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An Iron Age Shock Doctrine – Did the AD 536-7 event trigger large-scale social changes in the Mälaren valley area?

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ABSTRACT:
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In this article, a dataset of burial grounds is considered in relation to the question of a probable demographic crisis in the 6th century AD, as a consequence of the cosmic event in AD 536-7. Although indications of an extensive crisis can be seen in a wide range of sources, it is difficult to make any estimate of the extent of the crisis. Some hypothetical social consequences are, however, discussed and compared to the Black Death in the 14th century AD. For the 6th century crisis, a widespread upheaval and renegotiation of property rights for land that has been abandoned is suggested, together with a possible redefinition of the nature of property rights. After the crisis there seem to be increased possibilities for private ownership of land, which enables the acquisition of large landholdings among a limited number of people. This is related to an increasingly stratified social structure in the Late Iron Age, where an elite is thought to have been able to take advantage of the crisis for their own benefit. It is argued that this is reflected in the Late Iron Age/Vendel Period burial grounds and their locations, as these might have been used to manifest renewed property rights.

KEYWORDS: Landscape archaeology, GIS, Iron Age Scandinavia, Fimbulvinter, AD 536, burial grounds, topography, prehistoric property rights.

DANIEL LÖWENBORG[1]

An Iron Age Shock Doctrine – Did the AD 536-7 event trigger large-scale social changes in the Mälaren Valley area?

Consequences of a catastrophe

With crises often comes the possibility or necessity to reorganise society, and perhaps also to reorganise how economic resources are distributed. Some principles for how crises have been used for benefit in modern times are discussed in Naomi Klein's book *The Shock Doctrine: The Rise of Disaster Capitalism* (Klein 2007). In the 1950s there had been much interest in psychological theories of how people under stress could have their personalities eradicated and replaced using electroshocks. Klein argues that the use of similar mechanisms was explored by neoliberals with the aim of reforming whole societies. The ideology behind this was the neoliberal economic ideas developed by the Chicago School under Milton Friedman. According to these, deep economic depressions or politically inflicted crises such as military coups in South America could be used to introduce system changes that would be politically impossible otherwise.

> 'Only a crisis – actual or perceived – produces real change. When that crisis occurs, the actions that are taken depend on the ideas that are lying around' (Friedman 1962:ix).

The social unrest after the fall of the Soviet Union is a well known example of how such a crisis can result in some extremely rich people being able to benefit from the turbulence, while the masses face poverty. Gorbachev intended to gradually reform the Soviet Union with democratic means to become a social democracy of the Scandinavian model. However, the International Monetary

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Found and the G7 put pressure on the Soviet Union to introduce a radical economic shock therapy, or lose the much needed financial support (Klein 2007:219). As this would have been impossible to implement without violence, Russia was forced to "the Pinochet option", as Klein calls it, which was made possible by the takeover of power by Yeltsin. Encouraged by economic advisors trained in the Chicago economic theory, Yeltsin initiated an experiment in extreme capitalism. One outcome of this was that previously state controlled assets, like Gazprom, were sold at a fraction of their value, and came under the control of a small group of extremely rich oligarchs, who in turn gained influence over politics.

In addition, natural disasters like the South Asian tsunami in 2004 and the Katrina hurricane in New Orleans in 2005 could provide the shock needed for unpopular political reforms. Apart from being a deep tragedy, Katrina was also seen as "an opportunity" that was used for pro-freemarket ideas in order to create an economic competitiveness zone. One demand was to give parents vouchers to use at charter schools (Klein 2007:410). Similarly, the fishermen in Sri Lanka were stopped from rebuilding their homes by buffer zones that were instituted in order to privatise the beaches for the tourist industry after the tsunami. Friedman builds on the work of Adam Smith in *The Wealth of Nations*. Since it is today no longer possible to find "savage and barbarian nations" without Western law to exploit, the earlier lawlessness should be recreated by abolishing existing laws and regulations (ibid:241).

One of the major catastrophes in historical times was the Black Death, and the consequences of that widespread and disastrous plague have often been used as an example to understand a possible crisis in the 6th century. The Black Death reached Europe in AD 1347 and spread quickly, especially in the densely populated medieval towns. Several different analyses have been carried out in order to estimate how large a part of the population that was lost in the epidemic. There would have been much regional variation in the death toll, but it is clear that a considerable part of the population died; figures around 50 % are often mentioned (Christakos et al., 2005; Myrdal 2003:245). Much has been written about the social and economic consequences of the Black Death (e.g. Benedictow 1992; Horrox 1994). Most importantly for this development is the decline in population that resulted in a shortage of labour and unattended land, especially in less fertile areas in the periphery. How this should be understood in relation to the agrarian crisis of the 14th century is still debated (Lindkvist & Ågren 1985:46). In many cases, it can be seen that the crisis was already under way when the Black Death struck, with desertion of land and a fall in prices of land in some parts of Europe, while the plague itself would have been the main cause of the widespread decline in population and economy in other areas (Sandnes 1981:238; Myrdal 2003:13).

The cause and the long-term consequences of the crisis are complex, but some aspects of the development seem to be agreed upon. The peasants could strengthen their position in the late 14th century and there was a general tendency for wages to be increased, something that was countered by regulations in order to keep wages down. In England this resulted in the

Statute of Labourers (1351), which declared that wages should be at the same level as in 1346, and that refusing employment should be punishable with imprisonment (Horrox 1994:312). This situation led to some noblemen finding themselves in financial difficulties. At the same time, others were able to profit from the economic decline through gathering great holdings of land as the prices diminished. The late 14th through the 15th century saw the emergence of extremely wealthy men like Bo Jonsson (Grip) and the Sture and Trolle families in Sweden (Harrison 2000:141). Standards of living and real incomes seem to have increased considerably, especially for peasants, while interest rates sank considerably over an extended period of time (Haddock & Kiesling 2002:585).

An attempt to use economic models to understand these developments in the wake of the population decline has stressed the importance of economic property rights theory. Other models for understanding how the changing conditions for production were handled, such as through different changes in land use, failed to predict the economic effects that could be observed in the historical records.

> 'On account of the disaster's very magnitude, the Black Death would predictably have caused a substantial and diverse upheaval in medieval property rights' (Haddock & Kiesling 2002:554).

As much fertile land became available and reverted to open access use, or was used much more extensively, there would have been less motivation to invest in the costs associated with maintaining claims of property rights (ibid:573). However, human resources, as labour, would have become more important and valued. In order to maintain efficiency, production was shifted from labour intensive use to land intensive production such as animal husbandry (Salvesen 1979:176; Poos 1991:9; Lindkvist & Ågren 1985:46).

The extent to which the fall in labour force was met by technological innovations to increase production is debated (Herlihy 1997; Cohn 1997; Myrdal 1988:203). To some degree, however, it seems that production loss was compensated through a shift in property rights and regulations. In order to increase motivation for production, serfs could be allowed improved conditions and rights to the land and some of the surplus of their work. Thus, depending on different social and regional preconditions, peasants and serfs, as well as the nobility in some parts of Europe, would sometimes have been able to benefit from the developments after the Black Death.

Background

One of the main problems that have occupied Scandinavian archaeologists during the 20th century is what happened around the middle of the first millennium AD. There are indications of a dramatic and perhaps sudden societal, economical, ecological as well as demographic downturn, or at least extensive change. This shift has caused Swedish archaeologists to make a distinction between the Early and the Late Iron Age at this time. The turning point is usually set at year AD 550,

although there has been some difference in opinion as to whether to include the Migration Period (AD 400 to 550) in the Late Iron Age or not (Stenberger 1964; Ambrosiani 1964:226; Herschend 2009a).

RESEARCH ON 6TH CENTURY CHANGES IN BRIEF

The question of the cultural, ecological, economic and societal change has long been debated as the "Migration Period crisis" (see Näsman & Lund 1988).[2] A considerable body of archaeological research has focused on related questions, and the cause was early assumed to be some kind of disaster or war that caused a population decline and abandoned settlements. There exist a large number of abandoned settlements, visible in the landscape as stonelaid foundation of houses on Öland and Gotland, some of which seemed to have been burnt down. In combination with contemporary hill forts and the deposition of several hoards of gold, these were seen as indications of war and conflicts around the end of the 5th century or early 6th century (Stenberger 1933; 1955).

The question of abandonment has also been discussed in relation to different locations on the Swedish mainland. In Östergötland and Västergötland, archaeological remains and environmental data have been combined to suggest a decline in the 5th century, followed by a recolonisation and shift in burial practice (Lindquist 1968:155-156; 1975:154). Some of the most distinct evidence of a crisis in the middle of the first millennium AD can be found in Hälsingland. Around AD 500 there is a drastic decline in pollen of cereals and other vegetation that indicate human activity, and in the 6th century many settlements seem to have been completely abandoned, only to start expanding again in the late Viking Age (Liedgren 1992:212; Brink 1994:156). To some extent, the changes noted around these times do not have to be seen as confined only to Scandinavia, but could be seen as part of a wave of change in settlement location and burial customs throughout much of Europe (Hamerow 2002:124). The turbulence of the period has often been understood in association to the turmoil after the downfall of the Roman Empire.

The relict remains of houses and dry stone enclosures of Öland and Gotland has continued to be central to the discussion of a possible crisis, but later research has often toned down the extent of the crisis. A large number of the settlements that were abandoned have been interpreted as having had direct continuing use nearby, in locations that would stay in use into medieval times and beyond (Carlsson 1979:163). The settlements have been analysed in relation to land use and the landscape, indicating continuity of use, and have raised questions of the representativity of the material (Carlsson 1988:40). Recently, the type of houses with stone foundations has been dated up until AD 700. The changes are not seen as an indication of a decline in population or number of settlements, and instead there would have been much continuity from the Roman Iron Age until medieval

[2] See also Ulf Näsman's extensive and updated discussion on research on the Migration Period crises in the reviewer comments in the *Editorial log* of the journal, for which I am most grateful.

times. A change in the rules of inheritance around AD 400-500 could instead be the reason for changes in burial customs, also resulting in fewer identifiable graves (Fallgren 2006:185-6). The extent of the decline has also been questioned for Östergötland. Even if a certain decline is evident, it is interpreted as the result of changes in social and agricultural organisation in combination with a break in place continuity and the formation of hamlets (Swe: *byar*) (Widgren 1983:118-119).

Changes have been seen in a wide range of archaeological materials, but the explanations offered have varied with time. Early theories saw indications of a profound crisis caused by war, possibly in combination with plague or climatic change (Gräslund 1973; Flink 1986). This has later been replaced by theories that focus more on a shift in agricultural methods, land rights aggregated to large farms and a gradual and deliberate change that tones down the catastrophic elements and sees man as in control (Pedersen & Widgren 1998:309; Myhre 2002:170). This reflects a wish to avoid monocausal explanations in favour of more complex descriptions of events that stress a diverse social development (Näsman 1988:11).

THE *FIMBULVINTER*

Bo Gräslund has in a recent article again argued for a dramatic event as an explanation for the changes. He puts forward a dramatic climatic catastrophe in AD 536-537, that probably is remembered as the *Fimbulvinter*, "the notorious long winter" (Swe: *den beryktade långvintern*) (Gräslund 2007:118) to be recorded centuries later in Old Norse literature. These sources seem to describe a situation where the sun is blocked over a long period of time, causing a winter-like climate during two summers in a row. This would have caused crop failures and much distress, foretelling the end of the world, and some sources indicate that many would have died, by mentioning those who survived the disaster. Accounts of the same event can be seen in classical written sources from Europe, the Middle East and China. The interpretation is that these all describe a, probably volcanic, cloud that blocked the sun for around 18 months. This well documented event can be seen in extremely low growth in three rings over most of the northern hemisphere for a period of ten years, as well as in a layer of sulphate in ice cores. Gräslund suggests that this led to a climatic crisis that caused severe famine and probably a demographic decline, possibly in combination with the Justinian plague that followed shortly afterwards. In his conclusions, Gräslund also argues for a connection between the population decline and an increasing social stratification that can be seen in Scandinavian archaeological material from the following period. The effect might have been that abandoned land has fallen into the hands of an elite that could then strengthen its position (ibid:114). The extensive deposition of treasures around the middle of the first millennium AD has also been suggested to represent a reaction to the cosmic event of AD 536 (Axboe 2001).

In this paper I will follow up on some of the conclusions of Gräslund, and examine the social development suggested from a landscape perspective, focusing on a set of dated burial grounds from the district of Västmanland, east central Sweden, and the Mälaren Valley in general. The aim is to suggest a few possible mechanisms that might explain the development and how this might be reflected

in the archaeological record. If the hypothesis by Gräslund of a major population crisis in the 6th century is correct, then that will of course have an enormous impact on how the development should be understood. This is especially so at the agricultural fringe of Europe, which the Iron Age Scandinavia might represent. One question that arises from this is how the development of property rights to land would have changed as a consequence of a catastrophe of this magnitude.

IRON AGE PROPERTY RIGHTS

Property rights should foremost be understood as regulating relations between people in terms of access to and exclusion from land (Widgren 1995). These could take many different forms and it is important to avoid applying a modern concept of property rights to prehistoric conditions. Combining a wide variety of sources, some outlines might be suggested, however. There is today a general trend towards giving more emphasis to individual rights to land after the middle of the first millennium. This can be seen from Iron Age place-names, where Early Iron Age place-names, such as *–inge* and *–hem* seems to refer to the territory of a people, although

> 'not something punctual in the landscape, but [with] some spatial extension where some identified people lived' (Brink 2008:94).

In the Late Iron Age, on the other hand,

> 'we find place names with individuals as qualifiers and place name elements pointing to sites and punctual references in the landscape, for example to a specific arable land, to farms and to houses, which likely reflects a change in land use and ownership of land' (ibid: 94-95).

A similar development has also been suggested from the archaeological material. The most fundamental precondition for land rights would have been the past and present use of land. It would normally have been possible to claim rights to the patch of land that a farmer or a group of farmers were able to maintain for agricultural use. Land that had been used but was temporarily in fallow or unattended might have belonged to a larger group of farmers with collective rights. This would have been based on some kind of flexible kinship where members could be included through marriage, adoption or other rites that would manifest the inclusion into the group that had rights to the land (Widgren 1995:10). During the centuries around the middle of the first millennium, there seems to have been increased possibilities of individual rights to land. This could be exemplified by the parcels in South West Sweden. The distinctive division of land into easily managed units suggests more institutionalised rights to land compared to a previous extensive system without permanent markers (Mascher 1995:51). Strict land divisions would have increase the possibilities for shifting rights to a certain piece of land between individuals, making it increasingly possible to aggregate large landholdings. The new relation to land ownership is also reflected in the Early Iron Age shared infields and pastures that were joined by stonewall systems. These underwent radical restructuring as

> '[l]ands formerly knit together by cattle paths and pastured in commonty were […] divided' (Widgren 1983:116)

creating separate hamlets (Swe: *byar*) in the period AD 400 to 700.

The new abstract notion of land rights meant that it would have been possible to own land without living next to it (Herschend 2009a:257-71). In southern Scandinavia a process started in the 3rd to 4th centuries AD that shifted the focus of land rights away from the house and the household in a balanced landscape based on subsistence. Replacing this was a pattern with a

> '"headed" asymmetry, consisting of a dominant farm and, at least in Jutland, planned rows of dependant farms.' (ibid:226)

Hence a "represented lordship" is introduced, that can be exemplified by famous high status sites such as Tissø and Valsgärde (ibid:227). The introduction of a social elite that based their wealth and influence on control of land is suggested.

From Old Norse literature and medieval provincial laws it can be understood that the status of people, the legal system and indeed the idea of the order of the world were much embedded in the relations to land. This is reflected in the concept of *odal* that is a property both of man, land and their relation that dictates how land can be owned. The *odal* is hereditary and connected to rights both as an individual and as part of a group as intertwined with the land and long use of that land (Gurevich 1985:45-47). Long tradition of use is referred to in the Norwegian medieval district laws *Frostatingslagen* and *Gulatingslagen* as having been in the family for four or six generations (Lindqvist 1979:142). Runic stones are often seen as having double meanings, both as commemorating relatives and as manifesting land claims with reference to this 'five generation rule' of relatives (Brink 2002:103-104). As such, the runic stones act as documents of inherited land, and can sometimes give examples of large holdings that incorporate several settlements in the Viking Age (Jansson 1977:97-100). Maintaining property rights in a time when literacy was not widespread in all social groups would have required some special measures. Sometimes it would have been possible to refer to the marks on the landscape from agriculture, as noted above, but it has also been suggested that burial monuments, especially mounds, could have acted as manifestations of property rights in the Iron Age (Zachrisson 1994). By being able to show the mounds of a number of ancestors, it would thus be possible to justify claims to an associated part of land. Thus, the burial mounds would be the physical manifestation of the *odal* and the claims to land would have been legitimised with reference to generations of managing the land.[3]

The importance of property rights and how land was protected from unrightful claim can be exemplified in a new interpretation of the *Forsaring* from Hälsingland (Herschend 2009b). This Viking Age iron ring is inscribed with runes and represents the earliest surviving law from Sweden. Herschend

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[3] Understanding burial grounds as the physical manifestation of the *odal* is not unproblematic and something of a theoretical archaeological relict, see the comments by Gräslund in the *Editorial log*. While the direct legal importance of burial markers might be disputed, their symbolical role in the landscape is something that makes them relevant for the discussion here. Also, refer to Gräslund's discussion of the interpretation of the concept of *odal* in relation to archaeology in general.

argues that it concerns legal actions in the case of illegitimate appropriation of property. Large fines are associated with such crimes, fines that are being determined with reference to traditions of old as the right of all free men. Some of the background might even refer to the situation around AD 600 when there were many deserted farms in Hälsingland, and a need to maintain order in times of social unrest (ibid:71-73).

Burial Grounds in Västmanland

A major aspect of the changes between the Early and the Late Iron Age is how burials were located in the landscape, as observed by Björn Ambrosiani in his classic study of the southern parts of Uppland (Ambrosiani 1964). While early sites often are located on higher ground in the landscape, Late Iron Age burial grounds are often in close association to the settlements that are interpreted as having remained in more or less the same place in Medieval times and later (ibid:191-195). A similar tendency can be seen in Västmanland in an analysis by the present author. All the burial grounds were assigned to a chronological period based on statistical comparisons with the sites that have been excavated, so that the landscape situations could be studied for the sites only known from survey (Löwenborg 2009; 2010). By analysing the soil and topography at each site in a GIS and comparing between periods, it was shown that there seem to have been differences in the material as a whole. Bronze Age and Early Iron Age sites are located on or close to moraine or eskers, and in general on somewhat higher ground. Late Iron Age sites, and perhaps especially Vendel Period sites, are on lower ground, and on or near clay, in much the same landscape context as a set of prehistoric settlements that was used for comparison.

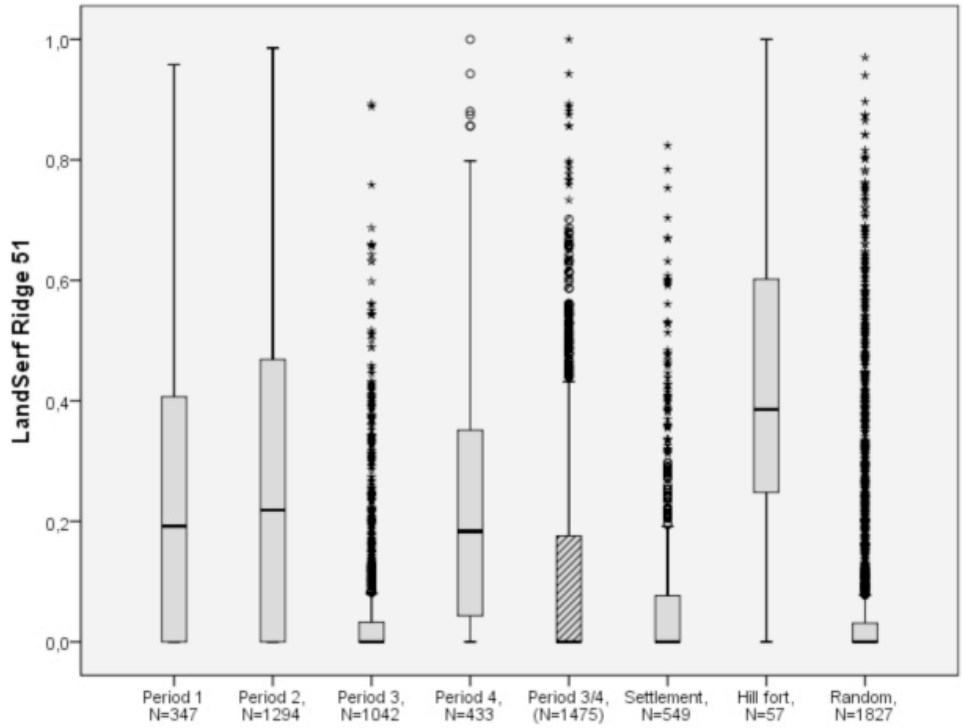

Fig. 1. Boxplot of ridge values, for different categories of sites. High values indicate locations on or near prominent ridges. The chronological classes used are 1: Bronze Age and Pre-Roman Iron Age, 2: Roman Iron Age and Migration Period, 3: Vendel Period, 4: Viking Age. Periods 3 and 4 are displayed both separately and combined in a class '3/4' to account for the questions on how the Late Iron Age sites should be understood. (Löwenborg 2010).

http://www.arkeologi.uu.se/digitalAssets/111/111790_jaah_lowenborg_fig1.pdf

These differences in the landscape context could be understood in terms of different usages of graves in relation to the settlement. Herschend has suggested such different localities to signify

> '(1) a reflexive identification between grave and settlement, because they mirror each other and constitute place, or (2) a border zone defined or enhanced by graves' (Herschend 2009a:117).

These are seen as balancing and complementary means of inscribing presence and history in the landscape, where the functions often would be overlapping.

Another important aspect of the collection of excavated sites from Västmanland is the information on continuity of use. It seems like that a clear majority of sites were abandoned around the middle of the first millennium, around the shift from the Migration Period to the Vendel Period. The exact date of abandonment is hardly ever known, since burial grounds rarely are fully excavated (Bennett 1987; Wikborg 2007:177). The chronological extent of the sites is illustrated by Figure 2, which is a generalised view of the continuity of the excavated burial grounds, including a few grouped single graves.

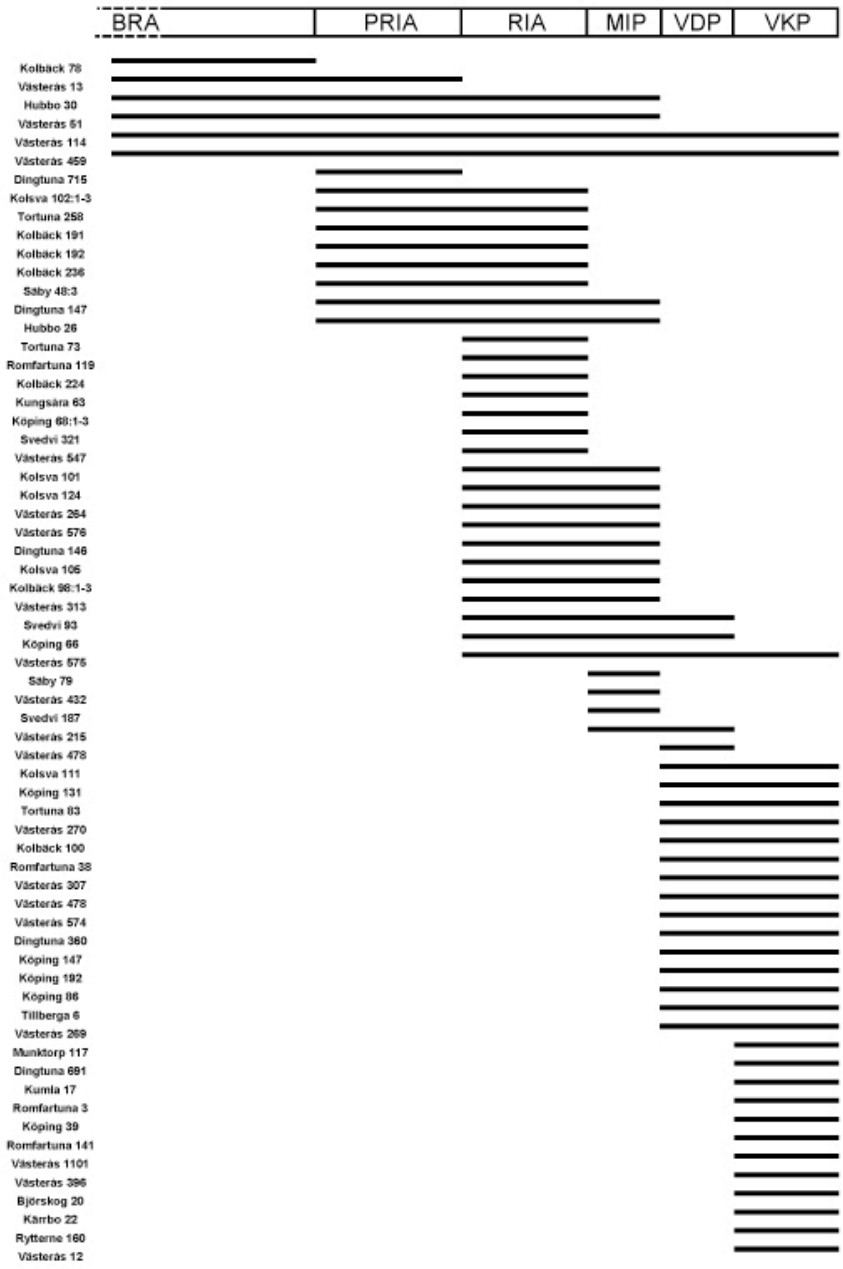

Fig. 2. Generalised chronological extension of use of the excavated burial grounds in Västmanland.

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As can be seen from Figure 2, there is a marked lack of continuity in the use of burial grounds from the Early Iron Age into the Late Iron Age, a situation that has been discussed in a detailed study of excavated burial grounds from Västmanland by Sjöö (1990). The discontinuation of the burial grounds seems to start between the Roman Iron Age and the Migration Period, and becomes even more pronounced between the Migration Period and the Vendel Period. Although several sites are in use for more than one period, there are few that are in use in both the Migration Period and the Vendel Period, suggesting that

burial grounds have generally been abandoned or moved to another location around the middle of the first millennium. The information in Figure 1 is generalised and schematic, as there are no exact dates available for most of the sites, and there is thus only an indication of the period which each site has been assigned. There are also problems with interpretation of sites with only a few graves that still have a long period indicated, such as belonging to the Early Iron Age, and which cannot be precisely dated. Figure 1 should thus only be seen as a general illustration of the continuity of the sites, and as such indicates a considerably lesser degree of continuity between Migration Period and Vendel Period sites. The ratio of sites continuing to the next period are: Bronze Age: 83 %, Pre Roman Iron Age: 86 %, Roman Iron Age: 57 %, Migration period 29 %, Vendel period: 82 %. Agneta Bennett/Lagerlöf summarized a large number of excavations in the Mälardalen valley between 1960 and 1980 and her summary showed less pronounced differences in continuity. In that material, 61 % of the sites from the Migration Period appear to continue into the Vendel Period, which is still less than the Early Iron Age sites, where continuity is over 80 % (Bennett 1987, figure 4). It might be relevant to ask whether some part of this discrepancy between studies could be explained by regional differences. There is also a difference in the ratio of mounds in general between the regions, where the 1475 mounds registered in FMIS for the district of Västmanland represent 7.5% of all the registered graves, compared to 9.4% for the district of Uppsala, 13.6% in the district of Stockholm and 16.1% in the district of Södermanland. There might be a range of different reasons behind these differences, both in burial customs and in chronological fluctuations in population.

Bennett also makes several important observations concerning the representativeness of the excavated material, given variations in the visibility of sites from different periods, and also concerning antiquarian decisions on which sites to preserve from exploitation and how these might introduce bias into the record of excavated sites. The main concern would be that sites from the Early Iron age, and very large burial grounds, would be underrepresented in the excavated material (Bennett 1987:145).

Burial practices underwent significant changes in many ways, including the treatment of the body, how the grave was constructed, the types of grave goods, etc. This is an extensive topic in its own right, but a recent contribution that can illustrate this change is given by Mejsholm (2009). From an analysis of to the extent to which children were buried at all, Mejsholm shows that there is a marked shift in practice between the Early and the Late Iron Ages, where children are generally missing in the latter case.

Mälardalen in the Late Iron Age, signs of crises…

The 6th century crisis has not been discussed for the Mälardalen area to the same extent as for other parts of Sweden. To some extent, the archaeological material gives a more ambiguous impression here, but since the material is

constantly increasing, an overview of some aspects of this would be in order. With more and more prehistoric settlements being excavated, this material will be an increasingly important material for quantified analyses of the development. Many settlements shifted location around the middle of the first millennium AD, with very few sites being continuously used into the Vendel period throughout Sweden. It is, however, often very difficult to give a definite date to when a settlement was abandoned, since that would have to include negative reasoning as very few sites are fully excavated (Göthberg 2000:120, 147-148). Patterns of extensive abandonment of settlements during the 5th to 7th century AD can be seen in Östergötland and especially in marginal areas such as the forested areas in southern Sweden and other parts of Scandinavia (Gren 2003:126; Petersson 2006:30). There are still often ideas of a general population growth throughout the Iron Age, based on early studies on the number of burial grounds (Ambrosiani 1964:190; Hyenstrand 1974). Recent studies, however, often stress that the population was as large or larger than the medieval one by the end of the Early Iron Age (Göthberg 1998:113).

Excavations for the new stretch of highway (E4) around Uppsala have been summarised by Jonas Wikborg. From this data there is no indication of a general abandonment of burial grounds during the Migration Period, but a considerable number of settlement locations were no longer in use after the middle of the first millennium (Wikborg 2007). A quick overview of the information in FMIS on dates of excavated settlements in Västmanland gives a similar impression; i.e. a dominance of Roman Iron Age and fewer Late Iron Age sites. The notably lower number of Late Iron Age settlements that are known from excavations is sometimes explained by suggesting that the sites chosen for Late Iron Age settlements were in continued use during the medieval period and onwards, and thus are hidden under present day occupations (Liedgren 1984:111; Frölund & Wilson 1993). Changes in building material and building traditions yielding houses that leave fewer remaining traces have also been suggested as explanations for the lack of Late Iron Age settlements on Gotland (Carlsson 1988:38). This makes it difficult to get a proper understanding of the nature and extent of Late Iron Age settlements. However, there are numerous examples of medieval settlements that have continuity back to the Early Iron Age, such as Säby, Valsta and others (Andresson & Hållans Stenholm 2006). The rural medieval settlement is also more spatially dynamic than previously assumed (Beronius Jörpeland 2010). The assumption that Late Iron Age settlements are to a greater extent hidden under medieval settlements can be questioned, and needs to be examined carefully in the future (Göthberg 1998:150; Bennett 1987:153; Herschend 2009a:112).

A decreasing population might be reflected in the intensity of cultivation and land use indicated by analyses of pollen accumulated in bogs or water. There is for example a drastic decline in cultivated species around the middle of the first millennium in pollen diagrams from Västmanland (Welinder 1974). The strength of Welinder's study lay in its use of cores from a number of sites in different landscape situations, which is of benefit for interpreting a general

overview of the development of the landscape. Since then, there have only been sporadic and limited studies of pollen in Västmanland (Zachrisson 2009:29-30). Although very inaccurate for later periods, the core from Fågelbacken gives a slight indication of lower levels of cultivated species for the later part of the Iron Age (Lindström 1997:157). Another core from Kräggesta, just to the north of Köping, however, does not suggest any break in continuity (Eriksson 2000).

Several recent extensive quaternary studies from Uppland provide rich data on the environment. A range of analyses was made from the sites excavated around Uppsala for the new stretch of the E4 highway. These gave mixed results, regarding both continuity and discontinuity of land use, as each core tended to reflect only its immediate environment. Taken together, however, and especially combined with the results of macro fossils, a rather strong tendency is suggested towards high agricultural activity during the Early Iron Age, and abandonment or significantly decreased agricultural activity on several sites after the shift to the Late Iron Age (Ranheden 2007:107, 112-115). Not all sites were affected by this decline, and some sites even seem to have expanded. There is a general trend of sites in the central parts of the region being used continuously throughout the period, while sites in more marginal areas have been abandoned in the Late Iron Age (Karlsson, Berntsson, Risberg 2009:167). The central areas also give the strongest indications of expansion in the Viking Age, whereas the marginal areas see expansion later, in the 12-13th century (ibid:170). At a national level, there seems to have been considerable regional variation, with a general trend towards more indications of decline in cultivation in the eastern part of Sweden than in the west. However, central Uppland and Ångermanland show indications of expansion (Pedersen & Widgren 1998:310-311). A similar decline has been suggested based on the evidence of a large collection of pollen analysis from much of central Europe and Scandinavia, with "the retreat of agriculture, including pasturing as well as cultivation of crops, leading to reforestation in large areas" around the middle of the first millennium AD (Berglund 2003:9).

Thomas Eriksson has applied a method of combining a large set of 14^{C} samples from archaeological investigations from Uppland and Västmanland (Eriksson 2009). Together these give a chronological curve that is interpreted as a measure of the bulk of human activity over time. From this Eriksson can correlate shifts in material culture, primary in ceramics, to climate change and social development in the area in the Bronze Age and Early Iron Age. The curve displays a marked decline after AD 500, but since samples from Late Iron Age burials were not fully included in the dataset, it would not be possible to interpret these results in relation to the *Fimbulvinter*. However, the convincing results of this method for earlier periods suggest that this might be a very rewarding way to address long-term social and demographic change in further research. Sometimes it might be better to collect samples from specific contexts like post holes or hearths to gain greater control over what is compared (Herschend 2009a:21-27). There will always be questions of how differences in

house construction or extensive use of hearths might distort the picture, but a large number of samples would provide some statistical reliability.

… and prosperity?

The characterisation of the Early Vendel Period as a time of crisis does not seem to fit the notion of the Late Iron Age in general as a time of great prosperity, usually presented as dominated by powerful aristocratic families. In an analysis of all the material that indicates the presence of a Late Iron Age elite throughout the landscape around Gamla Uppsala by John Ljungkvist, it is evident that there is an overwhelming large amount of indication of this class. Ljungkvist concludes that a

> 'minority of the Late Iron Age population owned a large or very large part of the land' (Ljungkvist 2006:182, my translation).

The elite in the society thus based much of their status on owning land, land that was managed as a complex of a number of farms controlled from a central manor, through some kind of patron client relationships. The economy was complemented by incomes from trade, raiding and external tributes.

A similar situation of a small number of powerful landowners with large property domains can be found in many parts of Scandinavia during the Late Iron Age. For Småland, the existence of extensive, powerful estates has been suggested. These would have had a work force of more or less enslaved labour in the form of thralls and serfs, and would have continued to exist well into medieval times (Tollin 1999). In Norway there was a concentration of the most powerful centres to a small number of chieftains' sites after AD 550, where agriculture and estates were the primary source of wealth (Myhre 2002:202-213). These were controlled by magnates who based their authority on military power and in the Late Iron Age also increasingly as leaders of the religious cult, seeing themselves as decedents of the gods (Skre 1998). Often these kinds of powerful institutions were the central nodes in a complex that formed the core of districts, and thus could control considerable territories. Although sometimes with roots down through history, it seems to have been especially during the Vendel and Viking Periods that these power complexes were formed (Brink 1998:321).

A main tendency in the tradition of external burial customs during the Late Iron Age is that graves were very manifest in the landscape, in which the visual expression was important (Herschend 2009a; Zachrisson 1994). This is in contrast to some of the rich Early Iron Age burials, the chamber-graves, which were expensively furnished. Externally, however, they were less prominent, at least when compared to the great mounds of the Late Iron Age. During the Late Iron Age it seems to have been much more important to ensure that burials were visible in the landscape, as mounds became the dominating form. That might reflect the fact that the function of the burial as a mark of property rights seems to have gained importance, due to the need of stating presence in the landscape. The introduction of building very large

mounds in the Mälardalen area is a special instance of this tradition. Although great mounds have previously been constructed in the northern parts of Sweden during the Early Iron Age, it was not until the second half of the 6th century or early 7th century that the kings' mounds were built in Gamla Uppsala, marking the start of the Iron Age tradition of great mounds in the Mälardalen area (Ljungqvist 2008:275; Bratt 2008). In the Late Iron Age there are extensive indications of a strong aristocratic upper class, especially in Uppland and Södermanland, which is reflected in the distribution of runic stones and great mounds, which are much more frequent than in Västmanland (Bratt 2008:figure 4).

Discussion – Aftermath and recovery

The case of the Black Death illustrates that one of the most important factors in the social development after the population decline was the availability of land and the lack of human resources to cultivate that land. A sudden abundance of land readily available for cultivation together with a shortage of labour might have stimulated extensive production such as animal husbandry, as was the case after the Black Death (Salvesen 1979; Linkvist & Ågren 1985:46). Whether this was also the case in Late Iron Age Sweden is difficult to say. As noted, there are indications of expanded agricultural activity in some locations in Uppland from pollen analysis. In at least some of these sites there are indications of extensive use of land as pastures in the Late Iron Age, as in Hällenmossen (Ranheden 2007:106) and Långsjön (Almgren, Hennius and Åberg 2007:458). If the expansion, or lack of decline, in some cases could be a result of increased animal husbandry, then this would be very interesting. This is a question that will be worth considering as the number of analysed pollen cores increases, allowing a higher chronological and spatial resolution of the interpretations. Determination of what level of change in human activity would be necessary to give the imprints in vegetation data is, however, not straightforward. There are presently no indications of a decline in the environmental record for the medieval agrarian crisis of the 14th century, which is otherwise well documented. This could be because the period is relatively short, and perhaps not studied in detail so far (ibid:455; Karlsson, Berntsson, Risberg 2009:171). A pollen analysis from Vikhus in Västmanland has been carried out with some precision for medieval times, but it does not show any indications of a decline in relation to the agrarian crisis (Karlsson 2002). In the Vendel Period, there was a decrease in cultivation, after which grazing was the dominant land use in the Gamla Uppsala area, as seen in a palaeoentomological analysis from Myrby träsk (Hellqvist 1999:7, 27). However, comparing the effects between the Black Death and the *Fimbulvinter*/Justinian plague would be problematic in several ways. For agriculture, a significant difference would be that the Black Death did not affect domestic animals, which would have left a surplus of cattle available. A long period of starvation would of course have

had a major impact on the domesticated animal resources, and the length of time necessary to rebuild livestock might have been substantial.

Another method of maintaining productivity might have been to use technological innovations to increase efficiency, something that has been discussed in relation to the Black Death. The increased use of iron and the introduction of improved agricultural technology like the longer scythe and ferrules in the Late Iron Age might be an example of this (Hyenstrand 1974; Myrdal 1988; 2002:247; Myhre 2002:197). This would have meant increased efficiency at the price of higher costs of investments in iron, as a way of dealing with the scarcity of human labour. Increasing capital might also be seen in the production of brooches and other jewellery, which became standardised and of both high quality and quantity, indicating large-scale production, which would also have required extensive investments. A generally increasing wealth and innovations in metallurgy would in part also explain this development, but it is evident that there was much capital available for investment during the Late Iron Age.

An interesting aspect of this is the idea that an effective means of increasing productivity was to replace slaves as labour, replacing them with serfs. Slaves were probably an important economic factor (Lindkvist & Mydal 2003; Pedersen & Widgren 1998), but would require strict management and control, and have little own motivation to increase revenue. This would have been an important factor for the process of increasing freedom and rights for serfs after the Black Death. Might it be possible to imagine a similar development in the distribution of land after the *Fimbulvinter*? Late Iron Age central-place complexes with place-names that indicate some kind of dependency relationship appear in this period (Brink 1999). Place-names including warrior elements such as *Rink*, *Karl*, *Tegn* and so on, often appear in small clusters together with other elements that indicate the presence of a chieftain and suggest some kind of vassal relationship. These warriors would not have been thralls or serfs that had been freed, but suggests some kind of superior control of land, which could have been extended to people in return for being part of a lord's armed men, a *lid*. A prerequisite would have been that there were members of the elite who controlled very large landholdings that they could extend in return for services. Parallel to this, unfree labour would have been an important economic factor for working the land, but at the same time, putting serfs to tend their own pieces of land might have been an effective way of maintaining productivity and increasing income through rent. This system was to be perfected in the medieval period, when serfs were of major importance for producing surpluses (Linkvist & Ågren 1985:128; Lindqvist 1979).

Conclusions - Relocated graves and relocated property rights?

Gräslund (2007) outlines some of the major trends in social development that might be linked to a population crisis after the *Fimbulvinter*, possibly in combination with the Justinian plague. The preceding period, the Migration Period (AD 375-550), seems to have been a time when Scandinavian society was flourishing. In the following Vendel Period, the opposite is true, and there are extensive indications of settlements being abandoned, with the remaining settlements concentrated to the best land. At the same time, there is an increased stratification of society, with emergence of powerful elites. Gräslund suggests that

> 'a significant depopulation caused by the climatic catastrophe in 536-545 contributed to a large number of farms and perhaps whole hamlets being abandoned, land that remaining protoaristocratic families took over with reference to relationships or by force. In this manner, the environmental disaster might also have contributed to the general economic concentration of power to a land-owning upper class that characterises the end of the Iron Age and the Early Middle Ages' (ibid:114, my translation).

The formation of a system of royal manors, the *Uppsala Öd*, and the great mounds in the Mälaren Valley might also be expressions of this.

Much of the development towards a more stratified society can be seen in parts of Scandinavia as early as the Roman Iron Age, but this development would have been accentuated by the crisis that disrupted the regular order of society as the population was shocked and traumatised by the crisis. The Early Iron Age "kleptocracy" had based their status on contacts with the Roman Empire, both in trade and as being part of the Roman army (Fischer 2005). After the fall of the Roman Empire, they lost much of the network needed to maintain their status, and turned their interest to land instead (ibid:231). The elite would thus have benefitted from the crisis that was used as a catalyst for social stratification and increased their landholding and power. One aspect of the renegotiation of property rights is that from that time onwards, land was associated more with the individual or family, in a private manner that would probably have been more difficult to accomplish during the Early Iron Age. As private ownership of land might be seen as a necessity for a developed hierarchical society (Linkvist & Ågren 1985:8), this would be crucial for understanding the Late Iron Age in Scandinavia. This development would have involved a different course of events in different regions. The effect of the climatic catastrophe would have had most extensive effects in marginal areas, where conditions for agriculture were difficult and disturbances could have considerable consequences if ecological thresholds were passed. Different systems of subsistence would also have varied the impact of the *Fimbulvinter*.

Property rights, embedded in the concept of *odal*, were closely linked to family and to keeping land within the custody of the family. It would thus have been no easy task to reassign land to new owners, especially since there would have been limited formal means of transferring properties. For someone who

wished to claim abandoned land, it would thus have been necessary to reinvent the *odal* for that location. This would have been achieved by different means, sometimes perhaps manifested by erecting new burials in connection to the land claimed, either on existing burial grounds or on new sites nearby. This might explain the general break in continuity of the burial grounds around the middle of the first millennium in Västmanland, as seen in figure 2. A wish to distinguish the new burials might also explain some of the differences seen in burial customs around this time. It has been suggested that the new graves to some extent were deliberately constructed and situated in different ways to separate them from older graves. Hence, mounds become increasingly usual, and burial grounds were situated closer to the land that was claimed, so that the landscape situation came more to resemble that of settlements (Ambrosiani 1964; Göthberg 2000:157; Löwenborg 2010). This might be a reflection of how graves were used for creating new bonds to land that had been abandoned.

The principles for confiscation of land from a previous owner are probably best illustrated by the cases of graves that have been constructed directly above recently abandoned houses (Renk 2008). Houses had either been torn down or burnt down, and shortly afterwards one or more graves had been placed on top of it, or close to the house, in what was probably a deliberate expression of renewed property rights.

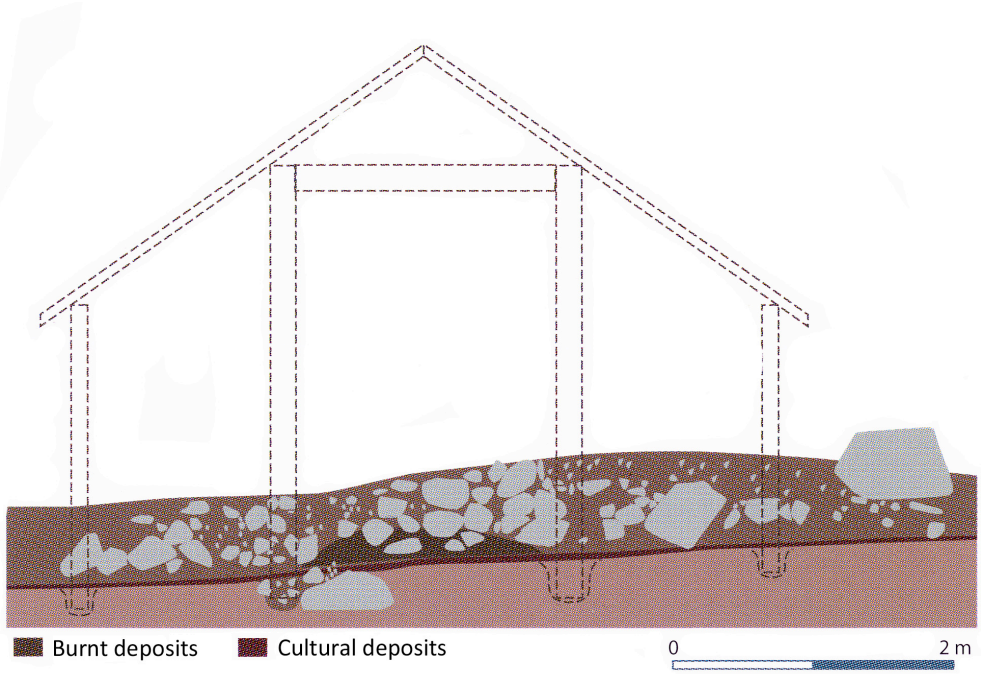

Fig. 3. Illustration of a case with a burnt down house being covered by a grave shortly after. After Renk 2008:fig. 2.

http://www.arkeologi.uu.se/digitalAssets/111/111794_jaah_lowenborg_fig3.pdf

This practise was not uncommon in the southern parts of Uppland, especially during the early Vendel Period, with a second phase in the Viking Age. In the second phase, however, the houses had been abandoned for some time, since

the second half of the 6th century or early 7th century (ibid:93). The graves built on houses are of high status character, often with weapons, indicating a warrior class. Renk interprets the phenomenon in terms of high-status families being able to claim the land of others more or less by force, with reference to ritual practices and an ideology of lordship. This would have allowed land to be claimed, manifested by erecting graves on houses, as a way of creating history (ibid:102). The same general principle for claiming land could also have been applied if the original houses had been abandoned during the 6th century crisis. And as Renk notes, this practise could well have been more common than is known today, with 19 cases from the Vendel Period and 12 cases from the Viking Age, since excavation methodology has developed from an earlier practise of only excavating the visible parts of a grave (ibid:92, 101).

Late Iron Age mounds often also partly cover earlier graves, a phenomenon which seems to indicate a wish to relate to history and ancestors and to stress the importance of genealogies. This is seen as a "ritualized way of constructing memory" (Hållands Stenholm 2006:341), that probably had some ideological parallels in the custom of erecting graves on houses. However, graves were being constructed on older graves to some extent already in the Migration Period, and during the Viking Age graves could be placed on other graves from earlier parts of the Late Iron Age; thus, this represents a similar mode of behaviour rather than the same function as the graves on houses. Creating and manifesting ancestral history might also be reflected in elite burials during the Late Iron Age, where the diversified burial practises often seem to suggest a composed funerary narrative of the deceased (Price 2008:156-161).

The Late Iron Age great mounds are quite extraordinary seen in relation to the *Fimbulvinter*. The monumental mounds can be understood as a response to an acute necessity to manifest power and control over land and people in the new situation when society is rebuilt after the catastrophe. It can be noted that destroying fertile land for the mounds would have been less problematic in a situation when there was less pressure on land resources owing to the population loss. Building a mound could thus be an extremely explicit way of "claiming the land" by literary taking it in. Interestingly, the great mound of Anundshög, outside Västerås, which probably is one of the largest mounds in Sweden, is situated on top of an Early Iron Age settlement (Bratt 1999).

There seem to be some differences regarding the extent to which burial grounds have discontinued use in the Mälardalen region. In what might be categorised as more central areas in Uppland and Södermanland, there seems to be less discontinuity than is suggested from the material in Västmanland. The rich material of runic stones and the concentration of place-names indicate the presence of social and military leaders with the eastern part of the Mälaren Valley (Brink 1999:425). There thus seem to have been a concentration of power in these areas in the Late Iron Age. The evidence of a number of pollen analyses suggests that the landscape had not been abandoned to any great extent in the central areas, and highlights that there would have been considerable regional variation in this development. On the other hand, finds

of weapons and horse equipment from 10th century graves seem to be well represented in Västmanland (Simonsson 1969). Weapons in graves do not by themselves indicate membership of social elites (Ljungkvist 2006), but could well be understood in terms of a warrior class associated with the elite (Bratt 2008). There are indeed several sites that indicate the presence of an elite in Västmanland too, with fortified settlements, great mounds, exclusive objects and specialised craft. An interesting site is the Migration Period site in Bäckby, with highly specialised craft, interpreted as a branch from the production centre on Helgö in the eastern part of the Mälaren Valley, although used during a very short period in the beginning of the 6th century (Magnus 2008). Could it be that Bäckby was abandoned as a result of the *Fimbulvinter*? In general, however, Uppland and Södermanland give an impression of a more pronounced Late Iron Age elite than does Västmanland.

It is important to acknowledge that numbers of visible graves cannot be used to calculate population dimensions (Edgren & Herschend 1982; Herschend 2009a). The reasons for constructing graves would have been many and diverse, but the wish to manifest the social role of the family and claims to land would have been important. It would thus not be necessary to suppose an increase of visible graves as a consequence of a dramatic population crisis. More importantly, a large number of graves in the centuries following the crisis would not necessarily mean that the population remained at similar numbers. Instead, it would be possible to expect an increasing number of graves as property rights were renegotiated and some land was claimed by new owners, who needed to put their mark on the land by constructing graves.

The Black Death provides a good example of the way in which a society was transformed after an extensive population decline. It would not be an exact parallel development to the earlier situation, since cultural and social conditions would have differed, but can help to highlight some of the most important factors at play. The upheaval of property rights after the Black Death meant improved living standards, especially for peasants and craftsmen. After the 6th century crisis, it seems that it was the people who already were well off who managed to benefit most from the situation. One of several important differences between the crises of the 6th and the 14th century is that the Black Death struck more equally across class borders. Rich and poor were killed to more or less the same extent. During a period of failed crops and starvation on the other hand, people who had large reserves of supplies and the possibility of taking part in long distance trade would have had a considerably better chance of seeing the crisis through. This would have left the aristocracy in a good position to increase their power and dictate developments after the *Fimbulvinter*. Through making claims to land abandoned by dead peasants, or through shifts of rights to land in return for food products in a desperate fight against starvation, it would be possible to gather significant resources to the hands of a small number of people, the elite. The earlier social and legal obstacles that seem to have existed, which largely limited property rights to what could be cultivated by the owner, would easily have been set aside by a disastrous shock that left the population and society weak and disorganised.

Traditional limitations gaining access to land could temporarily have been circumvented to create a "window of opportunity" for those who survived.

The competition for labour in Western Europe after the Black Death was of benefit to the serfs, who could exploit the competition between feudal lords to keep rents down. To compensate for the loss in feudal rent a system of general taxation was introduced, which in time enabled the crown to keep standing armies, a factor that contributed significantly to the formation of early modern states (Lindegren 1998). In Eastern Europe, the competition was solved differently, by an agreement between feudal lords to oppose the mobility of the serfs and force them to remain by their land (ibid:11). The serf institution was thus strengthened instead, due to differences in agricultural and social organisation. In Eastern Europe there were less spatial mixing of land, and instead usually one lord for each village. This enabled greater control over land and people, compared to the competitive situation in Western Europe, where land was split up and spatially mixed. This increased peasant mobility, and kept rents down since peasants could go to the lord who offered the best contract. Even if the plague seems to have struck Eastern Europe less harshly, perhaps due to a lesser degree of urbanisation, this illustrates how the same cause could have different effects due to differences in social systems, with different social categories being able to benefit from the situation.

A similar competition for labour would be predictable after the 6th century crisis. This could explain the regional differences in repopulation that might be indicated in the environmental data and in the use of the burial grounds in the Mälaren Valley. Perhaps the possibility handing out good land in return for military services, which is reflected in place-names such as Karlaby, Rinkeby and Tegnaby, should be understood in terms of this restructuring of property rights and recolonisation. Another consequence that would be expected is an increasing use of slaves and thralls, who would be needed in order to maintain the productivity of the land gathered in large domains by lords. Although it is clear that unfree labour was important during much of the Iron Age, it would be very difficult to make reliable estimates of any quantitative differences between periods (Lindkvist & Myrdal 2003). Sometimes it might even have been the case that people voluntarily or due to debts became thralls (Iversen 1994:185; Brink 2003).

The Black Death was an enormous catastrophe in the 14th century, as many eyewitness accounts show, but despite all the records available that document the event it is still difficult to describe and it is hard to fully depict the effects of the plague and the rate of population decline (Siraisi 1982:10). Estimates of the extent of mortality are heavily dependent upon written accounts and records, but can still only be taken very generally and with much reservation (Christakos et al., 2005). It is no surprise then that the effect of a crisis in the 6th century should be even more difficult to grasp, especially in a region like central Sweden that is almost entirely lacking contemporary written sources. Even though the possibility of a crisis has been debated back and forth by archaeologists, reading the archaeological record in different ways, there has often been a reluctance to explain the changes seen as the result of external

factors. Instead, there has been a preference for seeing man as in control, and in charge of the course of history. Theories that involve a disaster as part of an explanation might be seen as simplifications, something that also has influenced some of the scholarship on the Black Death (Bean 1982:23). What has been missing for the 6th century catastrophe is something that gives a reasonable explanation for an extensive population decline. A smoking gun is now presented, in the shape of the AD 536 event, as discussed by Bo Gräslund (2007).

It can also be noted that the name of the time following the cataclysm, the Vendel Period, as well as the name Merovingian Period used in Scandinavia outside Sweden, has connotations of wealth and exclusive artefacts associated with a social elite. This might make it difficult to think of the society as one that had been torn apart by starvation and a possible plague, and the social unrest that would have followed. However, if we recognise that a large population is not a prerequisite for material wealth or, especially in Iron Age Scandinavia, a large number of graves, then we might come to see the material in a new light, encouraging other interpretations.

References

Almgren, E., Hennius, A., and Åberg, K. 2007. Bygd för bönder, land för stormän. In: Hjärtner-Holdar, E., Ranheden, H. and Seiler A. (Eds.) *Land och samhälle I förändring. Uppländska bygder i ett långtidsperspektiv*. Arkeologi E4 Uppland – studier, IV. SAU. Pp 429-463.

Ambrosiani, B., 1964. *Fornlämningar och bebyggelse: studier i Attundalands och Södertörns förhistoria.* Uppsala.

Andersson, C. and Hållans Stenholm, A-M. 2006. *Nabor i Norrsunda – bytomterna Valsta och Säby vid sjön Fysingen. Arlandabanan.* UV Mitt, Rapport 2006:25. Arkeologiska undersökningar, Riksantikvarieämbetet.

Axboe, M. 2001. Året 536. *Skalk* 1,4. Pp 28–32.

Bean, J. M. W. 1982. The Black Death: The Crisis and its Social and Economic Consequences. In: William, D. (Ed.) *The Black Death. The Impact of the Fourteenth-Century Plage. Papers of the Eleventh Annual Conference of the Centre for Medieval & Early Renaissance Studies.* 23–38. Medieval & Renaissance text & studies, 13. Binghamton.

Benedictow, O., J. 1992. *Plague in the Late Medieval Nordic Countries. Epidemiological Studies.* Middelalderforlaget, Oslo.

Bennett, A. 1987. Mälarområdets järnåldersgravfält. In T. Andræ, M. Hasselmo and K. Lamm (ed.) *7000 år på 20 år. Arkeologiska undersökningar i Mellansverige*: 143-64. Stockholm: Riksantikvarieämbetet.

Berglund B. E., 2003. Human impact and climate changes – synchronous events and a casual link? *Quaternary International* 105:1, 2003. Pp 7–12.

Beronius Jörpeland, L. 2010. *Medeltida landsbygdsbebyggelse i Stockholms län*. UV Mitt Rapport 2010:8.

Bratt, P. 1999. Anundshög. Del 1. Delundersökning för datering. Arkeologisk undersökning av Anundshög, RAÄ 431, Långby, Badelunda socken, Västerås stad,

Västmanland. Västerås stad/Stockholms läns museum. Rapport 1999:20. Stockholm.
Bratt, P. 2008. *Makt uttryckt i jord och stenar. Stora högar och maktstrukturer i Mälardalen under järnåldern.* Stockholm Studies in Archaeology 46. Stockholm.
Brink, S. 1994. Hälsinglands älder bebyggelsehistoria. Ett forsök till en syntes. *Bebyggelsehistorisk tidskrift,* 27.
Brink, S. 1999. Social order in the early Scandinavian landscape. In: Fabech, C. and Ringtved, J. (Eds.) *Settlement and Landscape. Proceedings of a conference in Århus, Denmark, May 4-7 1998.* Jutland Archaeological Society, Aarhus University Press. Pp 423-438.
Brink, S. 1998. Land, bygd, district och centralort i Sydsverige. Några bebyggelsehistoriska nedslag. In: Larsson, L. and Hårdh, B. (Eds.) *Centrala platser, centrala frågor : samhällsstrukturen under järnåldern : en vänbok till Berta Stjernquist.* Acta Archaeologica Lundesia Series in 8° Minore. No 28. Almqvist & Wiksell International, Lund. Pp 297-326.
Brink, S. 2002. Law and Legal Customs in Viking Age Scandinavia. In: Jesch, J. (Ed.) *The Scandinavians from the Vendel Period to the Tenth Century. An Ethnographic Perspective.* The Boydell Press, San Marino. Pp 87-127.
Brink, S. 2008. People and *land* in Early Scandinavia. In: Garipzanov, I. H., Geary, P. J. and Urbanczyk, P. (Eds.) Franks, Northmen, and Slavs. Identities and State Formation in Early Medieval Europe. Turnhout, Brepols. Pp 87–112.
Carlsson, D. 1979. *Kulturlandskapets utveckling på Gotland. En studie av jordbruks- och bebyggelseförändringar under järnåldern.* Press förlag, Visby.
Carlsson, D. 1988. Den folkvandringstida krisen. In: Näsman, U. and Lund, J. (Eds.) *Folkevandringstiden i Norden. En krisetid mellem ældre og yngre jernalder. Rapport fra et bebyggelsearkæologisk forskersymposium I Degerhamn, Öland. D. 2.-4. oktober 1985.* Aarhus Universitetsforlag, Århus.
Christakos, G. et al. 2005. Interdisciplinary Public Health Reasoning and Epidemic Modelling: The Case of Black Death [electronic resource] / by George Christakos, Ricardo A. Olea, Marc L. Serre, Hwa-Lung Yu, Lin-Lin Wang. DOI 10.1007/3-540-28165-7
Cohn, S. K. 1997. Introduction. In: Cohn, S. K. (Ed.) The Black Death and the Transformation of the West. Harvard University Press, Cambridge.
Edgren, B. and Herschend, F., 1982. Arkeologisk ekonomi och ekonomisk arkeologi. Ett försök till beskrivning av det Öländska jordbrukets förutsättningar under äldre järnålder. *Fornvännen* 77, 1982. Pp 7-21.
Eriksson, J. A. 2000. *Vegetationshistoria i Kräggesta.* Institutionen för Geovetenskap, Uppsala.
Eriksson, T., 2009. Kärl och social gestik.: Keramik i Mälardalen 1500 BC-400 AD. AUN 41. Edita Västra Aros, Västerås.
Fallgren, J-H. 2006. *Kontinuitet och förändring : bebyggelse och samhälle på Öland 200-1300 e Kr.* Aun 35. Uppsala University: Department of Archaeology and Ancient History.
Fischer, S. 2005. Roman imperialism and runic literacy : the westernization of Northern Europe (150-800 AD). Aun 33. Uppsala University: Department of Archaeology and Ancient History.
Flink, G. 1986. Ölands stensträngsområden och den justinianska pesten. *Bebyggelsehistorisk tidskrift* No 11. Pp 121-135.

Frölund, P. and Wilson, L. 1993. Bybildning : förhistorisk kontinuitet eller medeltida innovation? : exempel från Uppland och Västmanland. *Arkeologi i Sverige.* 139–146. Stockholm, Riksantikvarieämbetet.

Gren, L., 2003. Hackerör i Njudungs västra härad: regional analys och detaljstudier i Norra Sandsjö. In: Widgren, M. (Ed.) *Röjningsröseområden på sydsvenska höglandet. Arkeologiska, kulturgeografiska och vegetationshistoriska undersökningar.* Meddelanden från Kulturgeografiska institutionen vid Stockholms universitet, 117. Stockholm: Pp 113-167.

Gräslund, B. 1973. Äring, näring, pest och salt. *Tor* XV. 274–293.

Gräslund, B. 2007. Fimbulvintern, Ragnarök och klimatkrisen år 536–537 e. Kr. *Saga & Sed* 2007. Pp 93–123.

Gurevich, A. J. 1985. *Categories of Medieval Culture.* London, Routledge.

Göthberg, H. 1998. Bebyggelsestruktur under äldre järnålder i Trögd och på Håbolandet. In: Andersson, K. *Suionum Hinc Civitates.* Occasional papers in archaeology 19, Uppsala. Pp 95–121.

Göthberg, H. 2000. *Bebyggelse i förändring. Uppland från slutet av yngre bronsålder till tidig medeltid.* Occasional papers in archaeology 25.

Haddock, D. and Kiesling, L. 2002. The Black Death and Property Rights. *Journal of Legal Studies*, July 2002. Available at SSRN: http://ssrn.com/abstract=378620

Hamerow, H. 2002. Early Medieval Settlements: the archaeology of rural communities in Northwest Europé, 400–900. Oxford.

Harrison, D. 2000. Stora Döden. Den värsta katastrof som drabbat Europa. Ordfront, Stockholm.

Hellqvist, M. 1999. *Urban and rural environments from Iron Age to Medieval time in northern Europe : evidence from fossil insect remains from South-Eastern Sweden and Novgorod, Russia.* Uppsala : Acta Universitatis Upsaliensis.

Herlihy, D. 1997. *The Black Death and the Transformation of the West.* Harvard University Press, Cambridge.

Herschend, F. 2009a. *The Early Iron Age in South Scandinavia. Social order in settlement and landscape.* Occasional papers in archaeology 46. Uppsala.

Herschend, F. 2009. *Mellan skrift och tal. Essäer om runinskrifter.* Occasional papers in archaeology 48. Uppsala.

Horrox, R. 1994. *The Black Death.* Manchester: Manchester University Press.

Hyenstrand, Å. 1974. *Centralbygd – randbygd. Strukturella, ekonomiska och administrativa huvudlinjer i mellansvensk yngre järnålder.* Stockholm: Almqvist & Wiksell.

Hållands Stenholm, A-M. 2006. Past memories. Spatial returning as ritualized remembrance. In: Andrén, A. Jennbert, K. Raudvere, C. (Eds.) *Old Norse religion in long-term perspectives : origins, changes, and interactions : an international conference in Lund, Sweden, June 3-7, 2004.* Lund: Nordic Academic Press. Pp 341–345.

Iversen, T. 1994. *Trelldommen. Norsk slaveri i meddelalderen.* Historisk institutt, Universitetet i Bergen.

Jansson, S. B. F. 1977. *Runinskrifter i Sverige.* Uppsala: Almqvist & Wiksell.

Karlsson, S. 2002. *Vegetationshistoria och markanvändning I Vikhus, Rytternområdet, Västmanland.* Institutionen för Naturgeografi och Kvartärgeologi, Stockholms universitet, rapport.

Karlsson, S., Berntsson, A., Risberg, J. 2009. Expansion eller ödeläggelse? Om järnålderns och medeltidens jordbruk. In: *Hem till Jarlabanke. Jord, makr och evigt liv i östra Mälardalen under järnålder och medeltid.* Lund: Historiska media. Pp 155–175.

Klein, N. 2007. *The Shock Doctrine. The Rise of Disaster Capitalism.* London : Allen Lane.
Liedgren, L. 1984. Iron Age settlement in Hälsingland, northern Sweden. *Papers in northern Archaeology.* Umeå: Archaeology and Environment 2.
Liedgren, L. 1992. *Hus och gård i Hälsningland. En studie av agrar bebyggelse och bebyggelseutveckling i norra Hälsningland Kr.f–600 e.Kr.* Umeå: Studia Archaeologica Universitatis Umensis 2.
Lindegren, J. 1998. "Om detta continuerar et teller tu år till, må vi saga att vi vunnit land av androm och därutöveer ruinerat vårt eget." Expansionspolitik i 1600-talets Sverige. Uppsala: Annales Soceitatis Litterarum Humaniorum Regiae Upsaliensis. Årsbok 1998.
Lindkvist, T. 1979. *Landborna i Norden under alder medeltid.* Uppsala: Studia Historica Upsaliensia 110.
Lindkvist, T. and Myrdal, J. 2003. Trälar. Ofria I agrarsamhället från vikingatid till medeltid. Stockholm, Nordiska museet.
Lindkvist, T. and Ågren, K. 1985. *Sveriges medeltid.* Stockholm: Almqvist & Wiksell.
Lindquist, S.-O. 1968. *Det förhistoriska kulturlandskapet i östra Östergötland. Hallebyundersökningen I.* Acta Universitatis Stockholmiensis. Studies in North European Archaeology 2. Stockholm.
Lindström, H. 1997. Paleobotansiska undersökningar. In: Lekberg, P. *Fågelbacken : ett fornlämningskomplex i östra Västmanland. Del 1, lämningar från tidigneolitikum, mellanneolitikum och järnålder undersökta 1993 : Raä 73, 147 och 158.* Arkivrapport. Arkeologikonsult AB, Upplands Väsby.
Ljungkvist, J. 2006. En hiar atti rikr. Om elit, struktur och ekonomi kring Uppsala och Mälaren under yngre järnålder. Aun 34. Uppsala.
Ljungkvist, J. 2008. Dating two royal mounds of Old Uppsala. Evaluating the elite of 6th to 7th century Middle Sweden. *Korrespondenzblatt. Römisch-Germanisches Zentralmuseum.* Mainz.
Löwenborg, D. 2009. Landscapes of death: GIS modelling of a dated sequence of prehistoric cemeteries in Västmanland, Sweden. *Antiquity* 83. Pp 1134-1143.
Löwenborg, D. 2010. Digital Perceptions of the Landscape: A GIS based analysis of the location of burial grounds in Västmanland, Sweden. *Acta Archaeologica*, 81. Pp 124-138.
Magnus, B. 2008. The metal workshop at Bäckby, Väterås, Västmanland – a Helgö in miniature. In: Clarke, H. and Lamm, K. (Eds.) Excavations at Helgö XVII. Stockholm. Pp 221–237.
Mascher, C. 1995. Dispositionsrätter till mark i brons- och järnålderns agrarsamhälle. In: Widgren, M. (Ed.) *Äganderätten i lantbrukets historia.* Skrifter om skogs- och lantbrukshistoria 8. Stockholm: Nordiska museet. Pp 37–57.
Mejsholm, L. 2009. *Gränsland : konstruktion av tidig barndom och begravningsritual vid tiden för kristnandet i Skandinavien.* Occasional papers in archaeology 44. Uppsala.
Myhre, B. 2002. Landbruk, landskap og samfunn 4000 f.Kr.–800 e.Kr. In: Myhre, B. and Øye, I. (Eds.) *Norges landbrukshistorie I. 4000 f.Kr.–1350 e.Kr. Jorda blir levevei.* Det Norske Samlaget, Oslo.
Myrdal, J. 1988. Agrarteknik och samhälle under två tusen år. In: Näsman, U. and Lund, J. (Eds.) *Folkevandringstiden i Norden. En krisetid mellem ældre og yngre jernalder. Rapport fra et bebyggelsearkæologisk forskersymposium I Degerhamn, Öland. D. 2.-4. oktober 1985.* Aarhus Universitetsforlag, Århus.

Myrdal, J. 2003. *Digerdöden, pestvågor och ödeläggelse.* Stockholm: Sällskapet Runica et Mediævalia.

Näsman, U. 1988. Inledning. In: Näsman, U. and Lund, J. (Eds.) *Folkevandringstiden i Norden. En krisetid mellem ældre og yngre jernalder. Rapport fra et bebyggelsearkæologisk forskersymposium I Degerhamn, Öland. D. 2.-4. oktober 1985.* Aarhus Universitetsforlag, Århus.

Näsman, U. and Lund, J. 1988. *Folkevandringstiden i Norden. En krisetid mellem ældre og yngre jernalder. Rapport fra et bebyggelsearkæologisk forskersymposium I Degerhamn, Öland. D. 2.-4. oktober 1985.* Aarhus Universitetsforlag, Århus.

Pedersen, E. A. and Widgren, M. 1998. Järnålder. 500 f.Kr.–1000 e.Kr. In: Welinder, S., Pedersen, E. A. and Widgren, M. (Eds.) *Det svenska jordbrukets historia I. Jordbrukets första femtusen år : 4000 f. Kr.-1000 e. Kr.* Borås: Natur och Kultur.

Petersson, M. 2006. *Djurhållning och betesdrift : djur, människor och landskap i västra Östergötland under yngre bronsålder och äldre järnålder.* Stockholm: Riksantikvarieämbetet; Uppsala University: Department of Archaeology and Ancient History.

Poos, L. R. 1991. *A rural society after the Black Death: Essex 1350–1525.* Cambridge: Cambridge University Press.

Price, N. 2008. Bodylore and the Archaeology of Embedded Religion: Dramatic License in the Funerals of the Vikings. In: Whitley, D. S. and Hays-Gilpin, K. (Eds.) *Belief in the past. Theoretical Approaches to the Archaeology of Religion.* Walnut Creek : Left Coast Press.

Ranheden, H. 2007. Vegetationsförändringar. Markpåverkan och odlingsutveckling i norra Uppland. In: *Land och samhälle I förändring. Uppländska bygder i ett långtidsperspektiv*. Arkeologi E4 Uppland – studier, IV. SAU. Pp 17–117.

Renk, A. M. 2008. Erövrad mark – erövrat släktskap. In: *Hem till Jarlabanke. Jord, makr och evigt liv i östra Mälardalen under järnålder och medeltid.* 91–111. Lund: Historiska media.

Salvesen, H. 1979. Jord i Jemtland. Bosetningshistoriske og økonomiske studier i grenseland ca. 1200–1650. Östersund: Wisénska.

Sandnes, J. 1981. Conclusions. In: Gissel, S., Jutikkala, E., Österberg, E., Sandnes, J. and Teitsson, B. (Eds.) Desertion and land colonization in the Nordic countries c. 1300-1600 : comparative report from the Scandinavian Research Project on Deserted Farms and Villages. Stockholm, Almqvist & Wiksell. Pp 230–243.

Simonsson, H. 1969. *Studier rörande vikingatida vapen- och ryttargravar. Med utgångspunkt från det västmanländska materialet.* Uppsala University: Department of Archaeology and Ancient History.

Siraisi, N. 1982. Introduction. In: William, D. (Ed.) *The Black Death. The Impact of the Fourteenth-Century Plage. Papers of the Eleventh Annual Conference of the Centre for Medieval & Early Renaissance Studies.* 9–22. Medieval & Renaissance text & studies, 13. Binghamton.

Sjöö, R. 1990. *Gravfält och struktur – ett förslag till precisering av den alder järnåldern med utgångspunkt från undersökta gravfält i Västmanland.* Uppsala University: Department of Archaeology and Ancient History.

Skre, D. 1998. *Herredømmet. Bosetning og besittelse på Romerike 200–1350 e.Kr.* Oslo, Scandinavian University Press.

Stenberger, M. 1933. Öland under äldre järnålder. Stockholm

Stenberger, M. 1955. The Reasons for the abandonment of Vallhagar. In: Stenberger, M. (Ed.) Vallhagar. A Migration Period Settlement on Gotland / Sweden II. 1161–1185. Copenhagen, Ejnar Munksgaards Forlag.

Stenberger, M. 1964. Det forntida Sverige. Stockholm, Almqvist & Wiksell.
Tollin, C. 1999. *Rågångar, gränshallar och ägoområden. Rekonstruktion av fastighetsstruktur och bebyggelseutveckling i mellersta Småland under äldre medeltid.* Meddelande nr 101. Kulturgeografiska institutionen, Stockholm.
Welinder, S. 1974. Kulturlandskapet i Mälarområdet. Report Department of Quaternary Geology, 5-6. Lund.
Widgren, M. 1983. *Settlement and farming systems in the Early Iron Age. A study of fossile agrarian landscapes in Östergötland, Sweden.* Stockholm studies in human geography, 3. Stockholm.
Widgren, M. 1995. Individuellt eller kollektivt ägande i bondesamhällen? In: Widgren, M. (Ed.) *Äganderätten i lantbrukets historia.* Skrifter om skogs- och lantbrukshistoria 8. Stockholm: Nordiska museet. Pp 5–16.
Wikborg, J. 2007. De Levande och de döda. Gravfältens kontinuitet och relation till bebyggelsen. In: Notelid, M. (Ed.) Att nå den andra sedan. Om begravning och ritual i Uppland. Arkeologi i E4 Uppland – studier. Vol 2. 173–200. Uppsala: Riksantikvarieämbetet, 2007.
Zachrisson, T. 1994. The Odal and Its Manifestation in the Landscape. *Current Swedish Archaeology* 2. Pp 219–238.
Zachrisson, T. 2009. Del 2. In: Lihammer, A. (Ed.) *Stiftelsen Kulturmiljövård Mälardalen. Vetenskapligt program.* Västerås: Kulturmiljövård Mälardalen Skrifter 1.