have to repeat

2 For fundamental critiques see amongst others Hatcher and Stephenson, *Seven centuries of unreal wages*. Kent Deng and Patrick O'Brien have become very explicit exponents of this kind of critique and we refer to their recent joint publications referred to in that volume in note 14 on page 87. We also still consider the following two books Witold Kula, originally published in Polish, very enlightening: *An economic theory of the feudal system* (London 1987) and *The problems and methods of economic history* (Ashgate 2001).

ourselves time and again in the text. In particular for the case of Ming and Qing China we simply often lack the sources that would be needed to provide answers to our questions that are more than even quite speculative approximations. Often one has to conclude that there are no sources at all. For the other countries discussed here, the situation certainly is better but it is never as good as it would need to be to come up with conclusions that would be considered 'hard' in current-day social scientific research. For Qing China as a whole for example we have no real census data, as no national census was ever held, and no cadastral surveys. Considering the country's huge regional diversity and its weak economic integration extrapolating from one region to another is bound to be misleading. Considering the volatility of many economic phenomena the same applies to extrapolating from a shorter to a longer period. Wage labour was rather exceptional and wages, which fluctuated strongly, often included payments in kind. Exchange rates of silver and copper, which were both used as currency, also fluctuated strongly. A substantial part of the economy was not monetised, and so on and so forth.

To construct GDP figures for such an economy, for a period of several centuries and then on top of that express them in real incomes per capita and compare them with real incomes per capita in other countries - also with less than perfect sources - in terms of 1990 dollars purchasing power parities is very daring, to say the least. Personally, we are very skeptical when it comes to constructing such comparisons. The longer the period and the more different the economies compared, the more speculative and useless their outcome. If they have any value, which we think they can have, it resides in indicating trends and comparative orders of magnitude, not in determining absolute values. To present tables or graphs suggesting that one actually knows and can compare GDP per capita per year of different societies over centuries in terms of 1990 international dollars, and then come up

with claims that China's GDP in 1090 was 862 and in 1120 only 833 of such dollars, in our eyes is science fiction, misplaced precision in optima forma. Many economists and economic historians, however, believe in this national accounting approach and it has become very influential. To ignore it in a book that amongst other things pretends to give an overview of the current state of the art would be somehow 'partisan'. Constructing and comparing real wages in our view makes more sense as long as one realises - and tries to deal with the consequences - that the importance of wage labour, and its function and meaning, could differ very substantially between countries and periods. Reconstructing household incomes might remedy some shortcomings of focusing on wages but it in turn too has its empirical and conceptual issues. We are aware of the fundamental defects of many of the data presented in this book. To nevertheless try to get a realistic and reliable picture of the economies discussed we use various and varying perspectives and present many different 'measuring rods', supplemented by circumstantial evidence. We both believe that this is 'as good as it gets'.

The structure of the book does not need much more explanation than is provided in the extended table of contents. Apart from this brief introduction and a few final comments, the book contains nine chapters. The first four deal with very basic constraining aspects of material life: geography and demography, types and availability of energy, types and availability of resources, plus basic information on agriculture and agricultural systems. It would be hard to imagine a good introduction in pre-industrial material life without these ingredients. Chapter V is then dedicated to exchanges, with a clear focus on long-distance, intercontinental exchange, of people, flora, fauna, diseases, bullion and commodities. Chapter VI provides information on economic stagnation and growth. There has been a continuing major debate amongst economic historians on how to interpret economic

developments in the early modern era until the beginning of the Industrial Revolution in Great Britain. In that debate there are two main positions, that of 'Malthusianists' who think in terms of limits, ceilings and constraints and who hold the view that growth, certainly sustained growth, was all but absent and that of scholars who are more optimistic and who in any case see signs of growth and development for certain regions. Our data show a rather nuanced picture with differences when it comes to times and places although even in the most advanced regions modern economic growth, that is sustained and substantial growth, seems to have been lacking. What we certainly do not see is a simple upward and onward development. That is nowhere clearer than in Qing China where several indicators suggest that the economic situation began to deteriorate from at least the end of the eighteenth century. But even in Great Britain where eventually the great breakthrough took place, growth tended to be volatile, fragile and intermittent, its rate low and its duration short as compared to what became normal in industrialised economies.

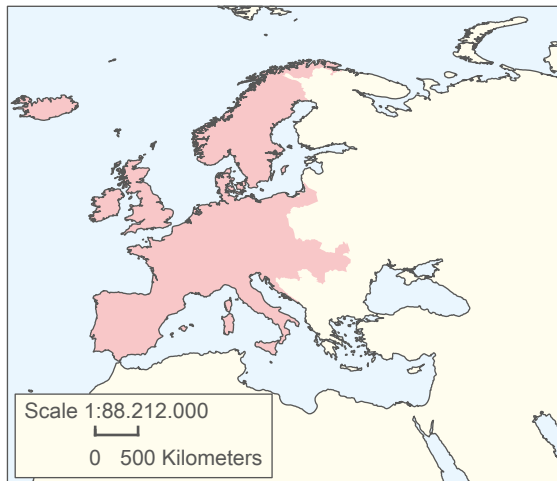
But apparently there were episodes of growth. Chapters VII and VIII deal with developments that can be considered to be the causes of that growth. Chapter VII focuses on what economists would call its 'proximate causes', whereas Chapter VIII focuses on some so-called 'ultimate causes', in this case the development of two major societal institutions, the state and the market, and their impact. Chapter IX, the last one, deals with the Great Divergence and the fundamental changes it brought about for material life in parts of the world that experienced modern economic growth. That growth in any case for the time being, brought a relaxation or even, so it appeared, an elimination of the Malthusian constraints. The coming of modern economic growth meant the emergence of a fundamentally new economic regime, characterised by new sources of energy, new technologies, new institutions and a new global economic order that, at rather low cost, made sustained and substantial growth possible in certain parts of the world at least, without of course changing everything at once and at the same speed.

GEOGRAPHY AND DEMOGRAPHY

Sizes

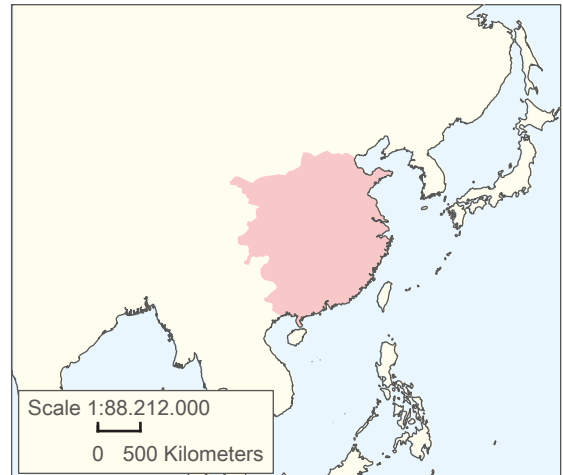
An atlas of material life in a pre-industrial setting can best begin with providing basic information with regard to the natural environment in which people lived. Let us begin with information on the sizes of the entities we will discuss. The globe in its entirety measures 510 million sq. km. Just under 150 million sq. km consist of land. Europe, including Russia west of the Urals, measures roughly 10.5 million sq. km and Asia roughly 44.5 million sq. km. The following maps show the size of the entities that play a (major) role in our descriptions. (See Maps 1-1/1-5.) Maps of the Mughal and the Ottoman Empires have been added to provide an idea of relative size. (See Maps 1-6/1-7.) All maps are on the same scale.

Map 1-1 Europe without Russia and the Ottoman Empire



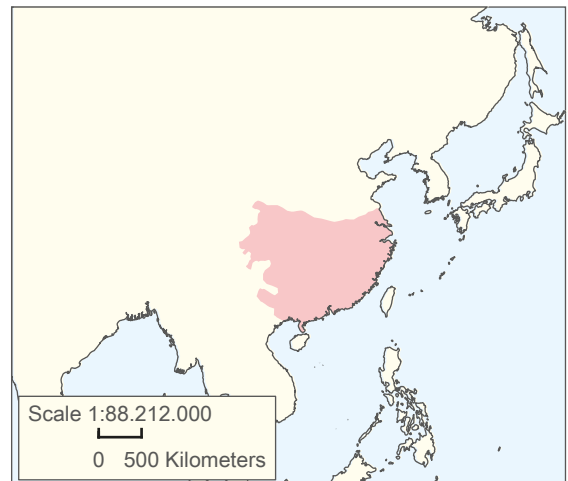
Size, as in map, \pm 4 million sq. km

Map 1-2 China: the Northern Song Empire, 960-1127



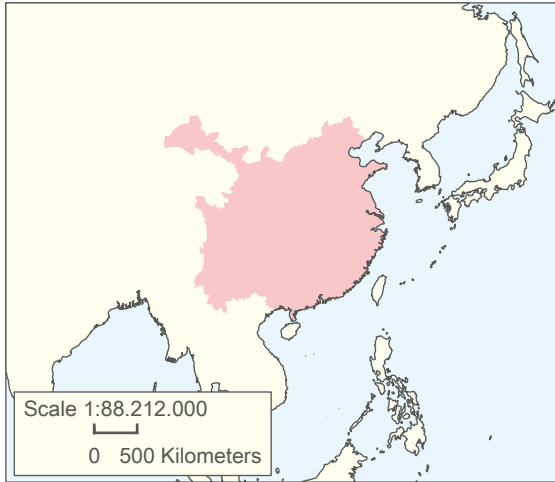
Size, as in map, at its major extension, \pm 3.1 million sq. km

Map 1-3 China: the Southern Song Empire, 1127-1279



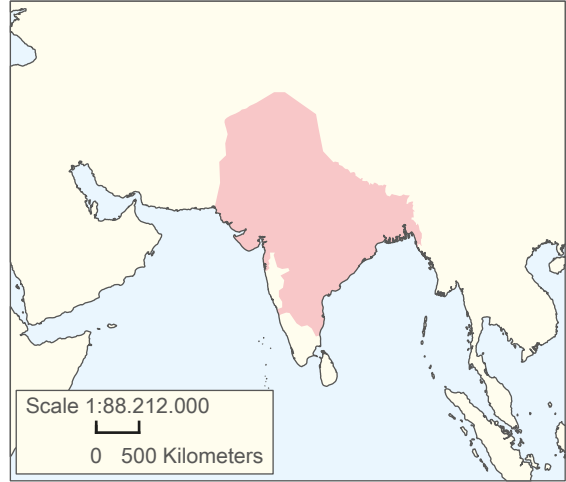
Size, as in map, \pm 1.8 million sq. km

Map 1-4 Ming China, 1368-1644



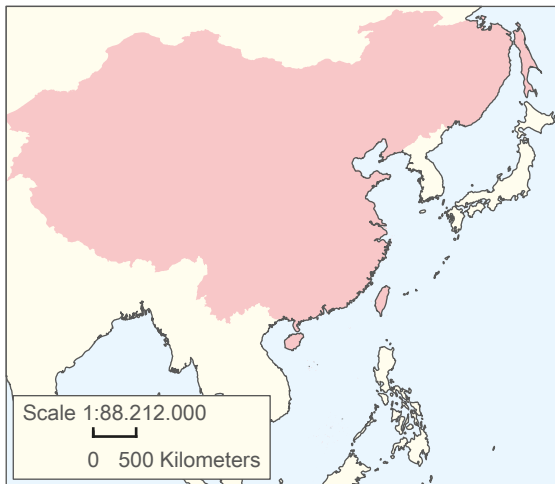
Size, as in map, \pm 4.5 million sq. km

Map 1-6 India: the Mughal Empire at its maximum extension at the end of the seventeenth century



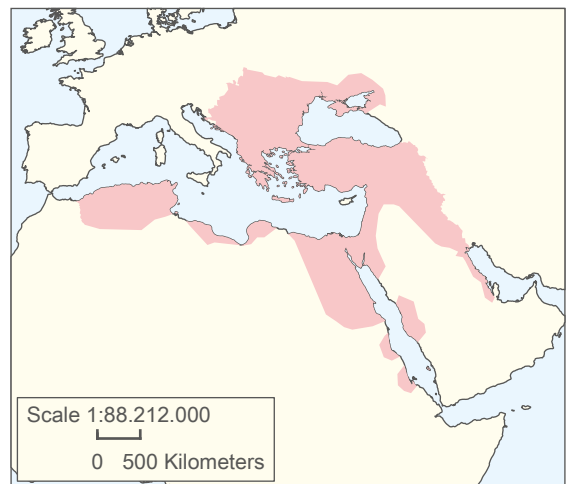
Size, as in map, at its maximum extension, \pm 4 million sq. km

Map 1-5 Qing China, 1644-1911



Size, as in map, at its maximum extension, \pm 13 million sq. km

Map 1-7 The Ottoman Empire at its maximum extension at the end of the seventeenth century



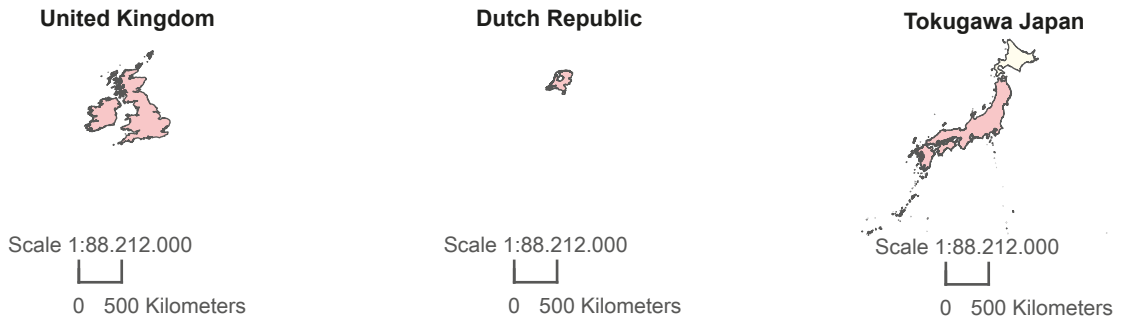
Size, as in map, at its maximum extension, \pm 5.2 million sq. km

The immense size of Qing China is striking. Many of its provinces were the size of major European countries. For those provinces we refer to the map on page 277.

For the sizes of the United Kingdom and its components and of the Dutch Republic/ The Netherlands see Table 1-1 on page 20. Tokugawa

Japan, which comprised only the three big islands Honshu, Kyushu and Shikoku, and a string of tiny islands, measured about 285,000 sq. km. The fourth major island, which became known as Hokkaido, would become part of the country only after the Meiji Restoration of 1868. Map 1-8 shows how tiny the United Kingdom, the Dutch

Map 1-8 United Kingdom, Dutch Republic, Tokugawa Japan



Map 1-9 The United Kingdom as a composite state



Republic and Tokugawa Japan were as compared to the big empires shown, on the same scale, on Maps 1-2/1-7.

Actually, the United Kingdom, the Dutch Republic and Tokugawa Japan were all so-called 'composite states', i.e. states composed of separate territories with often different rights, regulations, institutions and ways of control by the centre. (See Maps 1-9/1-11.) The Qing Empire, as an empire, to a certain

extent was also a composite polity, in which territories that were incorporated later on might have specific arrangements. (See for its aggrandising over time Map 8-15.) For the constituent parts of the United Kingdom see Map 1-9. England and Wales together formed Britain since the Acts of Union of 1536 and 1542. England, Wales and Scotland formed Great Britain since the Act of Union of 1707. England, Wales, Scotland and Ireland formed the United Kingdom of Great Britain and Ireland since the Act of Union of

Map 1-10 The Dutch Republic as a composite state in 1648



1801. The Dutch Republic as founded in 1648 consisted of the seven 'united provinces' of Holland, Zeeland, Utrecht, Gelderland, Overijssel, Friesland and Groningen, plus the province of Drenthe and the so-called 'Generaliteitslanden': Staats-Brabant and Staats-Vlaanderen that were ruled directly by the States General, the 'Parliament' of the Dutch Republic. After 1648, with the exception of several tiny areas added in the South, so-called Staats-Oppergelre and Staats-Overmaas, the territory remained intact until the invasion by the French at the end of the eighteenth century.

Tokugawa Japan consisted of the lands directly ruled by the Shogun or his direct bannermen, roughly one quarter of the country in its entirety - split into many tiny bits and spread over a large part of the country, to be concrete over forty-eight of the country's sixty-eight provinces plus some 250 to 300 fiefs where so-called Daimyo could rule as long as they respected the final authority of their overlord, the Shogun. When it came to their domestic affairs e.g. the levying of taxes, the Daimyo were autonomous. It was only with the Meiji Restoration of 1867-1868 that the country witnessed the creation of a modern, centralised state in which, after the last samurai rebellion of

1877, the so-called Satsuma Rebellion, central rule and unity were no longer seriously challenged.

Table 1-1, for the sake of comparison and to provide a sense of orders of magnitude, provides information on the current size of the most important Western European countries.

Table 1-1 Size of European countries, in sq. km

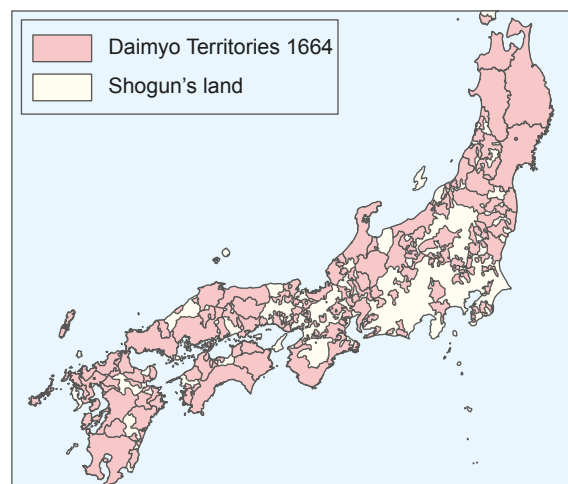
France*	547,000
Spain	505,000
Germany	357,000
Italy	301,000
United Kingdom	243,000
- England	130,000
- Scotland	79,000
- Wales	20,000
- Northern Ireland	14,000
Portugal	92,000
Ireland	70,000
Netherlands	33,000
Belgium	32,000

* Only the European territory

We are well aware that the regions referred to in the table underwent changes in size and status over time and that Italy as such did not even exist in 1850. For further information in that respect we refer to historical atlases and for a quick impression to Maps 8-6/8-9 in this book and here confine ourselves to some comments with regard to the size of three major European countries that were or became major powers early in modern Europe but that as such no longer exist.

At the heart of Europe there was the Habsburg Empire or since 1867 the Dual Monarchy of Austria-Hungary. At its maximum extension, just before World War One, this empire measured 675,000 sq. km. Prussia, another major player in the European concert of states since the second half of the eighteenth century, was initially an irrelevant, poor and small country. It only slowly became a force to be

Map 1-11 Tokugawa Japan as a composite state



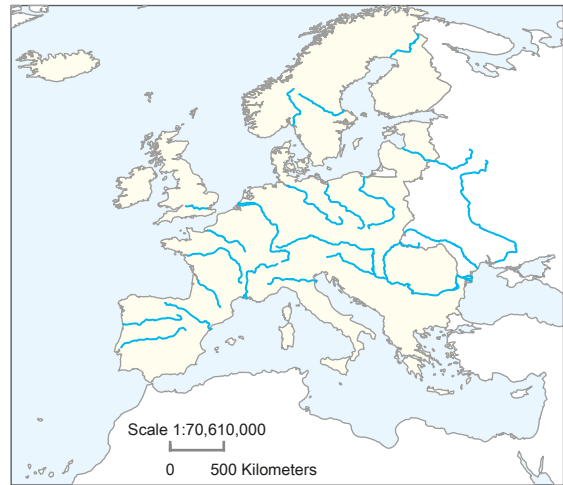
reckoned with. In 1713, it measured 113,000 sq. km. A century later it was some three times as big. The size of the German Empire as it was created in 1871 and of which Prussia formed the 'heart', was 541,000 sq. km. It was still that size in 1914. And then there was Russia, or rather, since 1721, the Russian Empire, which was extremely successful in enlarging itself and just before World War One measured some twenty-three million sq. km. For further information on that empire and its expansion and on the large overseas empires of Western European states with their typical division between a mother land and overseas colonies, see pages 273-276.

Physical geography

The natural environment has always been a major if not the main determinant of material life, in particular of course in the pre-industrial world. It has become stock in trade to claim that Western Europe in particular has been 'blessed by nature' and in this respect had and has certain advantages as compared to other major regions in the world. As compared to East Asia, or rather China and Japan, the other regions described in this atlas, it was less often stricken by major natural disasters like earthquakes, typhoons, volcanic eruptions, huge floods and droughts and fires. Its climate and its geography were less 'extreme' than East Asia's. There was nothing in Western Europe's early modern history to match e.g. the huge floods of the Yangtze and in particular the Yellow River. The Yellow River is estimated to have flooded some 1,500 times since the second century BCE. Three examples should suffice. In 1642, a major flood actually caused by Ming troops killed more than 300,000 people in Henan Province. A flood in 1887 is thought to have killed between 1,000,000 and 2,000,000 people. The estimates of the number of people killed by the flood in 1931 (but that of course is not in 'our' period) and the ensuing outburst of disease and

famine, range from 850,000 to 4,000,000. Nor are there equivalents in Western Europe's history of the big earthquake and landside in China's Shanxi, Shaanxi and Henan provinces in 1556, which are claimed to have taken over 800,000 lives. This means not only that fewer lives were lost in Western Europe but also that at least in this respect its capital stock was less often destroyed. It is of course harder for countries to experience sustained economic growth or even to sustain the existing level of wealth when they are regularly hit by major economic setbacks due to 'natural causes'. The relative absence of such setbacks in North-western Europe, in particular Great Britain, has certainly played an important role in its peculiar economic trajectory. Another 'European' advantage would consist in the fact that it has so much coastline. There are many different ways of measuring coastlines, with often surprisingly different outcomes depending on the choice of scale and method of measurement. But whatever scale and method one chooses, Europe, minus Russia, always turns out to have a far longer coastline than China, with which it is often compared in this context, even when we take China at its maximum size under the Qing (1644-1911). Unsurprisingly, considering its huge size, China also had a fairly low coast-to-area ratio. Moreover, Europe has a higher density of rivers that have the added 'advantage' that they flow into more and more different directions. For a comparison of the two regions, on an identical scale see Map 1-12 see page 22. In principle Western Europe could certainly profit more from 'the bounty of the sea' than China and many other parts of the world. Although that claim is often made, there are no indications of any geographical reasons for the fact that Europe stayed disunited, which is often presented as a major reason for its peculiar history, whereas China time and again became united. 'China' clearly is not a 'geographical' unity. Even within China Proper there were major geographical differences. Without the Grand Canal e.g. the North and the South would be rather unconnected.

Map 1-12 Europe and China with their coastlines and major rivers



All the major rivers in China flow from West to East and divide rather than unite.

Japan with its many islands and its elongated shape does have a quite extended coastline, but it is surrounded by seas that are not always easily navigable. The same goes for its rivers. They tend to be rather short - the longest being only 400 kilometres long and rather wild. An additional problem in this respect was political: the ruling Shogunate's policy of trying to control and often curb movement and exchange in the realm as well as with the outside world.

Europe as a continent had a dispersed resource portfolio and shows a great variety in terms of geology, geography and climate. At the beginning of the early modern era it had ample reserves of good land that could be used as arable, as will be shown later in this text, but also of forests, coal and minerals. It had a good location from which it was relatively easy to discover and exploit the New World with its huge 'ghost acreage'. It was easier for Europeans to reach the New World than it was for Asians. Which, as such of course does not explain why specific North-western Europeans would in the end profit most from this fact. The occupants of any one of Europe's 'core areas' found it hard to dominate the others. The fact that after the Roman

Empire Europe never again knew such a dominant and large empire meant that it continued to consist of geographically speaking relatively small polities that were relatively easy to 'manage' and 'develop'; that had to survive in a fiercely competitive setting and in which it was easier to sustain active representative assemblies. Distance offered some protection against Asian invasions, as did the forested landscapes that were unsuited to cavalry warfare. It had a rain-watered agriculture, not one based on irrigation. It has been claimed that therefore it would have given rise to less centralised, despotic states in which peasants could be more autonomous. All this strengthened local and medium-distance trade in ordinary goods.

Great Britain as an island in this context was particularly fortunate. It was even more protected against diseases and enemies. Its location, moreover, was favourable as regards the European Continent as well as the New World. Whereas it was relatively close to the enormous ghost acreages of the New World, it was even further away than the European Continent from the Central Asian steppes with their conquering nomads. It was amply provided with water that could be used for agriculture and transport (domestic as well as overseas) and as a source of power. It had large reserves

of coal at locations from where it could relatively easily be transported. All these comments by and large also apply to the Dutch Republic which, however, had to make do with peat instead of coal and not only was able to profit from the fact that it had so much water but also had to fight against it. Elevation of course is also a factor of major importance. Basic information in that respect is given in Maps 1-13/1-17.

All these references to geography of course do not imply geographical determinism. There are countries that have become rich against all geographical odds whereas other countries are blessed by nature

but are nevertheless poor. In the end geography is only one factor amongst many when it comes to explaining economic growth or the lack of it, but underlying much of what is written in this book is the thesis that differences in pre-industrial economies are inexplicable *without* taking it into consideration. Nature hardly ever provides sufficient explanation for economic developments by itself but considering the still rather primitive level of technology in the societies discussed it as a rule indicated the rather strict limits of what was possible and what was not. How could it be otherwise in organic economies?

Map 1-13 The physical geography of Europe, elevation

