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Plague, Settlement and Structural Change at the Dawn of the Middle Ages

The crisis in late antiquity and the early Middle Ages

Something happened in late antiquity. Several elements in society underwent profound changes. According to many scholars, the most important feature was a demographic crisis. Various symptoms have been discussed: fewer slaves (from the second century AD), depopulation of frontier areas due to the wars (especially in the third century), the abandonment of agricultural areas and the spread of *agri deserti* (abandoned lands which could no longer yield taxes), the spread of the *coloni* (tenants attached to their lands by state decree and very dependent upon their landlords), the increasing number of Germanic soldiers in the army, the *epibol* system (ἐπιβολή, originally a Ptolemaeic system that became widely used in the eastern empire: landowners were forced to take over evacuated lands close to their own and to pay taxes for these), etc. The state wanted to maintain the level of agrarian production, and its failure is interpreted as a consequence of the demographic crisis. The shortage of manpower made it necessary to force people to remain where they were and to perform services needed in the empire, especially with regard to taxation. Professions were made hereditary. Eventually, many towns were ruralized or ceased to exist; the Roman empire in the west disintegrated and fell. Mostly, the research leading to conclusions such as these are based on studies of late Roman laws.[1]

Calculations on the number of inhabitants during these centuries are, however, impossible to make. The most famous attempt, by J.C. Russell, is, as will be revealed below, not satisfying. Using results from other studies, like those referred to above, Russell assumed hypothetical population figures without any real empirical evidence. Apart from this, Russell based his hypotheses on, for instance, his own guesses concerning the impact of Germanic migrations and the plague of Justinian. A typical example is his use of the Anglo-Saxon document *Tribal Hidage* in evaluating British demography from the early phases of Anglo-Saxon settlement; both the method and the results are much too risky, as is easily seen if studying the document more carefully.[2]

The demographic crisis is based on two levels of interpretation:

(1) The sources are interpreted as evidence of shortage of manpower, especially within the agricultural sphere.
(2) Shortage of manpower is interpreted as demographic decline.

Both of these interpretations are weak. The laws can easily be misunderstood,

and shortage of manpower as such is not equivalent to shortage of people. The empire did suffer from a certain loss of manpower (administrators, soldiers, etc.), but the main reason why the state legislated against the desertion of lands was purely fiscal. The fact that people tried to avoid taxation does not mean that they did not exist, nor that they became fewer. The historical importance of these late Roman laws is the discrepancy between the explicit interests of the state (preserved in writing) and the implicit interests of the people (mostly not preserved in writing).

Naturally, some regions did suffer from demographic decline, but this cannot be proved by these and similar sources. A well-known example of this hypothetical decline, which has been studied through papyrus-documents, is the village of Karanis in the Faiyum district of Egypt. A.E.R. Boak, using poll-tax registers from AD 171—74, found about 618 landholders in Karanis, which he believed represented about 3,000 inhabitants. The private archives of Aurelios Isidoros from 308 and 310 revealed only about 140 landholders. This, according to Boak, clearly indicates population decrease.[3] In fact, it says nothing about the number of inhabitants. Some of the villagers might have bought their neighbours' vineyards, gardens and orchards in order to create a stronger basis for their own wealth. Changes in the number of landholders are not necessarily equivalent to changes in the number of people. Also, agricultural decline in some regions may coexist with an increase in the importance of pastoralism, *with or without* demographic changes.

The demographic situation in the early Middle Ages can best be discussed after investigations of the various potential elements within the process. In this study, I will try to evaluate one disaster in particular: the plague. This will be done through a survey of research concerning both the Mediterranean and the Northern European regions. As will be revealed below, some scholars, like Randsborg, refrain from even discussing the plague when analysing the demographic and settlement development in the first millennium AD. Others interpret the plague as a huge disaster stretching from Egypt to northern Scandinavia: for instance, MacArthur and Russell (and others) believed it reached England and Ireland, Seger believed it reached Ostrobothnia, Franz believed it ravaged Bohemia, Gräslund believed it devastated Gotland, etc. Even the recent dissertation of Benedictow shows an acceptance of Russell's view that the plague of Justinian reached Britain.[4] It is important to compare the history of these different regions, both with regard to diseases and to settlement structure. In many ways, the problem is similar to the much-discussed development in the late Middle Ages,[5] although the scholarly interest and research have not equalled the late medieval development — a factor which is partly responsible for the gap in our knowledge of the period.

The plague in antiquity

In several historical accounts, the word *plague* simply refers to any great epidemic. The actual disease known as plague has often been mixed up with other diseases. In this study, *plague* only refers to the disease caused by the bacillus *Yersinia pestis* (previously called *Pasteurella pestis*).[6]

None of the great medieval diseases can be traced to its earliest appearance in Europe. For instance, smallpox and measles may have existed as early as in the second century AD, but other indications (mainly observations by Arab scholars) point to a later date (from the sixth to the tenth century). Various ancient epidemics, such as the "plague" of the Philistines, the "plague" of Athens (BC 430—427), the epidemics in the Roman empire in c. AD 166—80 and in c. 251—68, are very hard to identify.[7]

The Hellenistic scholar Rufus of Ephesus (in the first century AD), some of whose writings have been preserved by Oribasius (a Greek doctor in the fourth century), provides us with the first possible references of plague. Rufus' account of the disease is based on observations made by Dionysius the Hunchback (in the third century BC) concerning the Levant and Northern Africa and later by Posidonius and Dioscorides (Northern Africa). Rufus writes about a fatal disease with buboes, high fever, delirium, agonizing pain and severe constitutional disturbance. According to Rufus and his references, the disease could be encountered in Syria, Egypt and Libya (=non-Egyptian Africa).[8] However, no sufficiently accurate observations before the sixth century have been preserved. The disease probably existed in tropical Africa, and it might occasionally have spread to the Mediterranean. Without more evidence, however, there is little room for speculations before Procopius' observations in 542.

Etiology and epidemiology: the causes and the spread of plague

A distinction is often made between pneumonic and bubonic plague, although both forms usually appear in the same epidemics. The fact that they do appear in the same epidemics is often ignored in general works on plague.[9]

Pneumonic plague appears in two forms. *Primary pneumonic plague* occurs when droplets of saliva are transmitted from one human being to another when a sick person coughs. Thus, the infection enters the body through the pulmonary mucous membrane, and, in the absence of modern antibiotics, hardly anyone survives the disease. *Secondary pneumonic plague* is actually a part of bubonic plague: in 10—25 % of bubonic cases, the bacteria are transported with the blood stream to the lungs where they cause pneumonia. Since persons infected this way often develop a cough and bloody expectoration containing bacteria, they may infect others by droplet infection. Primary pneumonic plague is very virulent and thus not a long-lasting disease (the cough usually emerges c. 24 hours after the infection, and the average duration of illness is 1.8 days, lea-

ving little time to infect others); it is therefore not as contagious as has often been believed, and the outbreaks of the disease are small and episodic. The largest epidemic of pneumonic plague on record (in Manchuria 1910—11, where the social circumstances were uniquely favourable to interpersonal and intra-local epidemic dissemination) only killed about 0.4 % of the population (according to Benedictow). *Bubonic plague* is mainly transmitted through the bites of infected fleas who have usually acquired the disease from the blood of an infected rodent (in most instances rats, since these live closer to human beings than other rodents do). At the death of the rodent, the fleas leave its body and settle on other rodents or on human beings. A pustule, which is formed at the point of the flea bite, necrotizes and develops into a black gangrenous patch. After a few days a large, painful bubo develops in one of the lymphatic glands (in the groin, the armpit or the neck). Sometimes, the infection is so overwhelming that it passes directly into the blood stream (before the appearance of the buboes) causing a very quick death, often only a few hours after the outbreak of the disease (*primary septicaemic plague*). Bubonic plague (with a recovery rate of between 20 and 40 %) may reoccur in the district in question on numerous occasions depending on the existence of infected fleas and rats. Most outbreaks of plague are of bubonic nature.[10]

One kind of flea, *Xenopsylla cheopis* (the rat-flea) is generally held to be responsible for the spread of bubonic plague to human beings, but *Xenopsylla cheopis* is not the only hypothetical transmitter. Some scientists (although not a majority of them) believe that *Pulex irritans*, a flea that can be common among human beings, may be capable of transmitting the infection, provided that a high number of this species is at hand.[11] In 1967, very vague indications of the transmission of plague by *Pulex irritans* were found in Nepal.[12] However, careful investigations have shown that the biological as well as the social preconditions (particularly the necessity of large concentrations of people) for the spread of plague through *Pulex irritans* hardly existed in the sparsely populated agrarian world of pre-industrial Europe. Thus, *Xenopsylla cheopis* must have been the main vector, carrying plague from rats to human beings.[13] Other fleas have also been discussed, but the rat-flea remains the commonly accepted main culprit.[14] The existence of rats was therefore necessary for the plague to develop into a large epidemic in the societies studied in this work.

Due to the responses to heat and humidity of the rats, the fleas and the bacillus, some regions and some periods of the year are more easily affected by plague than others. The activity of the flea is limited by cold, its reproductive function is arrested by heat, and its life span is regulated by the degree of humidity. In Europe, bubonic plague usually appeared in the warm parts of the year, while some have argued that sporadic outbreaks of pneumonic plague might have occurred in winter, since the cold forced people to live more permanently indoors, close to each other (although, see above, pneumonic plague must be preceded by cases of bubonic plague). In a cold and humid atmosphere, the infection in droplets of saliva can remain in suspension for a long time, and pneu-

monic plague might enter the body through inhalation. In particularly arid regions, like deserts, the *Yersinia pestis* itself is very short-lived; three to four hours of exposure to the sun is sufficient to kill it.[15] However, these climatic aspects are not at all as important as the effects of the social climate: economic networks in local society (especially transport of grain), cultural attitudes towards the sick persons, various kinds of meetings and local participation in social, political and economic events, etc., are of great importance in the history of the plague. For instance, the social climate of the sparsely populated countryside in fourteenth-century Norway enabled the bubonic plague to create a large demographic disaster.[16]

Usually, the infection among human beings is preceded by an epizootic (an epidemic among animals). Plague may develop into an endemic disease among rodent populations in rural districts with seasonal outbreaks among human beings (*sylvatic plague*). There are still several reservoirs of infection among underground rodent populations in many parts of the world. Some places may develop into temporary centres of infection, for instance ports, where rats grow accustomed to life among human beings. The most famous species of rats, which literally plagued Europe by its existence, is *Rattus rattus*, the black rat. *Rattus rattus* often lived in granaries and on ships; it was easily transported from one port to another. Another species (*Rattus norvegicus*, the gray rat) is a relatively modern phenomenon (in Europe since the eighteenth century).[17]

A main problem in studying plague is the impossibility of using modern epidemics as equivalents of historical ones. Each occurrence of plague is and was an individual fact which must be analysed according to its own peculiarities. The parts played by various species of fleas and rodents may vary considerably between arid, semi-arid, humid, hot and cold regions. Furthermore, the various elements in the spread of plague are historically relative; an important example, which will be discussed below, is the absence of *Rattus rattus* in Northern Europe in the early Middle Ages. New ways of building houses, advances in medical science and certain cultural practices also influence the way plague is spread.[18]

The plague of Justinian: a Mediterranean disaster?

The disease known as the plague of Justinian (after Justinian I, East Roman emperor 527—65) seems to have originated in Africa, although some scholars regard India as its home; the first recorded outbreak occurred in Ethiopia. It reached the Mediterranean through Egypt. In 541, the population of Pelusium (a port at the eastern mouth of the Nile) suffered from it. It soon spread to Alexandria and Palestine. In the spring of 542 it had reached Constantinople, where it appears to have lasted four months. The historian Procopius has provided us with a good description of the disease, and there is no doubt about the

identification: this was, indeed, bubonic plague. Other writers confirm this, for instance Evagrius and Paul the Deacon.[19]

The impact of the disease has been interpreted very differently by modern historians. Some have regarded the epidemic as a complete disaster, marking the end of antiquity and the beginning of the Dark Ages. This attitude is prevalent in J.C. Russell's study "That Earlier Plague" (1968).[20]

Russell starts from the assumption that Europe and the Mediterranean were flourishing in the beginning of the sixth century. Asia Minor, the Balkans and Syria were prosperous, Egypt was a major exporter of grain, Northern Africa was "in good condition", Spain was "probably increasing in population", Italy had overcome its economic difficulties, the towns of Gaul were prosperous, and the immigration of Anglo-Saxons to Britain and of Britons to Aremorica meant an increase in the population of these areas. The prosperity of Egypt enabled the emperor Zeno (474—75, 476—91) to raise a new tax. When Justinian started to recover the western provinces of the Roman empire, he had reason to expect success. The inhabitants of the countries of the Western Mediterranean welcomed his plans; they were loyal to the idea of the empire, as was shown by the ease with which Justinian's troops conquered coastal areas of Visigothic Spain. The enemies of Justinian (such as Berbers and Sasanians) were unable to break down the Roman defence system. In 533—34, Justinian easily took Northern Africa from the Vandals. In 540, large parts of Italy had been reconquered from the Ostrogoths. Then, everything was ruined by the plague.

In evaluating the impact of the plague of Justinian, Russell makes explicit use of what is known about the Black Death in the fourteenth century, a devastating epidemic that is considerably easier to study, due to more written sources. He also uses modern observations of plague in India. Russell sees no great problems in these comparisons; according to him, the sixth- and the fourteenth-century epidemics developed in similar contexts. They started from scratch in the same geographical areas. The only differences consisted of denser population and a colder climate in the fourteenth century. In Russell's text, the ghost of the Black Death moves freely from page to page, determining the author's verdict on the extent and the effect of the epidemic.

Russell regards the plague of Justinian as a disaster of Biblical proportions. During the 540s, it moved across the Mediterranean to Italy and Gaul, continuing to Britain and Ireland. The references of chroniclers make it possible to establish its periodicity: the plague reoccurred in a fashion much similar to events in the second half of the fourteenth century. After the first epidemic in the 540s, a short economic revival seems to have occurred, and the political success of Justinian continued (all of Italy was conquered in the 550s); probably, the main victims of the first epidemic were elderly men and women. However, from 556 the plague returned with short intervals for several decades, and it continued to appear in the seventh century. The mortality of the epidemics was terrible: calculations based on Procopius and Agathias suggest about 300,000 — 400,000 deaths in Constantinople alone (although even Russell ad-

mits these to be extreme miscalculations, since the whole population of Constantinople would not have been sufficient in order to supply so many deaths). In arid regions (like Egypt), the impact of the plague was probably less severe. Since the early medieval sources only provide qualitative references to the devastation, Russell uses estimations based upon the fourteenth century in order to quantify the disaster:

> In general, the parallels between the two plagues are so close that one seems justified in assuming a fairly similar mortality for both. For ordinary areas this would be about 20—25 percent loss for the first epidemic of 541—44 and a total decline to perhaps 50—60 percent of the preplague population for the period 541—700.

Russell blames the rats. According to Russell, the periodic expansion of the rat population carried it (and its fleas) "far beyond the normal limits of its range". Russell admits that "doubt has been cast upon the existence of the rat in sixth-century Europe", but the existence of plague is *per se* enough to make him believe in the existence of the rats.

Russell's conclusion is that the plague "by its sheer power molded sixth- and seventh-century society into a new demographic and social pattern — the pattern which was to persist throughout the rest of the medieval period and which, in modified form, remains today." The population of Europe and the Mediterranean area decreased sharply, sometimes by the loss of 50 % of the population. The Roman empire crumbled and became a much smaller Byzantine empire. The seventh century, furthermore, was a very weak period for the Byzantine realm, culturally as well as politically. The imperial army decreased in numbers and was unable to stop the Arabs. Meanwhile, the arid regions of Arabia and Northern Africa were better off than the plague-stricken territories, which gave Arabs and Berbers an advantage in the early days of Islamic expansion. The loss of population also demanded a readjustment of the land. We know that the following centuries were marked by the existence of free peasant-soldiers upon which the new empire built its strength. According to Russell, this was due to the plague: abandoned lands were repopulated by order of the emperor. People were moved from one area of the empire to another. During the seventh century, the east and the west were separated in a Greek and a Latin sphere.

This pessimistic interpretation of the early medieval plague is shared by other scholars, such as Diehl,[21] Gottfried,[22] Hirst,[23] McNeill,[24] Sigerist[25] and Zinsser.[26] M.W. Dols, in a study limited to the effects of the plague in the Middle East, regards the disease as a factor of primary importance. Due to recurrent plague epidemics in the Umayyad period, the natural population growth was continuously retarded, and the strength of the Umayyad dynasty was debilitated. The immigration of Arabs to formerly Sasanian regions (like Mesopotamia), which were comparatively better off, led to an unbalanced growth of population and a political shift from Damascus to Baghdad under the Abbasids. However, on a methodological level, Dols strongly criticizes Russell for his

"hazardous assertions" and "very questionable comparisons with the Black Death".[27]

The plague of Justinian: a North European disaster?

The spread of the plague in the north has been discussed within especially two contexts: (1) the existence of certain diseases in Britain and Ireland and (2) the hypothetical archaeological evidence for a settlement crisis in Scandinavia and Germany.

We know for certain that both Britain and Ireland were afflicted by epidemics in the early Middle Ages. In Ireland, an epidemic known as *blefed* (referred to in the Annals of Ulster) occurred in the middle of the sixth century. Another Irish sixth-century disease is referred to as *buidhe chonaill* ("corn-" or "stubble-coloured yellowness"). These epidemics seem to have spread to Britain (at least to Wales). The Venerable Bede and the Irish Annals of Clonmacnoise tell us about a disease in 664 (in Britain referred to as *pestis flava* and *lues flava*, "yellow plague"). A new outbreak occurred in c. 682 (*mortalitas puerorum*, "the death of youths/children"). We also hear of other diseases, most of which are very hard to identify, such as *samtrusg* (in 554) and *baccach* (in 708) in Ireland. In Wales, we know about certain epidemics which may be identical with the *buidhe chonaill* and/or the *pestis flava*: *y fâd felen* and *lallwelen*.[28]

W.P. MacArthur interpreted the epidemics in the middle of the sixth century (*blefed*) and in 664 and c. 682 as extensions of the plague of Justinian, but MacArthur also believed that other diseases (such as relapsing fever resulting in jaundice, which he believed to be equivalent with the *buidhe chonaill*) existed at the same time. He interpreted *samtrusg* as smallpox and *baccach* ("lameness") as poliomyelitis.[29] C. Creighton, too, interpreted the disease of 664 as bubonic plague.[30] J. Morris believes that the few remarks on the British epidemic in the mid-sixth century (which killed King Maelgwn of Gwynedd) indicate a terrible disaster in Celtic Britain. According to Morris, the plague of Justinian hit both the Irish and the British but not the Anglo-Saxons, since these had no contacts with the Britons and did not import goods from plague-infected areas in Europe. Thus, the politically weakened Celtic kingdoms were further weakened and the Anglo-Saxons conquered England.[31] Russell has argued that the epidemics were outbreaks of bubonic plague and that the disease caused the fall of Arthurian Britain. His arguments (1976) are based on hazardous interpretations of burial grounds and poetry (the *Lorica*, which hints at the ravages of some kind of disease[32]), while the actual written evidence is lacking. For instance, Russell tries to evaluate in what season the people died by looking at the direction of graves (the burials ought, according to Russell, to have taken place at sunrise, when the graves were lined up with their longer axes pointing toward the sun), and his result is that most people died in the warm parts of the year, which may mean that they died from bubonic plague.[33] Russell guesses that the epidemics of Britain reduced the population by 50 % or more. Now, the

Anglo-Saxons conquered large areas, and the leaders of small kingdoms used the crisis to strengthen their power over others. The Scots of Dál Riata and the Picts were better off than the Northumbrians, which explains the regression of Northumbrian power in the eighth century.[34]

Attempts have also been made to show the spread of the plague in Central Europe. For instance, L. Franz (1938) wanted to explain the disappearance of Germanic groups in Bohemia not only by referring to the migrations of the *Völkerwanderungen*, but also to the ravages of the plague of Justinian.[35] This kind of speculation *e silentio* in order to explain archaeological facts has been extensively used in a Scandinavian context. In 1973, B. Gräslund tried to explain the archaeological discontinuity in Gotland as a large regression of settlement (the *kämpagrav* settlement) due to the plague of Justinian. Gräslund explicitly neglected the fact that no evidence of the presence of *Rattus rattus* exists for that phase of Scandinavian prehistory. He argued that there are very few zooarchaeological traces of the black rat in later parts of the Middle Ages, when we know for certain (thanks to the written sources) that rats were common in Scandinavia. Furthermore, argued Gräslund, the domestic cat (a well-known enemy of black rats) had reached Scandinavia very early. Consequently, both the *Rattus rattus* and the *Xenopsylla cheopis* might have been active in the Baltic area already in the sixth century. Through these vectors, the plague was distributed along the trade routes of Northern Europe.[36] G. Flink (1986) used the same hypothesis in an analysis on the abandoned stone-foundations of houses in Öland. Flink relied on Russell (1968) and fully approved of his analogical use of the Black Death. According to Flink, the fourteenth-century disaster was simply a reoccurrence of the sixth-century plague, which was brought to Scandinavia by contacts between the Germanic tribes. Rodents could easily survive and thrive in the longhouses of Öland and Gotland, where both human beings and animals lived.[37] G. Helgen (1977), who also relied on Russell's study, wanted to see the discontinuity of settlement in Norway during this period as a result of the plague.[38] Other Scandinavian scholars have interpreted other archaeological changes during this period as caused by the plague, for instance B. Petré (1984) on the burial grounds on the island of Lovö in Lake Mälar, not far from Stockholm.[39]

T. Seger (1982) analysed the excavated and dated Iron Age burial grounds in Finland. He argued that the anomalies of burial ground development reflected disturbances in population growth. Inspired by Gräslund, Seger explained the anomalies as resulting from a decrease in population caused by the plague. He did not believe that the absence of rat-bones in excavations covering this period had to imply absence of rats. In Finland, argued Seger, the plague caused the settlement in the province of Ostrobothnia to be abandoned. However, he did *not* believe that the plague was responsible for the decline in the number of burial grounds in the province of Nyland. *That* anomaly was the result of the low burial ground continuity from the late Roman period, the cause of which cannot be defined.[40]

The limits of the disaster — critical views

The best thorough investigation of the sources concerning the early medieval plague is the work carried out by J.-N. Biraben, originally published (with contributions by J. Le Goff) in *Annales* (1969)[41] and later incorporated in Biraben's *chef d'oeuvre, Les hommes et la peste en France et dans les pays européens et méditerranéens* (1975). Biraben sees the activity of the fleas as the main reason why the disease spread among human beings, while the part played by *Rattus rattus* is not extensively discussed. Biraben provides the reader with a list of all references of possible cases of the plague of Justinian as well as maps of the documented extent of the various epidemic outbreaks. According to Biraben, the plague spread to most coastal areas of the Mediterranean, but the most afflicted areas were the central regions of the East Roman empire: Egypt, Syria, Palestine, Greece, Constantinople and its environs. The epidemics also ravaged Italy and Gaul, but apparently not as often as in the east. It is clear that the plague followed in the tracks of the troops, the ships and the merchants: Provence was repeatedly hit by epidemics, as well as the Rhône valley, but most of northern Gaul was spared, as were large areas in the Midi. Western Gaul appears to have been largely unharmed. In Northern Africa and Spain, the plague was apparently not as frequent as in other Mediterranean areas, and our evidence of epidemics in Illyricum is very scanty. After 600, the western parts of the Mediterranean were mostly free from epidemics; the plague seems to have hit parts of Italy in 608, 654, 746—47 and 767, and coastal parts of Gaul (Arles, Narbonne, etc.) in c. 630—55 and 694. There is no sign of plague in Spain and Northern Africa after 600.[42]

Biraben is careful not to list epidemics which may have been of great importance but cannot be proved to have been plague epidemics: local epidemics, such as in the area of Soissons in c. 550, in the area of Tours in c. 591, in Rome in 618, and the British and Irish epidemics.[43] Apparently, the plague did not reach beyond Reims, and it disappeared quickly from non-coastal areas. The epidemics essentially belonged to the Mediterranean, not to Europe. Biraben makes it clear that Russell's calculations are extremely exaggerated ("ces articles sont affaiblis par l'absence de toute critique des sources et l'accumulation d'hypothèses hasardeuses").[44]

As to the effects of the plague, Biraben does not give any answers to the question of how many men and women actually died, even if he assumes that the population in many Mediterranean areas suffered a serious decrease. Biraben also believes that many of the weaknesses in the empire after the death of Justinian can be partly explained by the plague. Other peoples (Lombards, Berbers, Slavic tribes, Arabs) occupied regions in an easier way than would have been the case had the plague never occurred.[45]

Biraben's reluctance to accept the British and Irish epidemics as true cases of bubonic plague is not original. W. Bonser (1944) argued that since the black rat obviously had not yet arrived in Britain, bubonic plague could not have cau-

sed so remarkable an epidemic as the one in 664, as well as the other recorded outbreaks of diseases like *pestis flava.* However, Bonser still considered the diseases to have been of great importance to Anglo-Saxon history. Like many others, Bonser believed that the kingdom of Northumbria was very weak after the defeat inflicted upon its troops at Nechtanesmere in 685 by the Picts. This weakness was, according to Bonser, largely caused not by the defeat but by the epidemics. Furthermore, the diseases (probably caused by famine) in the tenth century might have contributed to England's weakness in the age of Ethelred II.[46] A similar view is held by J.F.D. Shrewsbury, who tentatively identified the Anglo-Saxon epidemics with smallpox. According to Shrewsbury, these epidemics caused a demographic and cultural disaster leading to the decadence of Northumbria and the weakening of the Celts in Britain and of the scholarly traditions in Ireland. It must be kept in mind that it is completely impossible to quantify these disasters. The hypotheses of Bonser and Shrewsbury are based upon general observations on the effect of diseases like smallpox and measles in virgin societies (for instance the fate of the American Indians in the sixteenth and seventeenth centuries).[47] As to the speculations of Russell on bubonic plague in the British Isles, his hypothesis is completely based on extremely vague interpretations of burial customs and poetical verses with no direct reference to plague. The epidemics that did occur could just as well have been outbreaks of smallpox or some other disease.

The hypothesis on the extension of the plague of Justinian to Scandinavia is a part of the discussion on the Scandinavian crisis during the Age of Migrations, which will be discussed below. As to the particular hypothesis concerning the plague, this has been firmly rejected by U. Näsman (1988). Näsman argues that the indications of a general crisis in Northern Europe during this period are *per se* very problematic and that these can hardly be chronologically related to the plague of Justinian. Furthermore, the hypothesis is, according to Näsman, hampered by the erroneous analogy with the Black Death, since all the social, demographic, economic and political differences between the sixth and the fourteenth centuries are neglected in the hypothesis. Finally, no bones of *Rattus rattus* have been found in excavations of places belonging to sixth- and seventh-century Scandinavia, and no lasting, effective epidemic of bubonic plague could have occurred without the constant presence of the black rat and its fleas.[48]

The black rat

If the outbreaks of plague among human beings were caused by the *Xenopsylla cheopis*, which, as was said above, is most probable, and which is mostly the case in the plague-stricken areas studied in modern times, then it follows that the black rat (*Rattus rattus*) must have been present in order to keep the plague alive long enough to cause serious harm to the population. Before we continue

our discussion on the plague of Justinian, it is therefore necessary to define the extension of the black rats in early medieval Europe.

It is clear that the rats as well as their fleas existed in Mediterranean Europe during antiquity.[49] Excavations have also revealed early medieval rats at several places in Western and Central Europe. Apparently, they spread along the trade routes in the Rhineland to Britain, where their bones have been excavated in, for instance, the City of London (1983). The bones of the London rats were deposited in the mid-third century AD. However, these finds are very few, and the rat does not seem to have become a common animal in Britain before the eleventh century.[50]

No rat bones were found at the excavations of the important emporium of Hamwih (Southampton).[51] The rats also inhabited large parts of Central Europe (the Rhineland, southern Germany and the Alpine regions). The northernmost indications of black rats in continental Europe in the Roman period are from the Dahme-Spree-area not far from Magdeburg and Berlin.[52]

In Scandinavia and northern Germany, there does not appear to have been any black rats before the Viking Age. The most important of all the trade centres of the Viking world, Haithabu (evacuated in the middle of the eleventh century) in the southern part of the peninsula of Jutland, definitely had rats among its inhabitants, although it is impossible to tell when they arrived there.[53] In Lund, a leading town in medieval Denmark, the first indications (the fragment of humerus of a domestic pig with traces of gnawing by a rat) of *Rattus rattus* belong to the period of 1030—80.[54] Excavations of the fortified settlement of Eketorp in southern Öland did not reveal any sign of rats in its early phases of habitation, but it was inhabited by black rats during the *Eketorp III*-phase (c. 1000—1300).[55]

Thus, even if the black rat existed in Britain as well as in Central Europe at the time of the plague of Justinian, there are still no proofs of rats in the Baltic area. More importantly, even if the rats did exist in, for instance, London and York, they do not seem to have been many. On the contrary, the amount of excavated bones of rats belonging to the Middle Ages *after* 1000 is enormously bigger than the amount of bones belonging to the early Middle Ages. The relative importance of the rats would, consequently, have been far greater at the time of the Black Death than at the time of the plague of Justinian, at least outside the Mediterranean area.[56]

The plague of Justinian: an evaluation

The plague of Justinian definitely hit the coastal areas of the lands surrounding the Mediterranean as well as the inland areas connected with the sea by trade routes (such as the Po and the Rhône). There is no reason to doubt that these regions, as outlined by Biraben, were attacked by the epidemics and that a decrease in population probably occurred, as a consequence of high mortality rates

among reproductive groups. However, several of the scholars discussed above did not stop at that. Rather, they interpreted the plague as a gigantic disaster affecting most of Europe in the same way as in the fourteenth century. Most of these hypotheses are constructed *e silentio*. This is a bad way to construct hypotheses, and in this case it is definitely not a sound approach. The problem of the absence of written evidence of plague in Northern Europe has been tentatively solved by reference to the lack of contemporary historians in Germany and Scandinavia (as is done by Gräslund). This is not a good solution, since other areas of Europe did not lack historians, and since these did not refrain from writing about epidemics when these occurred. In fact, epidemics belonged to those items which were always described in early medieval chronicles, together with wars, volcanic eruptions, heinous crimes, miracles and other extraordinary events that fill the pages of Gregory's *Decem Libri Historiarum* and Paul the Deacon's *Historia Langobardorum*. Gregory of Tours, the Venerable Bede, and the others had every opportunity and reason to write about the plague, and their descriptions make it clear, as was observed by Biraben, that the geographical limits of the plague were largely determined by military and commercial activity. Inland territories were mostly spared. Thus, the way the plague was described by the authors that *did* exist speaks *against* an extension of the plague to inland regions, let alone to Northern Europe. The absence of historians in Öland and Gotland proves nothing.

Another fault in Russell's reasoning is his constant reliance on the Black Death. Each occurrence of plague is an individual fact which must be analysed according to its own peculiarities: different fleas, rodents, climates, cultures, houses, knowledge of medicine and religions all influence and change the course of the epidemic. Fourteenth-century society was different from sixth-century society; the Middle Ages were not static. It is impossible to assume that 50 % or 60 % of the population in a certain area died, only because they did so 800 years later. Population estimates are *per se* more or less impossible to make for this period.[57]

Russell and others want us to believe that the plague caused the disintegration of the Roman empire in the west. It is supposed to have made Justinian's dream of reconquest impossible to fulfil. Again, the hypothesis is weak.

(1) Russell presumes a flourishing economy in the Roman world before the 540s, but it is well-known that the levels and kinds of prosperity varied considerably from region to region, as will be shown below. The political and socio-economic background was more complex than Russell admits. This part of Russell's study is wholly based on secondary works, many of which are old and outdated.[58]

(2) According to Russell, the west would have been reconquered easily if it had not been for the plague. The East Roman troops were invincible when facing Visigoths, Vandals, Lombards and others, but the plague made it difficult to hire and pay the troops required. This view is, however, not in line with military reality. The East Roman armies were good, but they could not be every-

where at the same time, and they were not invincible. Both Sasanians and, at least for a great length of time, Ostrogoths managed to stop the forces of Constantinople. Furthermore, the mass of the population in the west was not universally pro-Roman. In Northern Africa, for instance, there were bitter feuds between different social layers of the population (some with anti-Roman tendencies) and different Christian doctrines (Catholics versus Donatists) already before the Vandal invasion. The mass of poor peasants were in all probability politically indifferent.[59]

The *Xenopsylla cheopis* cannot have brought the plague to northern Germany and Scandinavia, and it is very doubtful whether the rat population of Britain was sufficiently great to cause a severe epidemic. Naturally, the recorded diseases in Britain and Ireland were real, but we are not in a position to say anything about their nature, nor about their actual impact on society. For instance, the decadence of Northumbria in the eighth century is *per se* problematic. The absence of sources makes it difficult to say anything about the coherence of any early and middle Anglo-Saxon kingdom, including Northumbria.[60]

If bubonic plague indeed was a terrible disaster in Northern and Western Europe, then the main vector must have been *Pulex irritans.* As was noted above, the evidence for *Pulex irritans* as a vector of plague is comparatively weaker than the evidence for *Xenopsylla cheopis.* The cases of plague *hypothetically* spread by *Pulex irritans* are very few, and the climatic and socio-economic context in historical times do not seem to have been favourable to contagion tied to *Pulex irritans.* Leaving the biological problems, one would still have to assume that many individuals all over Northern Europe must have met on a regular basis in a way that made it possible for the fleas to jump from one body to another, and we actually do not know about such large-scale systems of meetings. The activity of warriors and merchants in prehistoric Germany and Scandinavia can hardly have sufficed. These preconditions also make occurrences of epidemics of primary pneumonic plague even more unlikely than is already the case.

The indications of population decrease in Northern Europe are as such very problematic, and the attempts at bringing the plague of Justinian into the discussion are often accompanied by anomalies within the hypotheses. A good example of this is Seger's study, where he interprets the crisis of settlement in Ostrobothnia (a coastal region in northern Finland) as a result of the plague, while he explicitly cannot explain the decline in the number of burial grounds in Nyland (a coastal region in southern Finland) as caused by an epidemic. If the bacillus had travelled all the way to Finland, why did it leave some comparatively densely populated regions in the south unharmed in order to travel further north and devastate Ostrobothnia?

The main reason why most authors referred to in this study have chosen to discuss the plague of Justinian at all is the need for a solution to the problem of the early medieval crisis. Some kind of change occurred both in the countries around the Mediterranean and in the lands in the north. As was outlined

in the beginning of this study, the crisis of the Roman world is often interpreted as a sharp decrease in population, demonstrated in the sources as shortage of manpower, especially within the administration and in the fields of fiscal interest. In the archaeological studies of Northern Europe, the crisis is often seen as a cessation of settlement which is interpreted as a decrease in population. It is easy to see the value of the plague of Justinian: to the uncritical eye, it offers an answer to both problems, the southern as well as the northern one. As has been shown, the high value of the plague is largely superficial. It is of immediate interest in studies on symptoms of crisis in commercially and politically central areas of the south, but its contribution to the hypothetical crisis in Central, Western and Northern Europe cannot be viewed in the same light. The written evidence of shortage of manpower is hardly sufficient to establish a general population decrease. What some have interpreted as the result of fewer human beings might have been the result of a many-featured process of restructuration. Nevertheless, a demographic crisis in continental Europe is almost always taken for granted, even by scholars like Näsman who do not believe that Northern Europe necessarily must have experienced a demographic decrease.[61] In order to arrive at a better understanding of the various patterns in early medieval Europe, a short survey of the settlement development will now be made.

Early medieval settlements: crisis and continuity

A recent attempt of K. Randsborg at understanding the development in Europe and the Mediterranean in the first millennium AD has revealed sharp regional differences, visible already in classical antiquity. There is no implicit context of early medieval decay in this essay. Rather, late antiquity and the early Middle Ages appear to have been times of cultural and social restructuration. This is especially demonstrated by comparisons of various rural settlements. The different ways of using natural resources, for instance the shifting balance of an economy based on agriculture and a largely silvo-pastoral economy, are shown and analysed. The period from the third to the tenth century was an unstable period of constant change. According to Randsborg, the main forms of the development were caused by:

(1) The social development of the Germanic tribes.

(2) The underdeveloped market system in the Roman empire.

The lack of a real international market economy caused the regions of the empire to develop their own economic systems. An important aspect in this process was, according to Randsborg, the establishment of estates, for instance in the Frankish kingdom from the seventh century. This kind of agricultural units was the basis for many early states.[62]

Randsborg's synthesis is, however, far from perfect.[63] Several important archaeological objects of study are not discussed, such as the debates on the early

medieval towns (especially in relatively urban countries like Italy[64]). Randsborg neglects the importance of towns in certain early states of Europe, such as the Italo-Lombard kingdom.[65] What is even more striking, however, is his indifference towards traditionally *historical* objects of study. The impact of epidemics is not even mentioned in his essay. Nor is demography: despite the discussion of rural settlements, Randsborg does not arrive at a hypothesis on the demographic development.

One particular change is very difficult to evaluate correctly: the growth of forests. The physical setting changed on several occasions, and especially the fifth century witnessed a considerable increase in the extension of forested areas in many Central European regions as well as in Britain. The areas mostly belonged to former frontier provinces of the empire, which now experienced Germanic invasions, Roman troop movements and other elements of instability.[66] It is tempting to interpret this development as depopulation, and in some cases this was probably the case (for instance when Germanic groups left their farms to settle in other regions), but the expansion of the forests may also have been due to cultural change affecting the everyday economic structure. As has been shown by M. Montanari, early medieval Italy reverted from the agricultural economy of the Roman times to a more silvo-pastoral structure. This was a good adaptation to new demands and a new mentality; it made it easier to survive, since the potential food resources became more varied.[67] Thus, what looks like depopulation may actually be a case of cultural change, with or without demographic decrease.

Countries within possible reach of the plague of Justinian. This area, from Gaul to the Middle East, comprised several different countries with many regional distinctions.

Many south-eastern regions flourished in late antiquity. The expansion of large estates, the *villae*, continued longer than in Western Europe, but they started to decline c. 400. They were replaced by new centres, chiefly citadels and other fortified sites (*castra*).[68] This does not imply a general impoverishment. For instance, the town of Stobi in Macedonia was prosperous, particularly from the late fourth to the early sixth century, and it is attested as an episcopal centre as late as 692.[69] In Asia Minor, there are indications of demographic stability in the fourth century despite documented birth control.[70]

Northern Syria was very prosperous in late antiquity, particularly in the sixth century. In the seventh century, however, many settlements collapsed quickly. One of the most remarkable features of Syrian prosperity was the development of certain mountain villages which have been intensively studied by G. Tchalenko. Tchalenko explains the prosperity of these villages in late antiquity as a result of the export of olive oil, which relied on these and other villages for the cultivation of olives. Arid regions were cultivated through irrigation, and large villages were created in previously uninhabited regions. Apparently, none of the disasters of the sixth century (plague, Sasanian raids, earthquakes, bad harvests, drought, increased taxation, religious persecution, re-

pressed rebellions, etc.) destroyed the villages studied by Tchalenko. Their isolation was a barrier for many potential disasters. The decline is not observable until the 610s, when a particularly long Sasanian occupation stopped the Syrians from participating in the international market. The situation was permanented by the Arab presence a few decades later, and the villagers had no alternative but to abandon their settlements and move down from the mountains to the plains.[71] At least, this is the reason afforded by Tchalenko; reality might have been different (for instance worsened possibilities of irrigation, as well as the possibility that some of the plague epidemics after all did reach the settlements). Other countries were also comparatively rich: Jordan, Palestine and Mesopotamia reached the zenith of their prosperity in the sixth century, but the local variations were significant. In some cases, the Islamic conquest and its aftermath definitely influenced the settlement pattern.[72]

A major change occurred in the seventh century, when the empire was attacked by Slavs, Avars and Arabs. The Arab invasions of Asia Minor consisted mostly of plundering raids against rural areas, particularly small places close to roads. The Slavic and Avar invasions of the Balkans led to the loss of most of the peninsula and, it would seem, to the collapse of many agrarian settlements. There can be no doubt that a certain demographic decrease was a natural result of these wars. To ensure the political and economic control of important districts, the emperors developed a policy of colonization and resettlement by people from other regions within the empire. Slavs were placed in Bithynia, people from Asia Minor were transferred to Thrace, etc. This gave the empire many tax-payers and free peasants, as is evidenced in the *Farmer's Law* (Νόμος Γεωργικός), as well as future recruits of the armies. The new agrarian taxation (i.e., the separation of the head tax from the land tax) accompanied the new development.[73] Russell interpreted the emergence of these new settlers as the result of recolonization after the ravages of the plague,[74] but the well documented wars are more logical, and chronologically far better, causes.

Apart from this, another change occurred. In eastern Asia Minor, refugees from the countryside contributed to the urban survival. The eastern towns and fortified places became more important than previously, while badly fortified towns decayed and lost their population to habitable districts in the mountains or to other towns. The Balkans and western Asia Minor became considerably more ruralized than had been the case in antiquity.[75]

In Italy, the southern parts of the peninsula were densely populated in late antiquity, and some areas remained prosperous for a long time. The regression in Sicily appeared in the seventh century. In other parts of Italy, especially in the environment of Rome, there was definitely an agricultural decline in late antiquity, several centuries before the plague of Justinian.[76]

In view of all the known disasters of the sixth century (the Gothic war, the plague of Justinian, the East Roman taxation and the Lombard invasion), it is generally believed that the Italian population suffered a considerable decrease in this century.[77] However, as has been pointed out by C. Wickham, there is no

real evidence of a permanent demographic crisis in all parts of the country. Rather, the economic and political circumstances should have made it easier for the peasant population and harder for the rich strata of society, which resulted in a decrease of new buildings and monuments, a decrease that should not be taken as evidence of a general demographic decline. Another reason not to build impressive secular monuments was the cultural domination of Christianity: the new status symbols were the churches, usually small foundations, sometimes associated with a charitable institution (such as the *xenodochium*, a combined hospital and pilgrim's hostel).[78] Furthermore, the towns of Italy remained important, more so than in most other parts of Western Europe. What some archaeologists, like G.P. Brogiolo, have interpreted as elements of decay should probably be interpreted as elements of structural change. Houses were built in new ways, Roman buildings were reutilized and the Roman system of town planning was sometimes abandoned in favour of a more medieval approach with less emphasis on geometrical street-patterns, and with cathedrals instead of forums in the town centres. A lack of technological continuity (for instance with regard to the streets) does not necessarily imply a lack of functional continuity with regard to the towns as such. Demographic density may have continued to exist, but in culturally new ways.[79]

Urban decline is more obvious in southern Italy, where the ease by which the Beneventan duchy was established by the Lombards in the second half of the sixth century, as well as the almost too extensive evacuation of most episcopal towns by their bishops, indicate a more rural dominance than in Northern Italy.[80] Excavations in Molise have confirmed and widened our view of southern Italy. In the fifth century, the southern Italian economy, at least in the inland, became very regionalized, with a dominance for hilltop settlements instead of the *villae*.[81]

The same prosperity that is observable for late Roman Sicily occurred in Northern Africa, but with great variations between coastal towns like Caesarea in Mauretania and the fertile regions in presentday Tunisia. Some regression occurred in the Vandal and Byzantine periods, but there does not appear to have been any shortage of food, and Northern Africa continued to be a leading producer of grain, although the development of stockraising might have been considerable.[82]

In Western Europe, the Roman *villae* started to disappear earlier than in the east. In many regions, particularly in the Alpine valleys, settlements were often, and remarkably so in late antiquity and in the early Middle Ages, placed on hills and low mountain-tops, possibly for military reasons. This pattern is observable from Gaul to Bulgaria. The people did not disappear; they simply moved from their former habitations to new ones, which in their turn were abandoned between about 600 and 800.[83]

In Gaul, the *villae* were replaced by other forms of settlement during the third and fourth centuries; Aquitaine seems to have been of great economic importance with more late Roman *villae* than in other Gallic regions.[84] During

the Age of Migrations, there were many local settlement breaks which were indicated, like in the Rhineland, by abandoned agrarian sites, but also by new ones. Furthermore, several small settlements which began to be established c. 500 did not persist into Carolingian times. They were mostly abandoned by 700 and were replaced by more permanent and larger units.[85] It would be of great value if we could use the row-grave cemeteries (*Reihengräberfelder*) as indications of Frankish settlement (as was previously done), but the existence of alternative ways of interpreting these burial grounds makes it clear that ethnic *Deutung* of this kind is too dangerous to be pursued.[86]

In the Iberian peninsula, Roman civilization had penetrated Catalonia, the Meseta and the south, but few Roman towns and *villae* had been founded in Galicia, Cantabria and the Basque regions. Historians have often interpreted pessimistic remarks by authors in late antiquity as examples of an awareness of decline, but new analyses have shown this to be a misinterpretation caused by a failure to understand the literary genre. In fact, we know very little about Spain. For instance, despite the contemporary chronicle of Hydatius, it is impossible to say in what way the Suevic raids in the fifth century affected society.[87] Some towns were prosperous in the Visigothic period. The best known Hispano-Gothic town is Mérida, which remained an important political and commercial centre. New Christian buildings replaced the secular public ones in the centre of the town (an episcopal palace, churches, several monasteries and a *xenodochium*).[88]

To sum up: we have found great regional and chronological variations which do not resemble the picture painted by Russell in his attempt at showing a wealthy world about to be torn to pieces by the plague. Moreover, regression of one kind of settlement (such as the *villae*) does not imply a necessary population decrease, but rather the restructuration of settlement.

Britain. Several guesses have been made concerning the size of the population of Britain, but the suggested figures of one scholar are hardly ever the same as those of another. It is fairly common to believe that the population of Roman Britain was larger than that of Anglo-Saxon England.[89] The evidence for this demographic decrease is, however, lacking. As is demonstrated on other places in this study, settlement regression does not necessarily mean demographic decrease in the whole country.

The crises of Roman and Anglo-Saxon England have been studied in the context of abandonment of settlements, both large *villae* and small farms and villages. Periods of regional regression in late Roman Britain have been defined, but it is mostly impossible to say *how* and *what* actually happened. The peasants adapted their reproductive strategies to suit the economic circumstances, but whether this was done by birth control or by reliance on the *saltus* economy (hunting, fishing, etc.) is a mystery.[90]

While the debate on the late antique landscape of Britain has often focused on the rise and fall of the *villae* (a problem that concerns the fourth and fifth centuries),[91] the debate on the early medieval settlement patterns in England

has focused on the immigration of the Anglo-Saxons. Several studies have been based on place-names;[92] other studies have relied on burial grounds.[93] Some works have been focused on the assimilation of Anglo-Saxons and Britons.[94] In recent years, more attention has been given to the excavation of settlements and the evaluation of their environmental functions. The gradual Anglo-Saxon conquest of England from the fifth to the eighth century is too well-known to be repeated in this work, but one important aspect must be emphasized: the relocation of early Anglo-Saxon settlements to new lands, a process not entirely different from the continental development related above and the examples from Jutland related below, but with its own characteristics.

Most of the early Anglo-Saxon nucleated settlements in Midland and southern England, which have been thoroughly studied by archaeologists, were deserted before the end of the eighth century. These settlements were usually located on light, well-drained soils. A plausible explanation is that the relocation was caused by new land-use requirements. Gradually thinner soils would have resulted in worse crop yields: previously good lands turned into marginal areas, making it profitable to relocate the settlements. As to the Romano-British settlements in the fourth century, these are often found to be near Anglo-Saxon settlements, but their datable artefacts are rarely from a period later than AD 400.[95] Thus, there was very little continuity from the Romano-British to the early Anglo-Saxon settlement phases, and the Anglo-Saxon settlements were often relocated in the seventh and eighth centuries. Neither of these shifts must have been accompanied by demographic decline.

According to P. Sawyer, the Anglo-Saxons did not constitute an expanding force in the British landscape; rather, they constructed their local worlds by fragmentation of large multiple estates (i.e., estates grouped and constructed for the better utilization of available resources).[96] At the same time, studies of south-east Wales by W. Davies show estates and Roman continuity regarding concepts of landholding. Only in the ninth century is a distinct break with the Roman traditions visible.[97]

Northern Europe. The Age of Migrations has mostly been regarded as a period of crisis by many archaeologists.[98] However, no consensus has been achieved, partly due to the great local variations. One study may indicate complete devastation, while another study covering the same period may indicate a great degree of stability.

An important aspect to keep in mind is the representativity of the excavated material. The remains from some periods are more conspicuous than the remains from other periods. Some particular epochs have received a lot of attention from universities and similar institutions, which has resulted in a biased selection of excavation sites. A "crisis" might therefore reflect a low level of interest among archaeologists rather than a historical period of decay. It may also reflect the inability of modern scholars to interpret the remains. According to D. Carlsson, this is exactly what happened in the attempts at understanding the abandonment of the *kämpagrav* settlement in Gotland. During the sixth cen-

tury, the building technique in Gotland gradually changed from the use of stone to the use of wood. The stone foundations are easy to find, but the holes in the ground, witnessing the erection of houses built completely of wood, have only lately been correctly interpreted. The new houses were sometimes built on the same spots as the old houses. The farm of Fjäle (in the parish of Ala in eastern Gotland) was continuously inhabited from the first century AD to c. 1400. Only peripheral farms were abandoned from the sixth century to the Viking Age without replacements.[99]

Another way to interpret the abandonment of certain settlements has been used to explain the situation in Öland. That some settlements were abandoned does not mean that this was due to population decrease. The people may have chosen to move for other reasons, for instance overpopulation, climatic changes affecting the quality of the land and new commercial patterns (like the disappearance of the trade with continental Germanic tribes which had moved away during the *Völkerwanderungen*). Restructurations of settlement could have resulted in dispersal of the inhabitants within a short radius from the original place, for instance the village of Eketorp. The process might have included demographic decline, but this was not a necessary part of the change.[100] There are several examples of relocations of villages in Scandinavia, especially in Jutland. The settlement at Vorbasse in Jutland was gradually relocated within a certain area. At Nørre Snede (40 km. from Vorbasse), the originally third-century settlement was relocated three times from the fourth to the seventh century; the village was not moved more than 100—200 m. on each occasion.[101] There are, in fact, numerous instances of continuity and stability in the settled regions of Northern Europe.[102]

In some areas, e.g. in northern Norway, there was no crisis at all, but perhaps even an extension of settlement within the context of cultural and socio-economic stability and continuity.[103] In other regions, the indications of settlement regression are too many to be ignored, for instance in northern Sweden (the provinces of Jämtland, Hälsingland, Medelpad and Ångermanland)[104] and in Ostrobothnia in Finland.[105] However, these relatively clear cases of regression were parts of a process of several centuries. The settlement regression in Ostrobothnia is visible as early as in the fifth century, when the previous settlement all along the coast had been confined to a relatively small coastal area and to the shores of the river Kyro close to its mouth. In 800, only the mouth of the Kyro was inhabited.[106] Since it is extremely unlikely, in view of what has been discussed above, that the initial regression was caused by plague, the solution to the problem should be sought in long-term structural contexts (climate, warfare, ecology, social stratification, etc.).

In Lower Saxony, there are clear cases of discontinuity. At Flögeln (between the Elbe and the Weser), the settlement continued through the Roman Iron Age, but it was completely evacuated in the middle of the fifth century.[107] At Feddersen Wierde (on the coastal salt marshes south of the mouth of the Elbe), in Rheiderland (at the mouth of the Ems) and at Wijster (in the inland region

of the province of Drenthe in the Netherlands) the same thing happened: complete abandonment in the fifth century. It has been argued that this abandonment was related to political events in the Roman frontier provinces and/or to normal variations in intraregional settlement structure (migrations to and from coastal areas depending upon the quality of the soil and periods of gradual inundation). The people has sometimes been shown to have remained within the region, but in new settlements.[108] Other regions in northern Germany also show strong indications of abandonment or regression of settlement, for instance Angeln and Schwansen (in Schleswig-Holstein), although more research is needed there.[109] It is tempting to interpret this regression as a result of the migration of the Anglo-Saxons to Britain.[110]

The hypothetical crisis in southern Norway has been much discussed; the elements of continuity are there, but so is evidence of the opposite. Some marginal areas were abandoned, but this tells us nothing about the demographic situation. Agriculturally inferior lands might have been evacuated, while better lands might have been used to support new settlers.[111]

One aspect, which must not be forgotten, is war. The Age of Migrations in Southern and Western Europe was a period of several wars, and there are strong indications of these kinds of disturbances in the north as well. Several fortifications (*fornborgar*), usually hill-forts but also (in Öland) ring-forts on the plains, were used during these centuries, like Eketorp in Öland and Torsburgen in Gotland.[112]

Consequently, many things lead to the assumption that the "crisis" of the sixth century was a slow process with no archaeologically documented general demographic decline. There is ample evidence of local continuity in Northern Europe.[113] The settlements were abandoned in some regions, perhaps due to population decrease, perhaps due to migrations. Cultural forms changed, but the culture rarely died.

Conclusion. This survey has shown instability and variations all over Europe and the Mediterranean. It is hard to define a period of settlement regression, and it is mostly impossible to define the causes. A regression of one kind of settlement may have been caused by the expansion of another kind of settlement, like migrations, relocations of habitations from *villae* to hilltops, etc. What looks like urban decline was sometimes merely a cultural restructuration, the material adaptation to new socio-economic needs and a new mentality. The growth of forests does not necessarily indicate a shortage of people to farm the land; rather, it may indicate a new way of using the natural resources (for instance a shift from reliance on mainly agriculture to mainly stockraising). Anyway, demographic decrease can rarely be taken for granted. Prosperity in one region was accompanied by regression in other regions. A period of peace sometimes led to prosperity and expansion (such as in fifth-century Syria), while it did not stop a serious decline in other countries (such as in central Italy from the second century AD).

The plague of Justinian met a world of largely different countries. It is not

even possible to ascertain population decrease in all of the Mediterranean regions for this period; and when a decrease did occur, then other known and documented disasters (particularly wars) are also important to consider as complementary to the plague.

Restructuration and adaptation

This study has shown the dangers of commonly accepted views of historical development, which are based upon ideas of cyclical change of an almost mythical nature: rise and fall, prosperity and decay, the Roman empire and the Dark Ages. Despite all books that have emerged from an army of learned scholars during the twentieth century, most of us are still reluctant to let go of the idea of cultural, political and socio-economic decay in the fifth and sixth centuries. The passage to the Middle Ages has ever since the Renaissance been regarded as a disaster. Demographic decline is a part of most disasters. Thus, it has been hard for most historians to reject the notion of a huge population decrease from late antiquity to c. 700. The signs of manpower shortage in late antiquity are modern evaluations based on texts whose meanings are more difficult to comprehend than one might expect. Indications of depopulation have been too easily interpreted within the context of civilizational disaster.

As was outlined in the beginning of this study, I have tried to survey the effects of the plague and the changes in settlement in areas that have previously been discussed in relation to the plague of Justinian. Contrary to previous studies, this has been done with careful consideration of biological and medical elements in history, particularly the prerequisites for the spread of plague and the existence of black rats in the areas in question. It has been shown that various European regions must have reacted very differently to the plague of Justinian.

(1) There is no reason to neglect the effects of the plague of Justinian in the Mediterranean. On the contrary; most works, both traditional political histories and recent archaeological surveys, completely neglect the potentials of epidemics. For instance, Randsborg's reluctance to discuss the epidemics (1991) is a serious mistake. It is not unlikely that 40—80 % of the population died in certain regions. At least for the eastern Mediterranean, as well as for the coastal areas in Italy and Provence, the plague must have been a terrible experience.

(2) In the non-coastal areas of the Mediterranean, particularly when untouched by the rivers and roads used by merchants and armies, the plague does not appear to have been as violent as in the above-mentioned cases. On the contrary; the plague seems to have left large areas of Gaul, Spain and other countries unharmed.

(3) In Britain and Ireland, there is no reason to suspect a severe plague epidemic. We know that violent epidemics did exist, but nothing points to the plague in particular.

(4) The hypothesis of plague in Germany and Northern Europe is even weaker than in the British case. Many archaeologists have accepted the plague as a major factor in the settlement history of these centuries, but, unless they can come up with completely new zooarchaeological evidence and/or new knowledge about the medical nature of plague, these hypotheses must be firmly rejected.

It should not be forgotten that *other* diseases permanently settled in Europe in the Middle Ages. The documented epidemics in Britain and Ireland may have been just as devastating as the bubonic plague. A particular disease, which caused serious harm to many regions, was malaria. Some medical historians have even gone so far as to attribute the fall of Rome to the spread of malaria,[114] which undoubtedly is an exaggeration. In any case, the impact of malaria largely depended upon the ecology of the affected regions: the degree of paludification, the extension of pastures as opposed to irrigated fields and the kind of animals in the local economy (for instance, the existence of lots of cattle often makes the mosquitoes attack these and spare the human beings, while sheep are more difficult targets).[115] The history of epidemics must be included in the general studies by historians and archaeologists in a more conscious way than has hitherto been done. Otherwise, there will be no alternative to historians like Russell, who rewrites the history of the Black Death for a period more than 800 years before its arrival.

An important, and often neglected, part of early medieval history is the adaptation of the people to the arrival and settlement of new diseases. The existence of malaria in, for instance, the Roman campagna influenced the way the inhabitants regarded their environment and their lives. Diseases like measles eventually became endemic in places where the demographic density was sufficient to sustain a chain of infection indefinitely. In the long run, this made people more immune, both on a purely medical level (thus transforming the epidemics into childhood diseases; and children are more easily replaced in the demographic pattern than adults) and through the creation of new cultural attitudes. It would seem that some kind of adjustment to the diseases had been completed in the tenth century.[116] The bubonic plague (which did not provide its surviving victims with long-lasting immunity that could save them in the next epidemic[117]), however, did not stay. It is last heard of in Naples in 767. Its absence was gratefully noted by the people. An Arab anecdote relates how an Abbasid official in Damascus pointed out that God had shown his will when removing the plague after the Abbasid accession. An Umayyad partisan responded by declaring that God the Merciful, wanting to chastise the sinful, had preferred to exchange one scourge for another, taking away the plague and replacing it with the Abbasids.[118] Why the plague disappeared is one of the mysteries of medical history. Apparently, the *Yersinia pestis* failed to find a stable ecological niche.[119] It would return 600 years later and find the conditions better suited to its needs.

Late antiquity and the early Middle Ages were periods of restructuration. This included many elements: regionalization; ruralization; territorialization;

ethnic assimilation; diseases; socio-economic changes in the relationships between slaves, free peasants and landlords; wars, migrations and new settlements; the emergence of several religious elements, like the cult of saints; ecological changes (like the rise of the silvo-pastoral economy), etc. The development was sometimes accelerated by demographic changes, but it is possible that this was less important than other changes. Demographic change, as cause and as effect, was *one of many hypothetically important elements.*

The fall of the Roman empire in the west is the main issue in studies of this period. The collapse of the state was important, but it was only one of many changes. In order to survive, the state had to adapt to new circumstances and cultural categories. The West Roman emperors failed to achieve this. What happened was not inevitable. There was a hypothetical chance that the empire might have evaded the decline of the mid-fifth century if the state had laid its foundations on the resources available in the new society, for instance by letting go of certain urban traditions (like amphitheatres), by transferring political administration from towns to rural fortresses and by transforming heavy taxes to locally collected and locally used taxes in kind and/or money and work, in a way that was acceptable to peasants relying on more silvo-pastoral economic assets than the late Roman laws wanted them to do. This could have made it possible to maintain central control over many regions which were now lost to the local interests of landlords, warlords and bishops, who were better suited to the new conditions. Instead, the emperors tried to maintain the Old Order, which led to the emergence of *coloni*, *collegia*, the *epibol* system, large armies and heavy taxes. In the end, the empire did change. In the seventh century, facing the dangers of these structural anomalies and of foreign aggression in Asia Minor and in the Balkans, the eastern empire brought forth internal changes which laid the foundations for the medieval greatness of Constantinople.

Abbreviations

AJP:	*American Journal of Philology* (Baltimore)
AM:	*Archeologia medievale* (Florence)
BAR:	*British Archaeological Reports*
Bericht 1987:	*Bericht der Römisch-Germanischen Kommission*, Band 67, Mainz 1987
The Birth 1989:	*The Birth of Europe. Archaeology and Social Development in the First Millennium AD*, ed. K. Randsborg, *Analecta Romana Instituti Danici*, Supplementum 16, Rome 1989
Diseases 1967:	*Diseases in Antiquity*, eds. D. Brothwell and A.T. Sandison. Springfield, Ill. 1967
DOP:	*Dumbarton Oaks Papers* (Cambridge, Mass. or Washington DC)
Folkevandringstiden 1988:	*Folkevandringstiden i Norden. En krisetid mellem ældre og yngre jernalder.*, eds. U. Näsman and J. Lund, Århus 1988
JBAA:	*The Journal of the British Archaeological Association*
LH:	*Landscape History*
Maladies 1989:	*Maladies et société (XII^{e}-XVIII^{e} siècles)*, Actes du colloque de Bielefeld, nov. 1986, eds. N. Bulst et R. Delort, Paris 1989
Structure 1981 :	*Structure sociale, famille, chrétienté à Byzance*, London 1981

Notes

This study would have been impossible to write without the help and good advice, especially of bibliographical and medical nature, provided by Bodil Persson, at the Department of History of the University of Lund. I hereby express my sincere thanks.

1. A.E.R. Boak, *Manpower Shortage and the Fall of the Roman Empire in the West*, Ann Arbor 1955; R. Doehaerd, *Le haut moyen âge occidental. Économies et sociétés.*, Paris 1971, especially p. 86—94; A.H.M Jones, *The Later Roman Empire 284—602. A Social, Economic and Administrative Survey.*, Oxford 1964, vol. 2, especially p. 1043; G. Ostrogorsky, "Das Steuersystem im byzantinischen Altertum und Mittelalter", *Byzantion*, Tome 6, Bruxelles 1931. On the desertion of land (*agri deserti*), which mostly affected marginal areas and which must not be exaggerated, see A.S. Esmonde Cleary, *The Ending of Roman Britain*, London 1989, p. 27—29; Jones 1964, vol. 2, p. 822—23 (summary); J. Martin, *Spätantike und Völkerwanderung*, Oldenbourg Grundriss der Geschichte, Band 4, Munich 1987, p. 63.
2. J.C. Russell, "Late Ancient and Medieval Population", *Transactions of the American Philosophical Society*, New Series, vol. 48, part 3, Philadelphia 1958. Russell assumes a total number of about 337,000—400,000 Anglo-Saxons in c. AD 590, which implies a settlement of about 200,000 in the fifth century. His hypothesis on the Celtic parts of southern Britain (p. 95—99) is also based on *Tribal Hidage* (which does not say anything about this): about 75,000 inhabitants in Wales and about 25,000 in Dumnonia. On *Tribal Hidage*, see W. Davies and H. Vierck, "The Contexts of Tribal Hidage: Social Aggregates and Settlement Patterns", *Frühmittelalterliche Studien*, Band 8, Berlin and New York 1974; R. Hodges, *The Anglo-Saxon Achievement. Archaeology and the Beginnings of English Society.*, London 1989, p. 57—58.
3. A.E.R. Boak, "The Population of Roman and Byzantine Karanis", *Historia*, vol. 4, Wiesbaden 1955.
4. O.J. Benedictow, *Plague in Late Medieval Nordic Countries. Epidemiological Studies.*, Oslo 1992, p. 235.
5. On Scandinavia, see *Desertion and Land Colonization in the Nordic Countries c. 1300—1600*, eds. S. Gissel, E. Jutikkala, E. Österberg, J. Sandnes, B. Teitsson, Stockholm 1981.
6. J.-N. Biraben, *Les hommes et la peste en France et dans les pays européens et méditerranéens.* Tome 1, La peste dans l'histoire. Paris 1975, p. 22—25.
7. J.F. Gilliam, "The Plague under Marcus Aurelius", *AJP*, vol. 82, n. 327, 1961; R. Hare, "The Antiquity of Diseases Caused by Bacteria and Viruses. A Review of the Problem from a Bacteriologist's Point of View.", *Diseases* 1967; L.F. Hirst, *The Conquest of the Plague. A Study of the Evolution of Epidemiology.*, Oxford 1953, p. 10; W.H. McNeill, *Plagues and Peoples*, Harmondsworth 1979 (orig. 1976), p. 112—14; A. Patrick, "Disease in Antiquity: Ancient Greece and Rome", *Diseases* 1967; R. Pollitzer, *Plague*, Geneva 1954, p. 11—12; Russell 1958, p. 37; J.F.D. Shrewsbury, *The Plague of the Philistines and Other Medical-Historical Essays*, London 1964; M. Stjernberg, *Farsoter under förhistorisk tid. Del 1: Bakterier och rikettsier.*, Thesis and Papers in North-European Archaeology 19, Stockholm 1987, particularly p. 79; H. Zinsser, *Rats, Lice and History*, London 1937, particularly p. 119—27, 135—41. Recent views on the "plague" of Athens: see the discussion (by Langmuir, Worthen, Solomon, Ray, Petersen, Morens, Chu and Holladay) in *The New England Journal of Medicine*, vol. 313, n. 16, 1985; 314, n. 13, 1986; 315, n. 18, 1986.
8. Biraben 1975, Tome 1, p. 22—25; Patrick 1967, p. 245—46; R. Rullière, *Histoire de la médecine*, Paris 1981, p. 63—64, 67; J.F.D. Shrewsbury, *A History of Bubonic Plague in the British Isles*, Cambridge 1970, p. 11, 17.
9. R.S. Gottfried, *The Black Death. Natural and Human Disaster in Medieval Europe.*,

London 1983, p. 6—10. There are many weaknesses in Gottfried's work, for instance a reliance on the works of Russell and McNeill.

10. Benedictow 1992, p. 23—32, 214—23; Biraben 1975, Tome I, p. 7—18; McNeill 1979 (1976), p. 119—21; Pollitzer 1954, p. 71—113 (on the bacillus), 203—14 and 411—46 (generally on the disease among human beings), 483—521 (epidemiology); Stjernberg 1987, p. 79—82.
11. See Pollitzer 1954, p. 379—81.
12. F.M. Laforce, I.L. Acharya, G. Stott, P.S. Brachman, A.F. Kaufman, R.F. Clapp and N.K. Shah, "Clinical and Epidemiological Observations on an Outbreak of Plague in Nepal", *Bulletin of the World Health Organization* 45, 1971, p. 693—706. The hypothesis on the role of *Pulex irritans* in Nepal is based on the possible absence of a rodent epizootic within the plague-affected village, Nawra, itself. However, the study does *not* provide any cases of positive evidence for the actual role of *Pulex irritans*, since no studies of human ectoparasites were made (p. 704).
13. Benedictow 1992, p. 156—71, 227—69.
14. Biraben 1975, Tome 1, p. 12—16; Pollitzer 1954, p. 315—91; Stjernberg 1987, p. 80—81.
15. Biraben 1975, Tome 1, p. 7—18; Pollitzer 1954, p. 104—09 (the bacillus) and 318—21, 327—28, 355—58 (fleas); Stjernberg 1987, p. 80—82.
16. Benedictow 1992, p. 27—31, 171—92, 222—23, 269—73.
17. Biraben 1975, Tome 1, p. 12—18; Pollitzer 1954, p. 251—305 (generally on rodents), 483—521 (epidemiology); Stjernberg 1987, p. 80—82.
18. I am greatly indebted to Bodil Persson, at the Department of History of the University of Lund, for helping me with these last remarks on the historical image of the disease.
19. Biraben 1975, Tome 1, p. 25—27; J.C. Russell, "That Earlier Plague", *Demography*, vol. 5, n. 1, 1968.
20. The following summary is based on Russell 1968, from which the quotations have been taken. See also Russell 1958, p. 40—45, 88—99, 138—40, 143; J.C. Russell, "The Population of Medieval Egypt", *Journal of the American Research Center in Egypt*, vol. 5, Cambridge, Mass. 1966, p. 71—72, 82; J.C. Russell, "Population in Europe 500—1500", *The Fontana Economic History of Europe. The Middle Ages.*, ed. C.M. Cipolla, London and Glasgow 1972 (orig. 1969).
21. C. Diehl, *L'Afrique byzantine. Histoire de la domination byzantine en Afrique (533—709).*, New York 1959 (orig. Paris 1896), vol. 2, p. 339.
22. Gottfried 1983, p. 10—12.
23. Hirst 1953, p. 10—12, 125—26.
24. McNeill 1979 (1976), p. 119—24, 150.
25. H.E. Sigerist, *Civilization and Disease*, Ithaca, NY 1945, p. 113—15.
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28. W.P. MacArthur, "The Identification of Some Pestilences Recorded in the Irish Annals", *Irish Historical Studies*, vol. 6, n. 23, Dublin and Oxford 1949; J.C. Russell, "The Earlier Medieval Plague in the British Isles", *Viator* 7, 1976; J.F.D. Shrewsbury, "The Yellow Plague", *Journal of the History of Medicine*, vol. 4, 1949; Shrewsbury 1970, p. 20—21.
29. W.P. MacArthur, "Old-Time Plague in Britain", *Transactions of the Royal Society of Tropical Medicine and Hygiene* 19, 1925—26; W.P. MacArthur, "Famine Fevers in England and Ireland", *JBAA*, 3rd Series, vol. 9, London 1944; MacArthur 1949.
30. C. Creighton, *A History of Epidemics in Britain*, vol. 1, London 1965 (orig. Cambridge 1894).
31. J. Morris, *The Age of Arthur. A History of the British Isles from 350 to 650.*, London

1973, p. 222—24.
32. Russell 1976, p. 71—72.
33. Russell 1976, p. 66—69. Russell has more arguments based on archaeology (p. 69—71), for instance speculations on the importance of sex ratio and age of the deceased.
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35. L. Franz, "Zur Bevölkerungsgeschichte des früheren Mittelalters", *Deutsches Archiv für Landes- und Volksforschung* 2, 1938.
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37. G. Flink, "Ölands stensträngsområden och den justinianska pesten", *Bebyggelsehistorisk tidskrift* 11, Stockholm 1986.
38. G. Helgen, "Vind og vargtid på overgangen fra eldre til yngre jernalder", *Universitetets Oldsakssamling*, Årbok 1975—76, Oslo 1977. See also B. Myhre, "Agrarian Development, Settlement History, and Social Organization in Southwest Norway in the Iron Age", *New Directions in Scandinavian Archaeology*, Studies in Scandinavian Prehistory and Early History, vol. 1, eds. K. Kristiansen and C. Paludan-Müller, Odense 1978.
39. B. Petré, *Arkeologiska undersökningar på Lovö. Del 4. Bebyggelsearkeologisk analys.*, Stockholm 1984, p. 136.
40. T. Seger, "The Plague of Justinian and Other Scourges. An Analysis of the Anomalies in the Development of the Iron Age Population in Finland.", *Fornvännen. Tidskrift för svensk antikvarisk forskning.*, n. 77, Stockholm 1982.
41. J.-N. Biraben and J. Le Goff, "La Peste dans le Haut Moyen Age" *Annales E.S.C.*, vol. 24, n. 6, Paris 1969. English translation: "The Plague in the Early Middle Ages", *Biology of Man in History. Selections from the Annales E.S.C.*, eds. Forster and Ranum, London and Baltimore 1975.
42. Biraben 1975, Tome 1, p. 25—44, 375—77.
43. Biraben 1975, Tome 1, p. 32—33.
44. Biraben 1975, Tome 1, p. 33 (quotation).
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46. W. Bonser, "Epidemics During the Anglo-Saxon Period", *JBAA*, 3rd Series, vol. 9, London 1944.
47. McNeill 1979 (1976), p. 123—24; Shrewsbury 1949; Shrewsbury 1970, p. 18—21. On the effects of diseases like smallpox in societies without previous knowledge of the disease, see A. Crosby, *Ecological Imperialism. The Biological Expansion of Europe, 900—1900.*, Cambridge 1986.
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49. H. Reichstein, "Archäozoologie und die prähistorische Verbreitung von Kleinsäugern", *Sitzungsberichte der Gesellschaft Naturforschender Freunde zu Berlin*, N.s. 27, Berlin 1987; G.E. Thüry, "Zur Infektkette der Pest in hellenistisch-römischer Zeit", *Festschrift 75 Jahre Anthropologische Staatssammlung München 1902—77*, Munich 1977.
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51. J. Bourdillon and J. Coy, "The Animal Bones", *Excavations at Melbourne Street,*

Southampton, 1971—76. CBA Research Report 33, ed. P. Holdsworth, 1980.

52. Armitage/West/Steedman 1984, p. 379; Reichstein 1987, p. 16—18; M. Teichert, "Beitrag zur Faunengeschichte der Hausratte, *Rattus rattus* L.", *Zeitschrift für Archäologie* 19, Berlin 1985 — Teichert also relates some hypothetical indications of rats in Poland as early as c. BC 500—400; P. Wolff, B. Herzig-Straschil and K. Bauer, "Rattus rattus (Linné 1758) und Rattus norvegicus (Berkenhout 1769) in Österreich und deren Unterscheidung an Schädel und postcranialem Skelett", *Mitteilungen der Abteilung für Zoologie des Landesmuseum Joanneum*, Jahrgang 9, Heft 3, Graz 1980, p. 146.
53. H. Reichstein, "Bemerkungen zur Verbreitungsgeschichte der Hausratte (Rattus rattus, Linné 1758) an Hand jüngerer Knochenfunde aus Haithabu (Ausgrabung 1966—69).", *Die Heimat.* Zur Vor- und Frühgeschichte Schleswig-Holsteins II. 81. Jahrgang, Heft 4, Neumünster 1974; Reichstein 1987, p. 16—18.
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56. F. Audoin-Rouzeau, "La peste et les rats: les réponses de l'archéozoologie", *Maladies* 1989; R. Delort, *Les animaux ont une histoire*, Paris 1984, p. 89.
57. See, for instance, E. Keyser, *Bevölkerungsgeschichte Deutschlands*, Leipzig 1938, p. 71—72, 130—32; E. Patlagean, "Sur la limitation de la fécondité dans la haute époque byzantine", *Structure* 1981 (orig. published in *Annales E.S.C.* 1969).
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61. Näsman 1988, p. 247.
62. K. Randsborg, *The First Millennium AD in Europe and the Mediterranean. An Archaeological Essay.*, Cambridge 1991. On agricultural units as bases for early states, see especially p. 68—69.
63. D. Harrison, "Arkeologi och historia", *Svensk historisk tidskrift* 1/1992, Stockholm 1992 (review of Randsborg's book).
64. See the debate in *AM* from 1986 and onwards (Brogiolo, La Rocca Hudson and Wickham).
65. D. Harrison, *The Early State and the Towns. Forms of Integration in Lombard Italy, AD 568—774.*, Lund 1993.
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67. M. Montanari, *L'alimentazione contadina nell'alto medioevo*, Naples 1979. See also G. Duby, *Guerriers et paysans, VII^e—XII^e s.*, 1973; C. Wickham, "European Forests in the Early Middle Ages: Landscape and Land Clearance", *Settimane di studio del*

Centro italiano di studi sull'alto medioevo 37 — L'ambiente vegetale nell'alto medioevo, Spoleto 1990.

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71. Randsborg 1991, p. 47—51; G. Tchalenko, *Villages antiques de la Syrie du Nord. Le massif du Bélus à l'époque romaine.* Institut français d'archéologie de Beyrouth. Bibliothèque archéologique et historique, Tome 50:1—3, Paris 1953—58, Tome 1, p. 422—38.
72. Randsborg 1991, p. 51—53.
73. H. Ahrweiler, "L'Asie Mineure et les invasions arabes (VII^{e}—IX^{e} siècles)", *Revue historique*, année 86, Tome 227, Paris 1962, p. 7—28; P. Charanis, "Ethnic Changes in the Byzantine Empire in the Seventh Century", *DOP* 13, 1959; P. Charanis, contribution on p. 285—91, *Actes du XII^{e} congrès international d'études byzantines*, Tome 1, Belgrade 1963, p. 289; Ostrogorsky 1931; Randsborg 1991, p. 64; K.M. Setton, "On the Importance of Land Tenure and Agrarian Taxation in the Byzantine Empire, from the Fourth Century to the Fourth Crusade", *AJP*, vol. 74, n. 295, Baltimore 1953. On the Farmer's Law, see also J.V.A. Fine, *The Early Medieval Balkans. A Critical Survey from the Sixth to the Late Twelfth Century.*, Ann Arbor 1983, p. 84—93.
74. Russell 1968, p. 183—84.
75. Ahrweiler 1962, p. 28—32; Kitzinger 1946; G. Ostrogorsky, "Byzantine Cities in the Early Middle Ages", *DOP* 13, 1959. Urbanization occurred earlier than the seventh century, and neither Arabs nor Slavs can be blamed for that; rather, poverty drove former peasant families from the countryside to the town. See E. Patlagean, "La pauvreté à Byzance au temps de Justinien: les origines d'un modèle politique", *Structure* 1981, orig. published in *Études sur l'histoire de la pauvreté (Moyen Age-XVIème siècle)* 1, ed. M. Mollat, Paris 1974.
76. Randsborg 1991, p. 42—44. An example of late Roman decline is Etruria: F. Cambi and E. Fentress, "Villas to Castles: First Millennium AD. Demography in the Albegna Valley.", *The Birth* 1989; R. Hodges and D. Whitehouse, *Mohammed, Charlemagne and the Origins of Europe. Archaeology and the Pirenne Thesis.*, Ithaca, NY 1983, p. 33—45. In some areas, the decline can hardly have been as extensive as is indicated by archaeological finds, since there is written evidence for at least some settlements. See, on the Rieti region, J. Moreland, "Ricognizione nei dintorni di Farfa, 1985. Resoconto preliminare.", *AM* 13, 1986, p. 338—39.
77. Hodges/Whitehouse 1983, p. 52; Russell 1958, p. 71—73, 92—94.
78. B. Ward-Perkins, *From Classical Antiquity to the Middle Ages. Urban Public Building in Northern and Central Italy AD 300—850.*, Oxford 1984, especially p. 51—91; C. Wickham, "L'Italia e l'alto medioevo", *AM* 15, 1988.
79. Harrison 1993; M.C. La Rocca Hudson, "Città altomedievali, storia e archeologia", *Studi storici* 27, n. 3, Rome 1986; M.C. La Rocca Hudson, 'Dark Ages' a Verona: edilizia privata, aree aperte e strutture pubbliche in una città dell'Italia settentrionale", *AM* 13, 1986; C. Wickham, "La città altomedievale: una nota sul dibattito in corso", *AM* 15, 1988. Conflicting views (favouring the hypothesis of urban decay): *Archeologia urbana in Lombardia. Valutazione dei depositi archeologici e inventario dei vincoli.*, ed. G.P. Brogiolo, Modena 1984, especially p. 48—56, 88—91; G.P. Brogiolo, "A proposito dell'organizzazione urbana nell'altomedioevo", *AM* 14, 1987. The importance of towns in medieval mentality has been studied by D. Harrison, "The Invisible Wall of St John. On Mental Centrality in Early Medieval Italy", *Scandia* 58:2, Lund 1992.

80. C. Wickham, *Early Medieval Italy: Central Power and Local Authority 400—1000*, London and Basingstoke 1981, p. 148—49.
81. Hodges/Whitehouse 1983, p. 45—46; R. Hodges and C. Wickham, "The Evolution of Hilltop Villages in the Biferno Valley, Molise", *Papers in Italian Archaeology 2, Archaeology and Italian Society. Prehistoric, Roman and Medieval Studies*, eds. G. Barker and R. Hodges, *BAR, International Series* 102, Oxford 1981; *San Vincenzo al Volturno. The Archaeology, Art and Territory of an Early Medieval Monastery*, eds. R. Hodges and J. Mitchell, *BAR, International Series* 252, Oxford 1985.
82. Randsborg 1991, p. 44—45. See also Courtois 1955, p. 316—24; Diehl 1959 (1896), vol. 2, p. 393—407; Diesner 1966, p. 40, 93, 135—37, 146—47; Frend 1952, p. 47, 66—67.
83. Randsborg 1991, p. 56, 60, 87. A famous example of these *castra* is Invillino (formerly Ibligo) in Friuli. It has been thoroughly excavated — see V. Bierbrauer, *Invillino-Ibligo in Friaul I. Die römische Siedlung und das spätantik-frühmittelalterliche castrum.*, Munich 1987. The tendency to use hills as locations of settlements was also of great importance in the West and East Slavic territories throughout the early Middle Ages. See M. Gojda, *The Ancient Slavs. Settlement and Society.*, Edinburgh 1991, p. 16—57.
84. Randsborg 1991, p. 57—58.
85. Randsborg 1991, p. 66—69.
86. E. James, "Cemeteries and the Problem of Frankish Settlement in Gaul", *Names, Words, and Graves: Early Medieval Settlement*, ed. P.H. Sawyer, Leeds 1979.
87. R. Collins, *Early Medieval Spain. Unity in Diversity, 400—1000.*, London and Basingstoke 1983, p. 8—23, 83—84 (on Galicia); E.A. Thompson, *Romans and Barbarians. The Decline of the Western Empire.*, Madison 1982, p. 157—58, 164.
88. Collins 1983, p. 88—104.
89. *The Anglo-Saxons*, eds. J. Campbell, E. John and P. Wormald, Oxford 1982, p. 9—11; P.J. Fowler, "The Countryside in Roman Britain: A Study in Failure or a Failure in Study", *LH* 5, 1983; Hodges 1989, p. 20; M.E. Jones, "Climate, Nutrition and Disease: an Hypothesis of Romano-British Population", *The End of Roman Britain*, ed. P.J. Casey, *BAR* 71, Oxford 1979; Russell 1958, p. 85—87, 95—99.
90. Hodges 1989, p. 15—16, 20—22, 34, 36.
91. The *villae* were abandoned in the second half of the fourth and in the fifth century. This might have been accompanied by demographic decrease, but the change should also be regarded as a part of a cultural shift, together with the ruralization of the towns, the construction of hill-forts (like South Cadbury) and the emergence of rural estates as centres of power. See *The Anglo-Saxons* 1982, p. 19—20, 39—40; Esmonde Cleary 1989, p. 100—16, 134—36, 158; Hodges 1989, p. 16—17, 25—26, 32; Randsborg 1991, p. 58—59; Sawyer 1978, p. 80—83, 88, 221.
92. See especially *Place-Name Evidence for the Anglo-Saxon Invasion and Scandinavian Settlements.* Eight studies collected by K. Cameron, Nottingham 1975 (the contributions by B. Cox, M. Gelling and J. McNeal Dodgson); M. Gelling, "Towards a Chronology for English Place-Names", *Anglo-Saxon Settlements*, ed. D. Hooke, Oxford 1988; M.J. Whittock, *The Origins of England 410—600*, London and Sydney 1986, p. 119—26.
93. On the difficulty in using these as sources, see *The Anglo-Saxons* 1982, p. 34—36; Hodges 1989, p. 28—29, 38—42.
94. For instance M.L. Faull, "British Survival in Anglo-Saxon Northumbria", *Studies in Celtic Survival*, ed. L. Laing, *BAR* 37, Oxford 1977; K. Jackson, *Language and History in Early Britain*, Edinburgh 1953.
95. C.J. Arnold and P. Wardle, "Early Medieval Settlement Patterns in England", *Medieval Archaeology*, vol. 25, London 1981; Hodges 1989, p. 62—65 (an interpretation focusing on the hypothetical political and economic awareness of better lands as supe-

rior resources); M.G. Welch, "Rural Settlement Patterns in the Early and Middle Saxon Periods", *LH* 7, 1985. Compare with the studies collected in *Anglo-Saxon Settlements*, ed. D. Hooke, Oxford 1988.

96. P. Sawyer, "Anglo-Saxon Settlement: the Documentary Evidence", *Anglo-Saxon Settlement and Landscape*, ed. T. Rowley, *BAR* 6, Oxford 1974.
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100. F. Herschend, "Bebyggelse och folkvandringstid på Öland", *Folkevandringstiden* 1988.
101. S. Hvass, "Jernalderens bebyggelse", *Fra Stamme til Stat i Danmark I. Jernalderens stammesamfund.*, eds. P. Mortensen and B. M. Rasmussen, Århus 1988; S. Hvass, "Rural Settlements in Denmark in the First Millennium AD", *The Birth* 1989; Randsborg 1991, p. 76—79.
102. Hvass 1988, p. 84—85 (Bellingegård near Køge, Sjælland); Petré 1984 (Lovö in Lake Mälar); Randsborg 1991, p. 80 (the Tollensee area in north-eastern Germany); M. Watt, "Bornholm mellem romertid og vikingetid — status 1985", *Folkevandringstiden* 1988 (on Bornholm).
103. R. Jørgensen, "Utviklingstendenser i nord-norsk bosetning ved overgangen fra eldre til yngre jernalder", *Folkevandringstiden* 1988.
104. L. Liedgren, "Några synpunkter kring den agrara bebyggelsen i mellersta Norrland i gränszonen mellan äldre och yngre järnålder", *Folkevandringstiden* 1988.
105. C.F. Meinander, "Forntiden i Svenska Österbotten", *Svenska Österbottens historia* 1, Vasa 1977, p. 28, 42—43; Seger 1982.
106. Meinander 1977, p. 42—43.
107. P. Schmid, "Ländliche Siedlungen der vorrömischen Eisenzeit bis Völkerwanderungszeit im niedersächsischen Küstengebiet.", *Offa*, Band 39, Neumünster 1982, p. 85—93; W.H. Zimmermann, "A Roman Iron Age and Early Migration Settlement at Flögeln, Kr. Wesermünde, Lower Saxony", *Anglo-Saxon Settlement and Landscape*, ed. T. Rowley, *BAR* 6, Oxford 1974.
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109. K.-H. Willroth, "Siedlungsarchäologische Untersuchungen in Angeln und Schwansen", *Bericht* 1987.
110. H. Unverhau, "Zur mittelalterlichen Siedlungsgeschichte des südlichen Schleswig", *Bericht* 1987.
111. T. Løken, "Forsandmoen — et samfunn i blomstring og krise gjennom folkevandringstid.", *Folkevandringstiden* 1988; E. Mikkelsen, "Overgangen folkevandringstid/merovingertid i Norge", *Universitetets Oldsakssamling*, Årbok 1970—71, Oslo 1973; B. Myhre, "Settlements of Southwest Norway during the Roman and Migration Periods", *Offa*, Band 39, Neumünster 1982.
112. J. Engström, "Torsburgen. Tolkning av en gotländsk fornborg." *Aun* (=Archaeological Studies, Uppsala University. Institute of North European Archaeology) 6, Uppsala 1984; Näsman 1988, p. 236—37. The hypothesis of wars is strengthened by what we know of the previous period: the agricultural expansion of the Germanic tribes had been accompanied by trading and raiding expeditions. See L. Hedeager, "Empire, Frontier and the Barbarian Hinterland: Rome and Northern Europe from AD 1—400", *Centre and Periphery in the Ancient World*, eds. M. Rowlands, M. Larsen and K. Kristiansen, Cambridge 1987. When the import of prestige goods from the

Roman empire ceased, increased warfare as well as participation in the wars in the south might have compensated for the loss of prestige goods through trade.

113. A. Johansen, "Forholdet mellom folkevandringstid og merovingertid i Norden", *Viking. Tidskrift for norrøn arkeologi.*, Bind 36, Oslo 1972; Näsman 1988, p. 232—36.
114. L.J. Bruce-Chwatt and J. de Zulueta, *The Rise and Fall of Malaria in Europe. A Historico-Epidemiological Study.*, Oxford 1980, p. 22—23, 90.
115. Y.-M. Bercé, "Influence de la malaria sur l'histoire événementielle du Latium (XVI^{e}—XIX^{e} siècles)", *Maladies* 1989. See also E. Bengtsson, "Malaria och andra parasitoser", *Epidemiernas historia och framtid*, ed. B. Evengård, Värnamo 1992, p. 208 (on the epidemic in twentieth-century Poland following the large-scale slaughter of cattle, which made the mosquitoes attack human beings instead).
116. McNeill 1979 (1976), p. 124—25, 139, 141.
117. Benedictow 1992, p. 155—56.
118. Biraben 1975, Tome 1, p. 45.
119. Biraben 1975, Tome 1, p. 45; Hirst 1953, p. 12; McNeill 1979 (1976), p. 150.