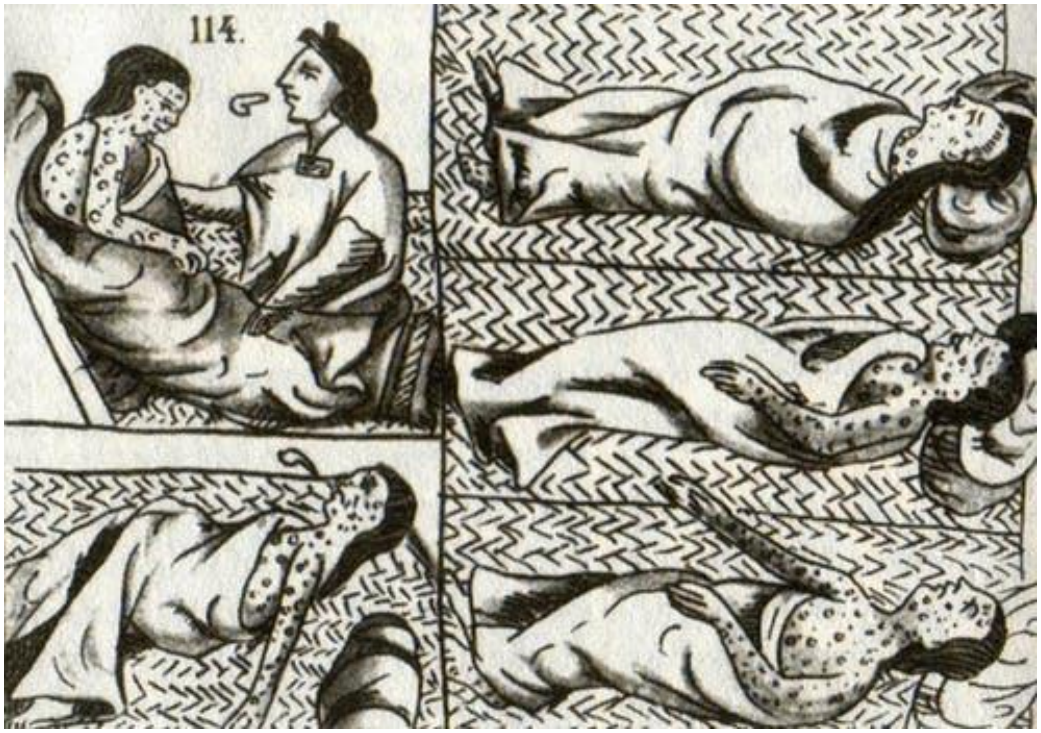
(Emmanuel Le Roy Ladurie)

The Unification of the Globe by Disease

(14th to 17th centuries) - II.[1]

Woodrow Borah's research on the genocide of the American Indians



Panel from the Florentine Codex depicting smallpox outbreaks in the Americas during the 16th century. Courtesy of Wikimedia Commons.

It is fairly well known that the microbial unification of the 14th and 15th centuries certainly affected Eurasia west of Tibet and more particularly western Europe. It may also have affected China where ominous signs of a demographic shortfall were evident towards the end of the Middle Ages (to use European chronology).

But beginning in the very last years of the 15th century and during the next hundred, or at least fifty years, the processes of epidemic contagion took a giant step westwards, across the Atlantic. From this time on, large tracts of the American continent felt the impact of "unification;" its devastating properties were experienced on a scale beyond anything Europe had known, shocking though that had been. To discuss this apocalyptic event in the history of America, obviously we must consult the work of Woodrow Borah.

Borah, of Berkeley University, California, revised, or it would be more correct to say, demolished the theories of Soetber, a fellow historian who refused to believe that any post-Conquest catastrophe

[1] *Revue suisse d'histoire,* vol. 23, part 4, 1973.

had taken place in Mexico.[2] To produce this devastating rebuttal, Borah drew upon a mass of documentary evidence of many different kinds: pictographs dating back to the Renaissance, the work of native Mexicans; surveys and census returns of Spanish origin; and tax data which, with the aid of fairly simple calculations based on overall tax receipts, tax assessments per family, and number of persons per household, enable one to estimate reasonably accurately population figures for the times such taxes were levied. Complete accuracy is of course impossible and the final figures, in millions and in hundreds of thousands are, in Borah's own word, "only a guess at the mid-point of a probable range."

Woodrow Borah

By the use of this method, however, Borah and his team produced some impressive estimates of the population figures of pre-Conquest Mexico. It is true that long before the arrival of Cortez, the cultivation of maize had made it possible to supply the needs of a considerable population, but there were already signs of a Malthusian saturation point: several instances of famine are known to have occurred in the course of the 15th century, and the persistence of the practice of human sacrifice might, after all, be interpreted – why not – "as a sign that the local culture contained elements favorable to population limitation."

But having said that, the worst outcome is not always the most probable; the catastrophe that finally occurred was by no means inevitable. But for contagious contacts from outside, the acknowledged Malthusian tendencies in 15th century Mexico might have well led to nothing more than a long-term period of population stagnation, such as that on record in many parts of Europe in the 17th century.

It was the shock of conquest from without – accomplished by Cortez at the expense of the Aztec Empire in 1519-21 – which caused this demographic collapse; admittedly, the population figures were not in too healthy a state, but they would have remained relatively stable in an endogenous context if only the country had been able to remain free from external contamination.

In a preliminary assessment, S.F. Cook and L.B. Simpson[3] proposed the figures given in Table I for the post-Cortez "haemorrhage" of the population of Central Mexico.

[2] Soetber, in Pet. Georg. Mitt., quoted by Borah, *New Spain's Century of Depression,* University of California Press, Berkeley, 1951.

[3] S.F. Cook and L.B. Simpson, *The Population of Central Mexico in the Sixteenth Century,* Yale, New Haven, 1948, quoted by Borah, *New Spain's Century of Depression, op. cit.,* p. 3.

Table I.

Date	Inhabitants (million)
1519	11.0
1540	6.4
1565	4.4
1597	2.5
1607	2.0
1650 (about)	1.5
1700	2.0 approx.
1793	3.7

The numbers are already astonishingly high at the earliest date and terribly depleted at the lowest point (1650); they convey more effectively than any long commentary the impact of the Spanish invasions and occupation. Subsequent research carried out by Borah in follow-up studies to his first book extend still further the upper and lower limits, confirming this impression of collapse. A close study of the *Suma de Visitas,* compiled in 1547, persuaded Borah to revise *upwards* the figures relating to the first half of the 16th century.[4] Together with those of the latter half of the century, they would now read as in Table II.[5]

Table II.

Date	Inhabitants (million)
1518	25.2
1532	16.9
1548	7.4
1568	2.6
1580	1.9
1595	1.4
1608	1.1

Figures like these point to a continuous rate of demographic decline between 1518 and 1608 of something between -3 per cent and -6 per cent *per annum.* Calculated regionally, the rates concerned were particularly bad in the low-lying coastal areas in central Mexico, which were more exposed than other areas to contagious diseases and outside contacts. The higher Mexican plateau was comparatively healthy and in parts less subject to contamination than the lower-lying territories. Measured in percentages rather than in absolute figures, the decline began to slow down after 1580. After this date, immediately following the holocaust of *matlazuhuatl* – the worst of all the outbreaks of disease – the epidemics became slightly less catastrophic in their effect. It was in the course of the last twenty years of the 16th century, then, that the lowest point was reached. From this baseline, very much later, after 1650 in fact, the recovery once more became possible. But for a very long time such recovery was no more than limited and partial.

[4] W. Borah and S.F. Cook, *The Population of Central Mexico in 1548,* 1960.

[5] See S.F. Cook and W. Borah, *Essays in Population History: Mexico…,* vol. I, Berkeley, 1971; Borah and Cook, *op. cit.,* 1960, p. 114; Cook and Borah, *The Indian Population of Central Mexico, 1531-1610,* 1960, p. 48.

Monographs such as the one dealing with the Mixteca Alta region[6] complement and confirm Woodrow Borah's overall estimates (Table III.)

Date	Inhabitants
1520	700,000
1532	528,000
1540	100,000
1569	57,000
1660-70	30,000
1742	54,000
1777	74,000
1803	76,000
1826	65,000

In this case again, the rate of decline was at first absolutely catastrophic; but from 1580 onward it began to slacken – if that is the right way to put it – once the demographic low-point was reached. The slow, painful recovery of the Mixteca Alta area did not get under way until after 1650; it did not really take off until after 1850, from which time it became very marked indeed.

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Borah's calculations on overall numbers are backed up by a series of complementary indices which he has carefully studied for the period 1520-1650. He draws attention first of all to a startling contrast: the Indian population figures collapsed but the white settlers were immune to or better protected against, the various epidemics and diseases which, however, they brought and spread. In 1570, there were 60,000 whites in central Mexico; in 1646 there were 125,000, in 1742: 565,000 and in 1772: 784,000. At the same time, this Indian genocide was accompanied by a critical shortage of foodstuffs, normally supplied by the colored subject people for the need of their white masters: towards the end of the 16th century, supplies of chickens and turkeys diminished, and tithes in the form of cereals fell. *Latifundia* – large ranches – managed by the Spanish colonists were created to try to make up for the increasingly serious deficiencies of native agriculture, which eventually failed altogether through lack of manpower. There was some slight consolation: as the American Indians became fewer on the ground, cattle and sheep by the million came to take their place. (The consequences of this invasion of livestock, replacing men, or rather, the corpses of men, was an irremediable process of soil erosion.) Systems of forced labor, of semi-slavery in payment of debt, and of tied-labor on glebe-land became the established practices by which the colonists hoped to remedy the drastic shortage of native manpower. As in the case of the Europeans in the 14th and 15th centuries, the Spaniards of Mexico found that as a result of its increasing scarcity, the cost of Mexican labor grew faster than the price of raw materials and agricultural produce. Wages, which therefore rose sharply, were not the only problem. Textiles, highly labor-intensive, multiplied in price twenty and thirty times between 1520 and 1610; on the other hand, in the grain market, which was more dependent on purely natural factors, inflation was markedly less pronounced. Another case of shortage of manpower after 1580-16500 in Mexico was in the silver mines. As a result, this local population deficit in the first half of the 17th century became one of the causes of the

[6] S.F. Cook and W. Borah, *The Population of the Mixteca Alta, 1520-1960,* 1968.

silver shortage, which gradually began to choke the economy of the far-off Mediterranean countries and continued to do so until at last, after 1670-1700, demographic and mining prospects picked up again. Even the building of churches closely conformed to the population trends in new Spain: during the first decades of Spanish domination in Mexico, says Borah, there was intensive building to the greater glory of god, just as, in a later age, in Europe, there was a building boom to the greater glory of profit in the halcyon days of the Industrial Revolution. To the singing of hymns, Indian manpower was lavishly deployed on the holy building sites. Then after 1576-9, the cathedral builders had to abandon their projects, not so much because their credits had run out but because there were no masons and above all no laborers to build the house of God – nor enough of the faithful to fill it.

Borah briefly investigates the causes of this demographic decline and its train of secondary phenomena, and finds that in the main they are attributable to the incidence of epidemics that followed on the "unification of the world by disease." There is, of course, no question of absolving or of whitewashing the Spanish colonization which was as cruel as any in history; nor of denying that, in certain instances, the Indians adopted frankly suicidal attitudes, either simply lying down and dying, or refusing to have children. But causes of this nature can only have been additional or partial; the central factor was disease. The proof of this is that in those regions of Asia and Africa that were later to come under European colonial rule, there is no record of genocide or ethnocide on anything like so drastic a scale. Native populations in the old continents remained stable and then expanded. The relatively benign nature of colonial contact in the Ancient World was not due to any particular kindness of treatment on the part of the conquerors but to the immunity, or at least partial immunity, enjoyed by the subject native peoples to the microbes that had been in circulation over a long period of time throughout Eurasia and Eurafrica. The native populations of the West Indies, Mexico and North and South America, by contrast, had to absorb the shock, all at once, of a whole host of pathogenic agents that had been roaming about the older continents for centuries, but were unknown until about 1500 in the recently discovered territories that were to form the empire of New Spain. For this reason, mild or not so mild diseases such as measles, smallpox, various forms of influenza and scarlatina, newly introduced from Europe, created havoc on the other side of the Atlantic. The epidemic *matlazahuatl,* which towards the end of 1570 killed off a large percentage of the remaining native population "was possibly only a form – harmless to the whites – of influenza."[7] At a later period, about 1700-50, the Indians of Baja California, already subject to syphilis, were to fall victim to plague, smallpox, typhus, dysentery and measles.[8] The Europeans had brought with them both plague and influenza – the serious and not so serious. Both types of disease flourished at the expense of the local population, which for the most part had had no previous experience of them. By joining forces, indiscriminately, they delivered what was virtually the *coup de grace* to the native peoples of America.

[7] P. Chaunu, *L'Amérique et les Amériques,* Paris, 1964, p. 104.
[8] S.F. Cook, *The Extent and Significance of Disease among the Indians of Baja California, 1697-1773,* Berkeley, 1937.

For it was not only Mexican territories that were affected. Recent research by Nathan Wachtel has clearly demonstrated the local effects of the "unification" upon the Cordilleras of Peru. Wachtel points out that from the time of Pizarro's conquest until the end of the century the death-rate was appalling.[9] Within its traditional boundaries the Inca Empire, in about 1530, (in 1524, to be precise) before the first epidemic struck, had a population of some 7 or 8 million (maybe as many as ten million). But by 1560 the figure was 2.5 million – a fall of at least 60 per cent in 30 years. And by 1590 the population was between 1.3 and 1.5 million, a fall of a further 40 per cent in the next thirty years. These figures suggest that on the whole the fall was less catastrophic in Peru than on the Mexican plateau, where within the same time-span 95 per cent of the native population perished. They also indicate that in Peru, as in Mexico, there was a slowdown in the demographic "landslide:" from 1560 to 1590 the rate of decline is less steep compared to that of 1530 to 1560; after this date the worst was over, though from a demographical point of view the situations still remained catastrophic until the end of the century.

The brief paroxysms of the epidemics in Peru occurred:

a. In 1524-6: measles and/or smallpox. These infectious diseases were rife even before the conquest of the country, for the germs had already spread through the native populations: from Mexico where the Europeans arrived first, all the way to Peru. The white men had sent their microbes before them.
b. In 1546: an undiagnosed disease, contagious and deadly, characterized by pains in the head and ears.
c. In 1558-59: smallpox.
d. In 1585-91: combinations, spreading in different directions and at different times, of smallpox, bubonic plague and typhus; also coughs and colds accompanied by fever, probably influenza.

When they were questioned, in the presence of investigators, as to the causes of their depopulation, the Indians courageously spoke out against the harsh treatment and forced labor imposed upon them by their conquerors. But they too laid most emphasis on the fatal and all-important role played by epidemics. As their numbers decreased, the natives were progressively better fed as the century wore on (a similar sequence of events had already been observed in Europe after the Black Death of 1348-50). The Peruvians even, mistakenly, regarded this more abundant allocation of food as one of the causes of their higher death-rate. They were nearer the mark, surely, when they apportioned part of the blame to the harmful effects of alcohol to which they had been introduced by the colonists; they pointed out, rightly, that this too had contributed to the death toll.

Death in the Caribbean Islands

[9] N. Wachtel, *La Vision des Vaincus,* Gallimard, Paris, 1971, p. 140-50.

Thanks to Borah and Wachtel, we now have a general impression of the problem created by "microbial unification" in the most densely populated territories of the American continent. Borah's work in this field has also reached out across a broader area, to the insular fastnesses of the Caribbean: long protected against bacterial infection, these islands were suddenly and rudely subjected to the shock attack of pathogens brought to their shores by sailors and colonists from the West.[10]

Borah's investigation of these islands demonstrates that during the phase of world conquest by Europe, there were certain cultures whose demographic pattern resembled that of continental America, that is, they tended to collapse like a *soufflé,* indeed to disappear altogether except for minute traces in the form of cross-breeding with the invaders; they were in effect "physically liquidated" by microbe. Other groups by contrast, held firm, or even tended to expand when they met with the invaders from the white man's world. The line of demarcation between these two types of demographic behavior leads to the heart of the concept of microbial unification.

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The populations which disappeared altogether were those of the Caribbean islands, notably of Hispaniola (Santo Domingo). Even between the best historians, estimates of the pre-Columbian population of this large island differ wildly: in 1964, Pierre Chaunu[11] suggested a figure of 3 million inhabitants for Santo Domingo in 1492: Woodrow Borah, however, in a powerfully documented study, puts forward a figure of *7 to 8 millions!*[12] and appends a table showing the progressive decline of the population which I now reproduce (Table IV); they are truly appalling – responsibility for their accuracy I leave to him.

Table IV

Date	Inhabitants
1492	Probably 7 to 8 millions
1496	3,770,000
1508	92,300
1509	61,600
1510	65,800
1512	26,700
1514	27,800
1518	15,600
1540	250
1570	125

[10] W. Borah, « America as model: the demographic impact of European expansion upon the non-European world," in *Acta y memorias del XXXV congress international de Americanistas,* Mexico, 1962.
[11] P. Chaunu, "La population de l'Amérique indienne, » in *Revue historique,* July-Sept. 1964, p. 112 ff.
[12] S.F. Cook and W. Borah, *Essays in Population History: Mexico and the Caribbean,* vol. I., Berkeley, 1971.

Charles Verlinden, on the other hand, writing in the Braudel *Festschrift,*[13] believes that there was only a total of "55,000 or 65,000 inhabitants on the island of Haiti before Columbus set sail."[14] It is true that Verlinden did not have the benefit of Borah's latest research (1971) which confirmed, proposed precise figures for, and even enlarged upon Chaunu's estimates. It is also true that the assessments of the two historians – Borah and Verlinden – differ greatly in their evaluation of the rate of population decline.

According to Borah, during the worst period of Haiti's total depopulation, between 1492 and 1570, 40 per cent of the surviving natives died *every year* – a truly geometrical progression of decline! Verlinden, however, without offering any further explanation and basing his estimate on pure guesswork (?) will only allow a *total* decline of 33 per cent in the population of Haiti during the first phase of the Conquest, i.e., between 1492 and 1509, and a total drop of 50 per cent between 1492 and 1514 ("which is certainly frightful enough," as he rightly concludes).[15]

As a non-specialist, I shall avoid taking sides with either Verlinden or the Chaunu-Borah combination. But it is worth noting that these three writers are in agreement upon a point of importance for our concept: the total, or near-total, extermination (apart from small groups of half-breeds) of the native population of Hispaniola between 1492 and 1570. Equally, all three are agreed that infectious disease was the chief cause. Hispaniola – like so many other islands, well protected at first, then suddenly thrust into the front line of contact – fell victim, in an area of the world unfortunately not immunized beforehand, to a veritable onslaught of pathogenic microbes.

Now for a change of oceans: concerning the islands of the Pacific, Borah's comprehensive study proposes percentages of population decline sometimes less radical but almost always catastrophic (Table V.)

[13] C. Verlinden, "La population de l'Amérique pré-colombienne. Une question de méthode, » in *Mélanges en l'honneur de Fernand Braudel,* vol. II, Privat, Toulouse, 1973, p. 453-62. This article, while occasionally discussing Mexico, mentions neither the work nor even the name of W. Borah, whereas Pierre Chaunu seeks only to be as faithful an interpreter as possible of the American historian. Readers will be hard put to understand this omission on Verlinden's part.

[14] Ibid., p. 45.

[15] Ibid.

Table V.

Australia:	300,000 aborigines before 1780; 80,000 in 1937.
Tasmania:	2,000 natives before colonization; none at all in 1876.
New Zealand:	300,000 to 500,000 Maoris before colonization; 40,000 in 1939.
New Hebrides:	Possibly one million inhabitants before colonization; 40,000 in 1939.
Hawaii:	400,000 inhabitants circa 1778 71,000 in 1853; 40,000 natives in 1890-1900
The Marquesas:	80,000 inhabitants before colonization; barely 2,000 in 1939.
Guam:	70,000 to 100,000 in 1668; 1,654 in 1733.

These Oceania territories therefore followed the same pattern of demographic collapse as America in the 16th century, though much later owing to the time-lag in colonization. A complete contrast can be observed between this behavior pattern and that of the populations of Asia (China, Japan, India), and even of Africa: despite periods of stagnation, or indeed of temporary or prolonged decline (especially in Africa because of the slave-trade), we find nothing comparable, among these colonized populations of the Ancient World, to the bacteriological genocides in the American and Pacific islands territories. Particularly remarkable from this point of view is the case of Indonesia and the Philippines. These archipelagos, although comparatively close to the great civilizations of the neighboring continent, have an "Asiatic" and not a "Pacific" pattern of demographic behavior: their populations did not collapse "like a *soufflé*". Despite some temporary setbacks, they experienced phases of healthy growth even during the heyday of colonialism, dating from various points in the 18th century. The reason for this state of affairs is very simple: the Philippines and Indonesia, through numerous lines of communication, were in constant contact with their neighboring countries in the continental Far East. The two large groups of islands were therefore included in the microbial community which covers a large part of densely populated Asia from India to China, and which has also had links with Europe dating back over many centuries. So the arrival of Westerners in person did not, from an epidemiological point of view, prove any more dangerous for the Filippinos and the Indonesians than it did for the Japanese, the Chinese and the Indians. The Pacific islands, situated very much further to the east, on the other hand, had not benefited from the partial immunization that had come by way of the age-old contacts; they were, therefore, from the 18th century onwards, submerged beneath the bacteriological flood, as the Americans had been two centuries earlier.

I should like to end on this note, by paraphrasing Woodrow Borah's trenchant conclusion, condensing and simplifying it a little here and there: the correlation to be made, he writes in essence, is not one between primitivism and depopulation: but between the *degree if isolation* or isolationism before contact with Europe, and the *size of the demographic destruction,* once that contact had been established. This suggests that the most important factor making for demographic destruction has been the spread of infectious diseases. Regions linked to the long-distance trade routes from Europe to the Far East absorbed the impact of a varied number of diseases over long periods of time; it was thus possible for them to recover and to build up immunological resistance. The peoples of the New World and later those of Oceania, who lived in complete or almost complete isolation, absorbed, in a few decades, the impact of every infectious disease that could be spread. They received in a very brief period of time the series of shocks that Europe and the Far East had had the opportunity to absorb over several thousand years.

Bacteria and viruses, in fact, had brought about the unification of the world before man succeeded on achieving it on his own account.[16]

Conclusion

In conclusion, let me take up again that last sentence of Borah, hoping that I shall not deform it too much to suit my purpose.

My point of departure in this essay was the notion that a "community of disease" had once upon a time existed: it did not extend to the whole of Eurasia, and had not reached America at all. This being so, accidents – "short-circuits" - were always *possible*, and in fact the *probability* of such accidents increased in the course of the later Middle Ages and the years immediately preceding the Renaissance. It grew ever greater as the large mass populations of the world expanded – the Chinese, the Mediterranean and European races, the American Indians – and also as vast networks of roads between these great masses (and attended by armies of rats and fleas) opened up, stretching across the forbidden zones of endemic disease in central Asia. The danger became urgent the moment those redoutable disseminators of epidemics, the Genoese, began to cross the Black Sea and press towards central Asia, now newly unified under the Mongols – those other guilty parties; and then once again, when one of those selfsame Genoese set sail westwards at the head of the Iberian conquistadors. One is tempted to draw a comparison with our own age, now that the proliferation of nuclear weapons has made the risk of accidents at any time not only possible but indeed probable.

But, to concentrate on the crucial phase of 14th, 15th and 16th centuries: the risk of an ecological and biological disaster on a major scale was all the greater since the threatened populations were in *a state of least resistance*, partially in the case of Europe, almost totally in the case of America. And this was so whatever the nature of

[16] W. Borah, *art. Cit.,* 1964, p. 387.

the agent of destruction: in Eurasia chiefly plagues; in America (and later, in the Pacific), infectious diseases of every kind. Thus a large part of the human populations of the world, especially in Europe and America (but leaving out, for the moment, Oceania, where certainly the same thing occurred, but later and on a smaller scale) perished, between 1348 and 1600, in the flames of a microbial holocaust – causing loss of life on a scale serious in Europe, devastating in mainland America, and total, or near total, in the Caribbean. The shape of the demographic curves, with their precipitous swoops in the 14th and 15th centuries in Europe and the 16th in America, followed by painfully slow upturns (in the 16th century in Europe, and the second half of the 17th in Mexico), has inevitably influenced all the rhythms of world history up to the present , so great is the role of demography as one of the fundamental and crucial variables shaping the development of mankind. And looking beyond demography, we find ourselves confronted by a disaster of cataclysmic proportions, too extensive to be confined to Postan's purely economic categories. It was not only the nourishing root-system, but the tree of life itself that was axed.

By 1530 in Europe, and 1650 in America, the time of major and universal demographic collapse seems to have passed. Subsequently, it was essentially on a regional scale that catastrophes of bacteriological origin occurred, some, it is true, on a vast scale: the wholesale destruction in Germany, for example, resulting from a combination of epidemics and violence associated with the Thirty Years' War; and instances of genocide of the remoter races, more offensive to the world's conscience than decisive in the world's history – I refer, of course, to the extermination by bacteriological infection of the native populations of Oceania from the 18th century onwards (see above). But the spread of cholera in the 19th century is proof that the era of *microbial unification* is not yet over – far from it, even in the countries of Eurasia. At least its effects are not as apocalyptic as they were on both sides of the Atlantic between 1348 and 1650. Unification by disease as the evil concomitant of expansion and trade has gradually, in modern times, lost its capacity to fashion the destiny of mankind.

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Translated by Siân Reynolds & Ben Reynolds

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