TO MAKE A MARK ON LAND. FOSSIL FIELDS SYSTEMS AND THE SOCIAL IMPLICATION OF AGRICULTURE DURING THE PRE-ROMAN IRON AGE ON GOTLAND, SWEDEN

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Abstract

If you make your way through the Gotlandic landscape today, you can still see agricultural remains originating from cultivation that took place two-three thousand years ago. The once cultivated land displays itself as systems of conjoined plots surrounded by baulks. The concern of this paper is the social implications this kind of agriculture had during the Pre-Roman Iron Age (500 BC-AD). This was a time when the practice was conventional and field systems were part of people's surroundings. How did an established, yet changeable landscape structure affect people, and what values, apart from strictly nutritional, did cultivation offer them?

Keywords: Pre-Roman Iron Age, Gotland, Sweden, agriculture, fossil fields, land-use.

Introduction

Walking through the Gotlandic landscape of today, you can still see traces of the agriculture carried during the Bronze Age to Roman times. The cultivated areas, showing similarities to field systems in Estonia, Netherlands and Denmark, consist of plots surrounded by baulks. The plots are conjoined into what often are large systems of up to two square kilometres (figure 1). This paper deals with this kind of agricultural remain and its social implications during Pre-Roman Iron Age Gotland i.e. 500 BC-AD.

Fundamental to the understanding of fossil field systems is when they were formed and how the large areas of conjoined plots came into being. The initial part of this paper therefore comprises a presentation of surveys, excavations and earlier research carried out mainly by *Sven-Olof Lindquist and his colleagues* in Sweden, and by *Valter Lang and his colleagues* in Estonia. As a complement to these studies, I then turn to questions regarding some of the social implications of agriculture. I am mainly interested in why people chose to maintain this kind of agricultural practice for a thousand years or more. Why did people continue to cultivate their fields in a manner which they knew from experience would deprive the fields their fertility? What values, apart from the strictly nutritional, did cultivation and its material effects offer people?

Discovery and morphology

Both on Gotland and in Estonia, research on fossil field systems (also known as "Celtic fields" or "Baltic fields") is a relatively recent phenomenon (Lang 1994, Lindquist, Carlsson, Windelhed 1973). On Gotland, the first systematic research was initiated by the human geographer Sven-Olof Lindquist, and carried out in collaboration with Dan Carlsson and Bengt Windelhed (Lindquist *et al.* 1973). The year was 1968 and the detection of fossil field systems were described as "the most important discovery that has taken place within Gotlandic archaeology during the last quarter of a century" (Jönsson & Löthman 1978, p. 113 (*my transl.);* Lindquist *et al*. 1973).

As implied, Lindquist's discovery was met by great interest. The following surveys showed that many field systems located in unexploited terrain was still visible. Positive was also the discovery that fields systems "erased" by later cultivation, in fortunate cases, could be "reconstructed" through aerial photography. The former baulks defined themselves as light frames against the darker plots (Manneke 1974, p. 33; Windelhed 1984b, p. 89; Figure 2).

Today over a hundred field systems are known on Gotland (Arnberg 2007). The baulks surrounding the separate plots gave the plots their shape, and from that shape we can appreciate the ploughing technique used. The single plots generally varies between 20x20 meters to 50x60 meters in size (Carlsson 1979, p. 50; Gren 1997, p. 109). The quadratic or slightly rectangular form indicates the use of an ard (Carlsson 1979, p. 50; Pedersen & Widgren 1998, p. 301). Since the ard does not have a mouldboard, ploughing in two directions was necessary. The quadratic shape was then ideal, as it minimizes the number of turns needed (Pedersen & Widgren 1998, p. 340; Widgren 1997, p. 12).

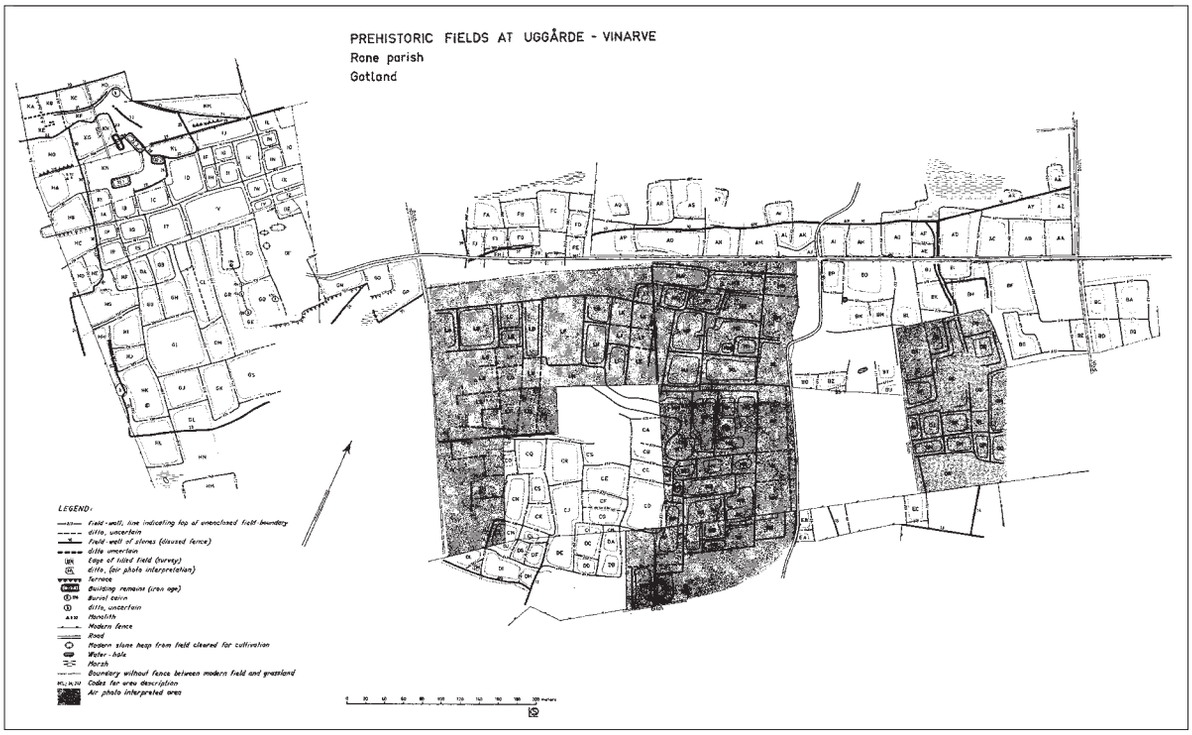

Fig. 1. The fossil field system at Uggårde-Vinarve, Rone parish, Gotland. Mapping carried out under direction of S-O Lindquist, 1973.

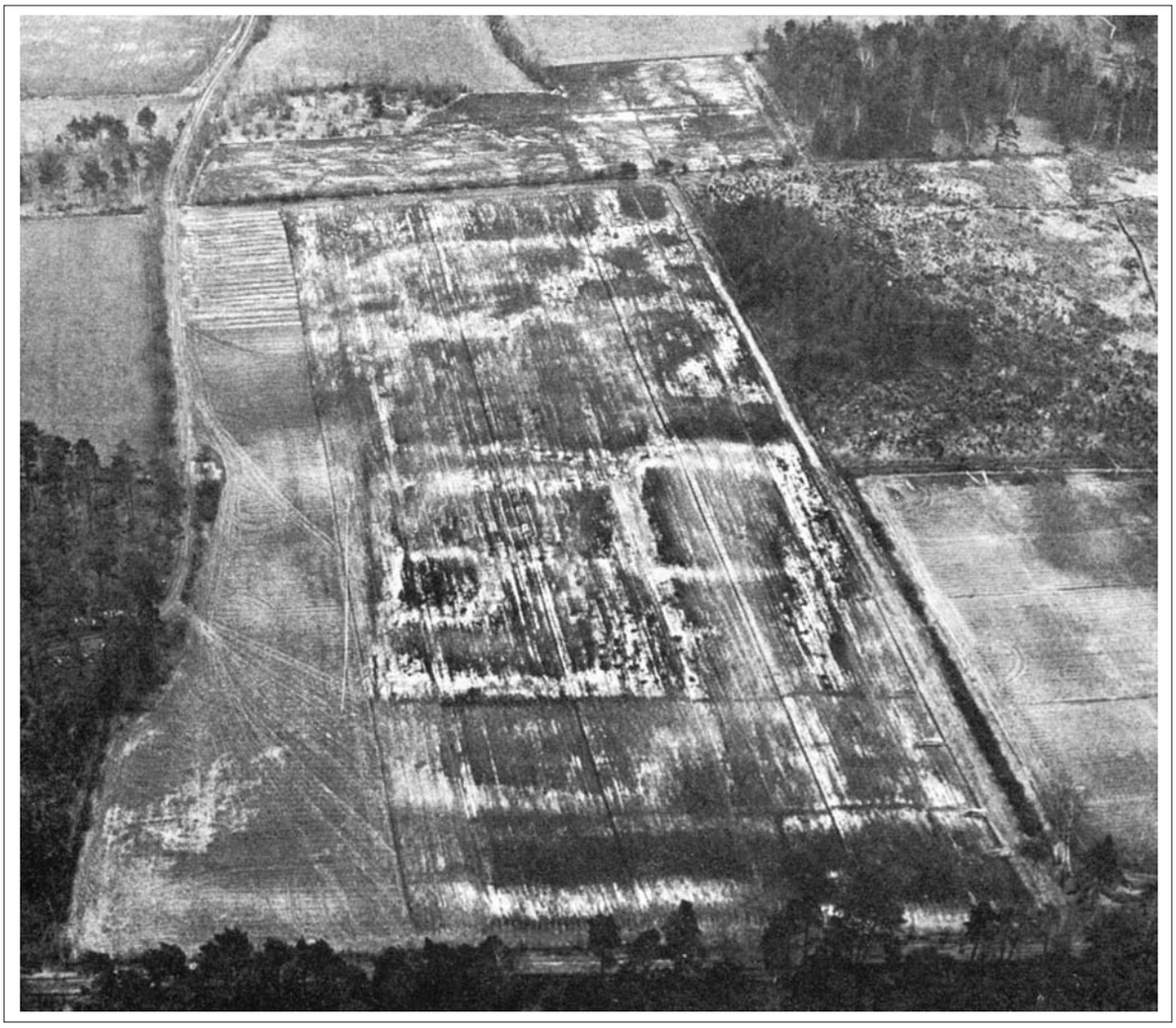

Fig. 2. Aerial photography showing parts of the fossil field systems at Uggårde-Vinarve, Rone parish, Gotland. Photograph by Peter Manneke (Manneke 1974, p. 35).

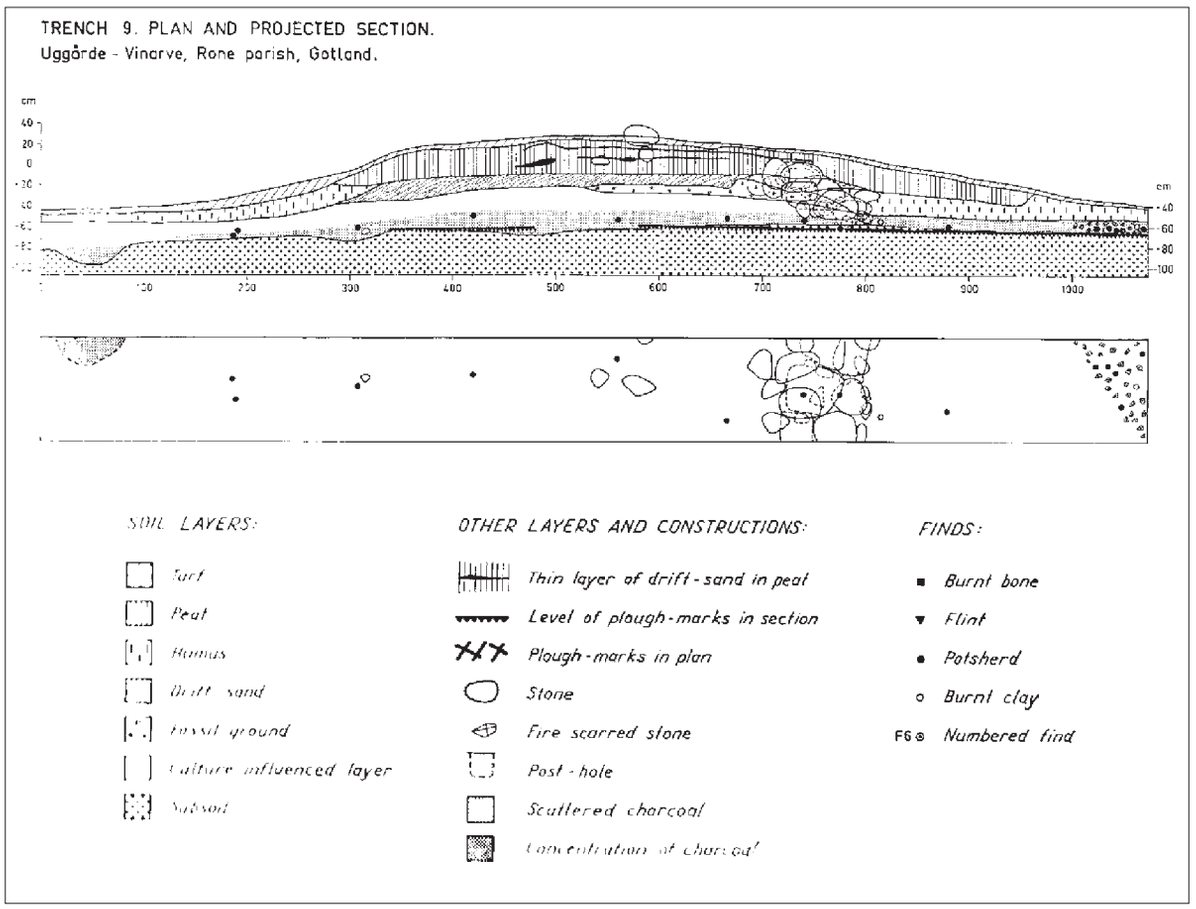

Fig. 3. Section through a field baulk at Uggårde-Vinarve, Rone parish, Gotland (Lindquist 1974, p. 15 and 17).

Uggårde-Vinarve and the initial excavations

The first more extensive excavations of fossil field systems on Gotland were initiated in 1973. The site chosen was Uggårde-Vinarve in Rone parish on the south-east part of the island (Lindquist *et al.* 1973; Lindquist 1974; Manneke 1974). Within an area of approximately 130 hectares were, besides a vast number of plots, settlements, stone enclosures and graves. The plots were mainly slightly rectangular and varied in size between 20x30 meters and 30x40 meters (Lindquist *et al.* 1973; Lindquist 1974; figure 1).

The primarily concern of the Uggårde-Vinarve excavation was to establish a chronology of the site. The researchers aimed both to confirm the relative stratigraphy indicated by previous surveys, i.e. that systems of conjoined plots were older features than stone enclosures and houses with stone foundations (commonly dated to AD 200-550 (Cassel 1998)), and to establish an absolute chronology for different archaeological features (Lindquist 1974, p. 14f).

The relative chronology was confirmed at an early stage. Stone enclosures and houses with stone foundations had repeatedly been laid out over field plots and baulks (Windelhed 1984a:93). Houses with stone foundations are commonly dated to the period AD 200-550, and the fields systems were thus to be older (Cassel 1998, Carlsson 1979; Lindquist 1974). For the establishment of an absolute chronology prospecting was however not enough, which led up to the first excavation of fossil field systems on Gotland.

Excavations were initiated the same year. After shafts had been laid out and the topsoil removed, criss-crossing ard-marks were displayed in the light subsoil within the former plots (Windelhed 1984b; Lindquist 1974). The ard-marks sometimes reached a bit under the baulks, but the centre of the baulks often lacked marks (figure 3). This was interpreted as the baulks originally being strips of grass dividing the plots. When plots were ploughed, the soil was subsequently transported to its edges slowly transforming the strips into baulks (Lindquist 1974, p. 24).

As more and more plots were excavated, it became clear that a large quantity of ard-marks could be present within a single plot. The plentiful ard-marks did most likely not originate from one, but from several ploughing phases. Oldest were those adjoining the baulks (Lindquist 1974, p. 24). In connection to these initial marks, charcoal was found often in such large

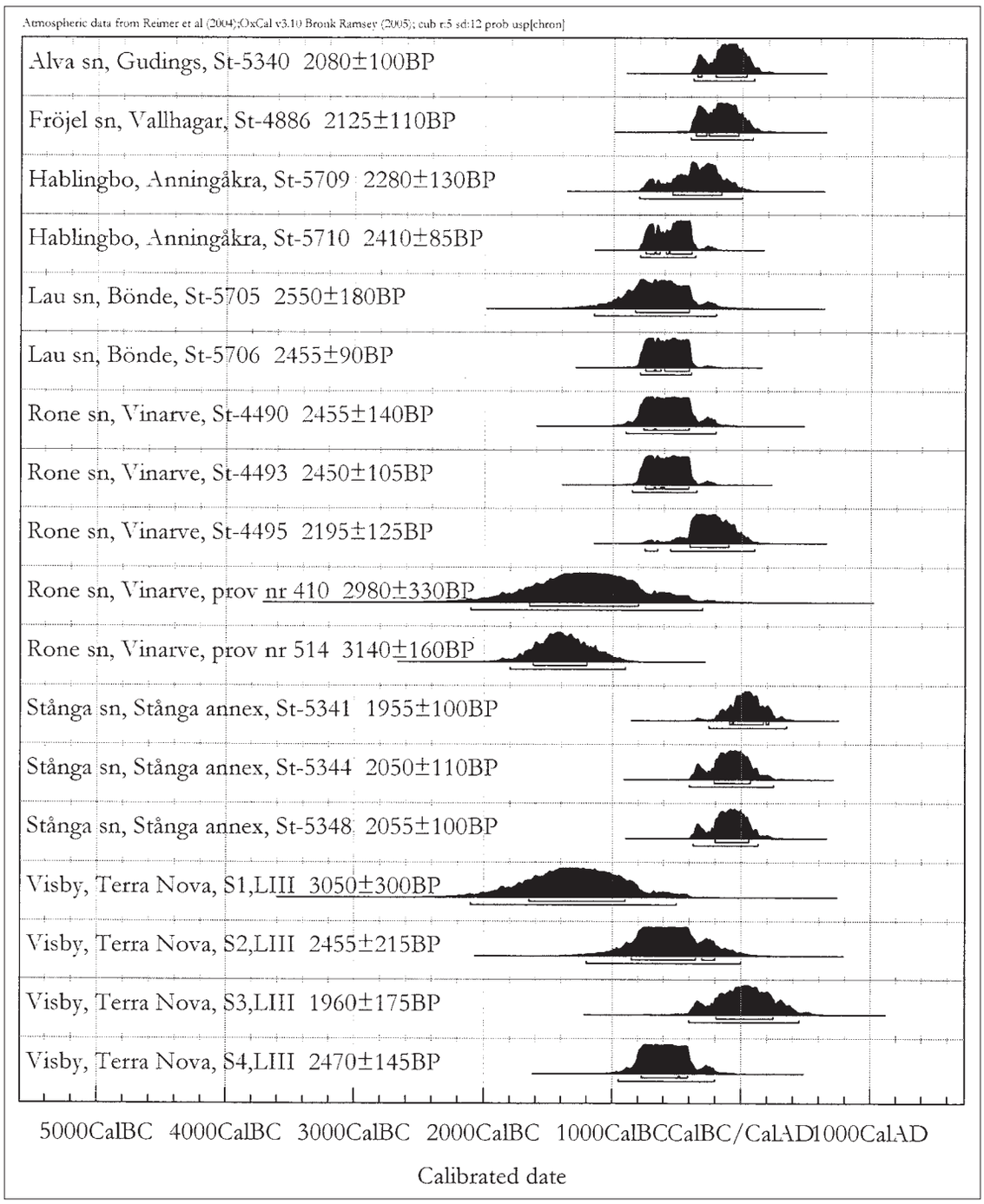

Fig. 4. Radiocarbon dates on charcoal from baulked plots remaining from field clearance. The BP values originate from Carlsson 1979; Lindquist 1974, Windelhed 1984b; Wickman-Nydolf, dnr 413-2493-1998, and calibrated by OxCal v.3.10.

amounts that it could be presumed to derive from field clearance (ibid, p. 17). Radiocarbon dates indicate that plots at Uggårde-Vinarve were first established during the Bronze Age and that the field system was in use to Roman times (figure 4).

The fields of Gotland – further research

The results from Uggårde-Vinarve have been published mainly by Sven-Olof Lindquist (1974) and Bengt Windelhed (1984a, 1984b). Another human geographer whose work has greatly contributed to our knowledge on fossil field systems on Gotland is Dan Carlsson. Carlsson's study comprises about ten localities with conjoined plots surrounded by baulks. Through his wider perspective Carlsson has been able pinpoint similarities as well as variations in the Gotlandic material. For example, he shows that Uggårde-Vinarve is not unique, neither regarding size, composition nor chronological position (figure 4). He also shows that is not uncommon for localities to be smaller. The size of Gotlandic localities varies from one or few, to a couple of hundred hectares (Carlsson 1979).

Today, due to extensive surveying, over a hundred field systems are known on Gotland. Most, especially the large and most visible, are located to the southern parts Gotland. Carlsson, however convincingly argues, that this chorological pattern is not a reflection of the prehistoric settlement pattern– something also indicated by the burial grounds from the pre-Roman Iron Age (Arnberg 2007; Carlsson 1979:53ff; figure 5). Instead the result from surveys, according to him, is due to geological conditions (Carlsson 1979; Figure 5). The formation of distinct baulks is dependent on the soil quality. In areas with sandy soils, as common on southern Gotland, baulks can be up to 10 meters wide and 1 meter high. On clayey soils, on the other hand, the baulks is usually only 3-4 meters wide and 0,1-0,3 meters high. Sandy soils are therefore vantage for visibility, and less common on the northern parts of the island (Carlsson 1979, p. 49-55).

The creation of field systems

Above dating and cultivation techniques, questions on how the fields were laid out, the time frame involved and how cultivation was socially organized has engaged previous researchers. Depending on if the researcher argues that field systems were laid out more or less as a whole, or that their gained their size as the result of a slow growth, different theories on the social organization of cultivation has been presented. While the latter argues the field systems mirrors an agrarian society built around the extended family, the former argues that society was organized in yet larger units (Carlsson 1979; Lindquist 1974; Windelhed 1984a, 1984b).

In the first papers on the results from the Uggårde-Vinarve, Sven-Olof Lindquist (1974) presents the vast field system as being laid out over a short period of time. This according to him, this excluded an intensive land use (Lindquist 1974, p. 29). The alternative was an area-consuming type of tillage, with periods of cultivation alternated with long periods of fallow, which implied that the "society must have been organised in larger units than the extended family" (ibid, p. 29, 31).

According to Sven-Olof Lindquist, the traces of large scale planning could be witnessed in the morphology of fields at Uggårde-Vinarve (Lindquist 1974). Participating in the research project was also Bengt Windelhed. Interestingly enough, his view on the formation and social organisation heavily differed from Lindquist's. Through an evaluation of how the radiocarbon dates of different plots correlate with the locality and morphology of the plot, Windelhed convincingly argues that the size of system were not due to an original large scale planning but organically grown (Windelhed 1984a, 1984b). Windelhed writes: "The field systems as shown on our maps should instead be looked upon as a summary of fields plots established over a period of 1500 years. The picture is due to the fields being cultivated in a way that in time forced people to abandon their plots" (Windelhed 1984a:184, *my transl.*).

Centrally placed within the cultivation area at Uggårde-Vinarve are quadratic plots. The plots are often placed in groups of three to four plots and correlate with sandy soils. In between these groups, are yet more plots of similar shape. In the more peripheral parts of the locality the plots are instead rectangular. The difference in morphology and locality correlate with the establishment of the plots. The centrally placed groups of quadratic plots are from the Bronze Age, while the rectangular ones were established during the early Roman Iron Age and in the outskirts of the sandy soils (Windelhed 1984a, p. 181).

The continuous establishment of new plots, and thus the size of the Gotlandic field systems are, according to Windelhed, the product of exhausting agricultural techniques - techniques that in time forced the abandonment of used plots and the creation of new arable land (Windelhed 1984a, 1984b). The vast areas of conjoined plots are the result of an agricultural practice where the ploughing slowly deprived the plot of its fertile topsoil, repositioning it on the edges. Former

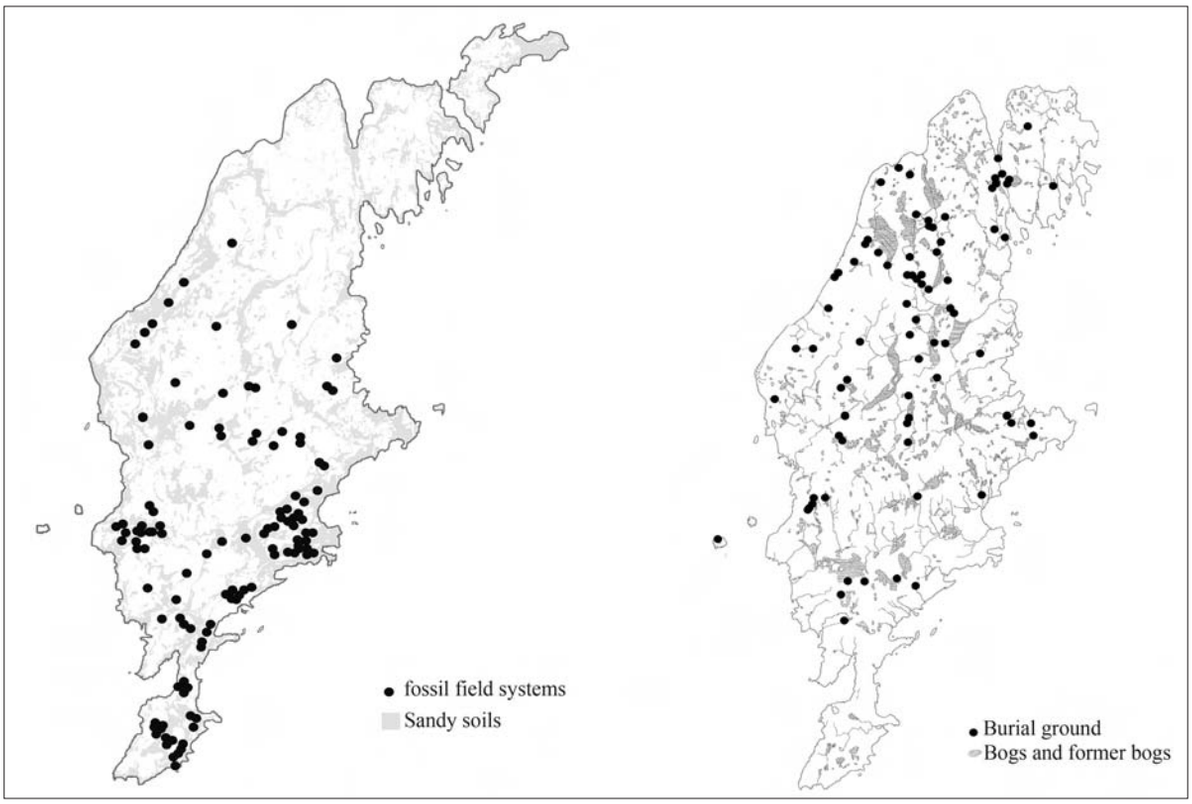

Fig. 5. The distribution of fossil field systems (left) and burial grounds dated to the Pre-Roman Iron Age (right).

fertile plots were in time turned infertile and new land was cleared (Windelhed 1984a, p. 184; 1984b, p. 97ff). Having studied the excavation reports of other Gotlandic localities, I, and other researchers with me, believe that the same line of argument is applicable for other Gotlandic localities as well (Arnberg 2005, 2007; Pedersen & Widgren 1998, p. 278ff). Instead of as a result of a momentous collective effort, the field systems should be looked upon as the result of slow and successive growth.

In most plots excavated, potsherds and animal bone, interpreted as house-hold waste have been detected. In combination with period of fallow, the spreading of waste material might have been used to increase the fertility of the plot (Carlsson 1979, p. 154). Fallow and house-hold waste made it possible to cultivate a plot more times than other should have been possible. This in turn meant that plot was ploughed at more occasions, and that the baulks slowly grew higher and wider, and thus more visible in relation to the surroundings. In time the deprivation caused by the ard depriving the plot its fertile topsoil, however became too intense. The plot was permanently abandoned.

During Pre-Roman times the Gotlandic landscape formed a mosaic of abandoned plots, plots in use, and plots in fallow. Through abandonment and clearance, the landscape was under constant change and cultivation was made a manifest part of the surroundings. Most probably, this picture was improved by vegetation. The agricultural techniques did not just result in baulks surrounding the plots. It also contributed to the variation of soil composition between plot and baulk. Since different vegetation benefit from different soil quality, the flora might have differed between them also under periods of fallow (figure 6). This enhanced the visibility of the fields and made them evident also from a distance. Cultivation was a manifest part of the Pre-Roman landscape. It was an activity that people, through their dwelling in the landscape, hade daily contact with.

Fields with baulks of stone

As indicated by Dan Carlsson's research, most Gotlandic field systems are located to sandy or clayey soils. The baulks of these fields mainly consist of soil. In addition to these localities, there is however a number of field systems with baulks of stone (Carlsson 1979, p. 49f). Such field systems are known from Liffride in Alskog parish, Ekeskogs in Kräklingbo parish (Hallin 2002; Johansson 1993), Ungelhem in Buttle parish (Carlsson 1979, p. 123f), Terra Nova outside Visby (Wickman-Nydolf, ATA dnr 413-2439-1998) and Uggårde-Vinarve Rone parish (Manneke 1974, p. 35). In opposition to fields with baulks of soil, the latter ones are mainly found on moraine or alvar.

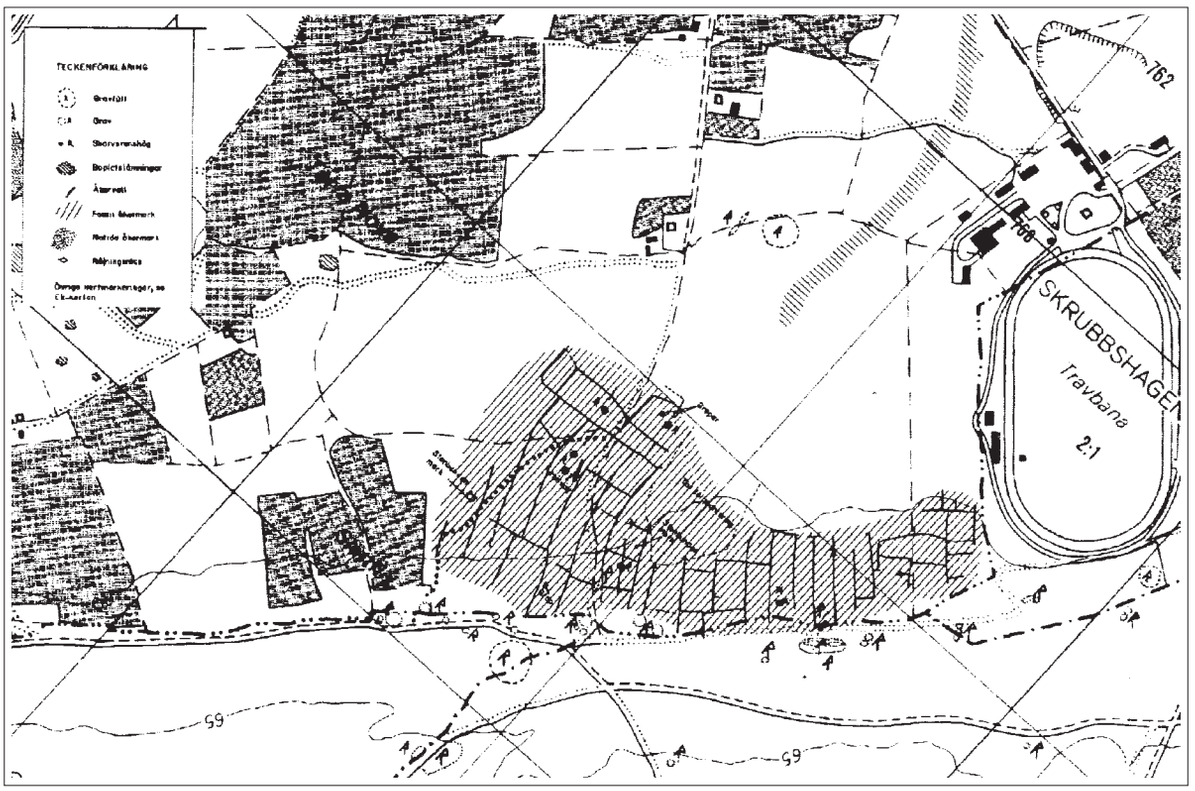

Fig. 6. Fossil field system. Drawing: Charlotte Rinaldo (Pedersen & Widgren 1998, p. 275). The plots were originally defined by strips of land that were not cultivated. Through the use of ard soil was eventually transported from the plot to the edges, and the strips turned into baulks. In time, the ploughing also caused the quality of the soil to vary between plot and baulks. This, in turn, caused flora to differ between plot and baulk even when fallow or taken out of use. Through the variation in vegetation the visual experience of the quadrilateral field pattern was been enhanced.

In opposite to fields with earthen baulks, fields with stone baulks have rarely been under excavation. One exception is Liffride in Alskog parish (Hallin 2002). The radiocarbon dates from Alskog is however uncertain, as there is a possibility that the charcoal dated originate from activities on the sites preceding the cultivation at the side.

Another example is Terra Nova outside Visby, where excavations took place in the early 1990s. Charcoal collected from the top of the trenches were from Roman to Medieval times, while samples further down mainly dated from Bronze Age and Pre-Roman times (Wickman-Nydolf, ATA dnr 413-2439-1998; figure 7). My interpretation is that plots were probably laid out and first cultivated during Bronze Age and Pre-Roman Iron Age, and the area re-used for cultivation during later parts of the Iron Age and during the Middle Ages (Arnberg 2007).

According to this, the fields with stone baulks at Terra Nova were in use at the same time those with earthen baulks at other localities. The chronological position to Bronze Age and Early Iron age is supported other ancient remains at the site. In connection to the field systems at Terra Nova are graves, roads, heaps of fire-cracked stone and settlement from this period. Further, the composition of the landscape at Terra Nova is much similar to that of Ekeskogs and Alskog. At Ekeskogs in the parish of Kräklingbo, for example the fossil landscape consists, besides of field systems, of clearance cairns, stone enclosures, heaps of fire cracked stones, graves and hollow roads (Johansson 1993; figure 8).

In the early 1990s, Estonian archaeologist Valter Lang visited the fossil fields at Ekeskog and Liffride. He stressed their similarities to some Estonia ones, by him called *Baltic fields* (Lang 1994, figures 9 and 10). In Estonia, fossil fields systems were first discovered 1982. The locality, called Rebala, is situated approximately 15 kilometres east of Tallinn. The cultivation area comprised of less than ten plots surrounded by stone baulks. One of the baulks was through later excavations indirectly dated by a hearth dug into it. The hearth was radiocarbon dated to the 1st century BC (ibid, p.203).

About a decade later to two other Estonian localities, Saha-Loo and Proosa, were under excavation. The two localities were located to the on the same alvar - a type of landscape also found on Gotland. Saha-Loo comprised, like the field systems of Ekeskogs and Liffride on Gotland, of irregular plots surrounded by stone baulks and clearance cairns (Lang 1994, p. 203ff; fig-

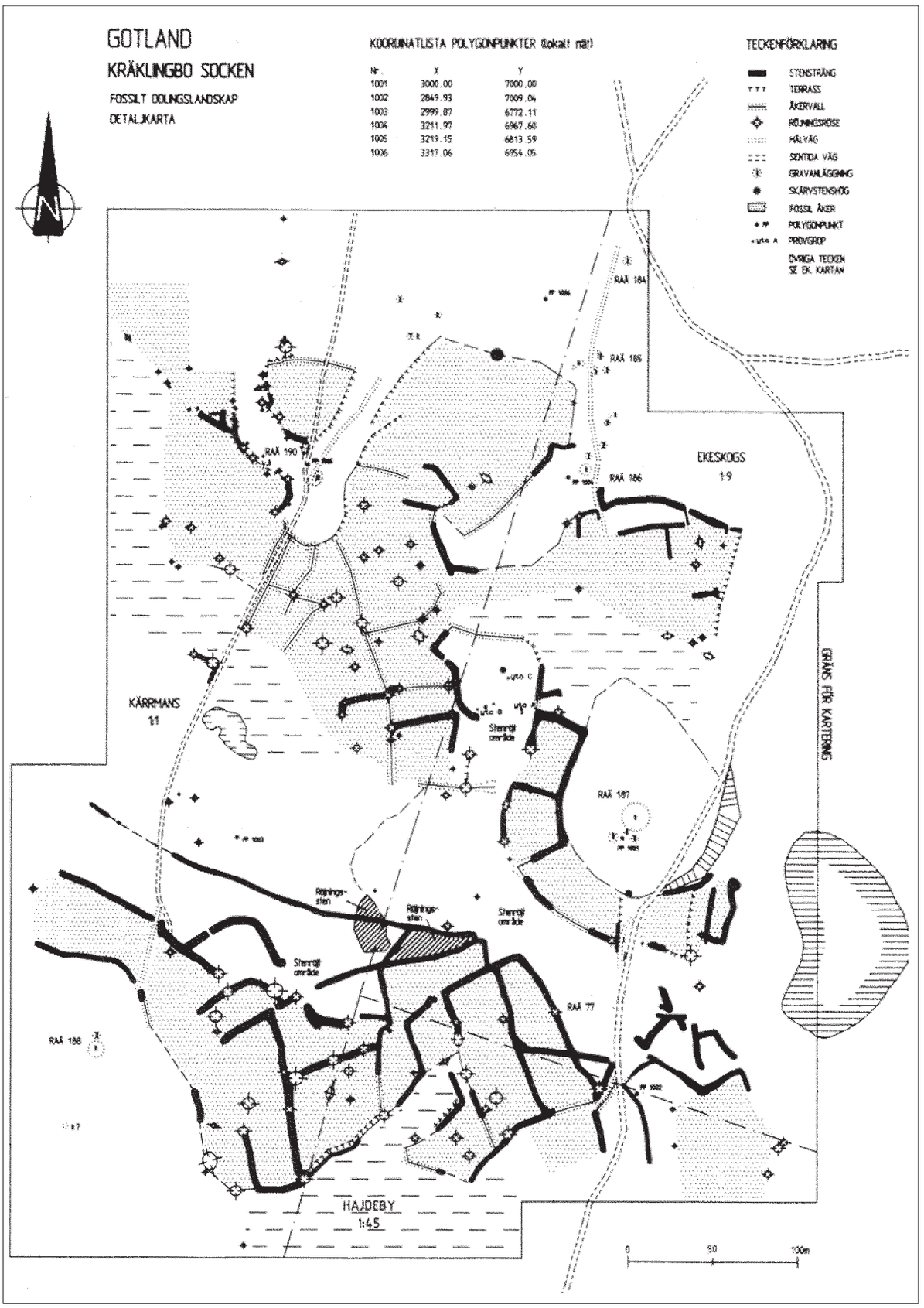

Fig. 7. Terra Nova outside Visby. The fossil field system measures 1,6 hectares and lay mainly on moraine. East of the field system is an ancient road, and by the road lay burial grounds, ship-settings and a cairn (Hallin 2002, p. 58).

Fig. 8. The agricultural landscape at Ekeskogs in the parish of Kräklingbo (Johansson 1993, p. 14).

ure 8). The plots at Proosa were more regular in shape and more similar to those of Terra Nova (figure 6 and 9).

Excavations at Saha-Loo and Proosa were also carried out in 1994 and 1995 respectively. It was concluded that regular field system at Proosa was probably established during Pre-Roman times. Saha-Loo was on the other hand cultivated already during the Bronze Age, and cultivation continued during the Pre-Roman Iron Age (Lang *et al.* 2005; Lang & Laneman 2006). Valter Lang sees the possibility that there is a connection between the chronology of the sites and morphology of the field systems. The irregular and presumably older field-type he calls *Baltic fields,* while the younger and regular ones is referred to as *Celtic fields* (1994, p.212ff). Though this might be the case on the eastern side of the Baltic, the distinction does not seem to be applicable to Gotland. Her regular field plots, for example in Terra Nova and Uggårde-Vinarve, have been radiocarbon dated to the Bronze Age, which rules out them as a younger landscape feature.

On account of the irregular fields of Saha-Loo, Lang and his colleagues further concludes, that all of the plots within the system were not contemporaneous. The cultivated area, which all in all measured 22 hectares, consisted of several smaller groups of plots (app. 0,5-0,6 hectares each), for which radiocarbon dates indicated that they were cleared and cultivated consequently. New areas were successively turned into arable land, and the groupings of plots represent, "consequent steps in the spread of tillage and land clearance at this site" (Lang *et al.* 2005). In other words, the interpretation of the formation of these fields are much alike that of Windelhed for the formation of the field system at Uggårde-Vinarve, Gotland.

In combination with radiocarbon dates, the composition of the fields at Saha-Loo, led Lang to the following conclusion for the formation plots at the site – a conclusion, he argues, is applicable to the fields at Liffride and Alskog on Gotland as well. He emphasizes that the baulks of the single plots, as well as the field systems, were formed stepwise, the former through

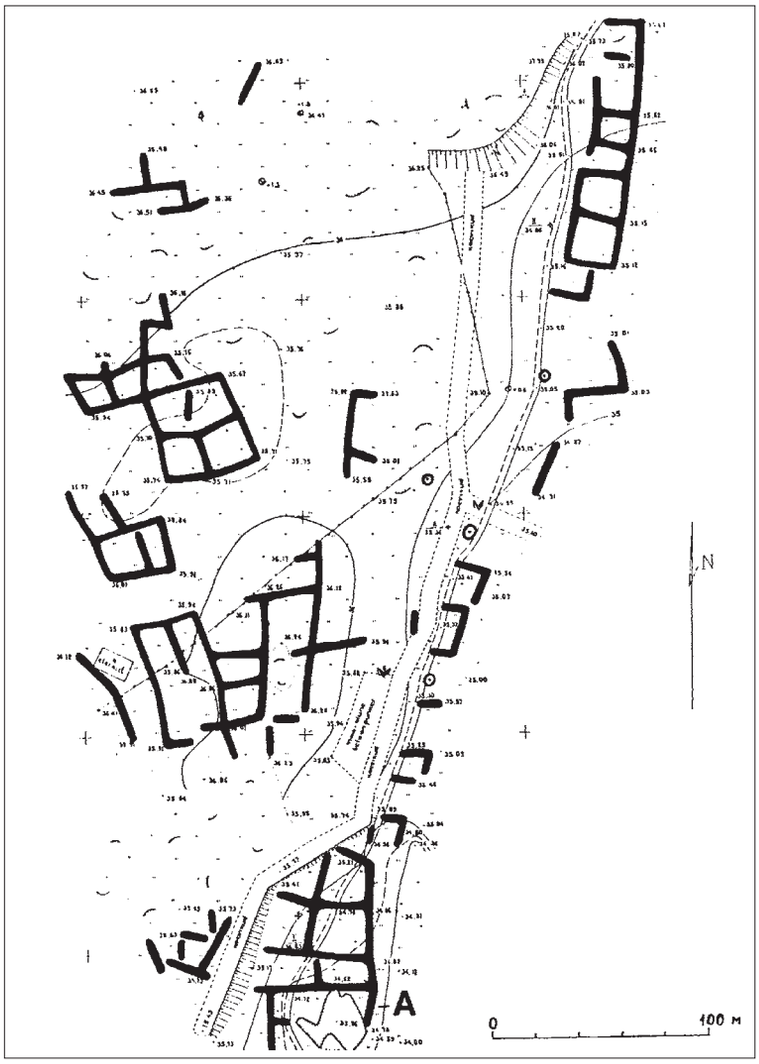

Fig. 9. Fossil fields at Saha-Loo, Estonia. Legend: 1) baulk, 2) clearance cairn, 3) excavation area of 1992, 4) buried stone walls, 5) preserved stone walls, 6) field path (Lang 1994, p. 205).

Fig. 10. The fossil fields at Proosa Estonia. Legend as figure 8 (Lang 1994, p. 212).

the interconnection of clearance cairns (Lang 1994, p. 214f). Regarding the chronological relation between the clearance cairns and stone baulks, he sees this as a short process: "(the) first baulks were formed very soon after the beginning of clearance and heaping up of the first cairns" (Lang 1994, p.215).

Fields with baulks of stone in comparison to those with earthen baulks

As mentioned, the fields with stone baulks correlate on Gotland to swaths of moraine or alvar. Plots with earthen baulks in turn connect to sandy or clayey soils. It thus seems to be a correlation between the geological conditions and the morphology of the single plots. As regards the construction material, the baulks of stone and soil respectively also bear witness to somewhat different cultivation practices. The earthen baulks have come into being as the result of the ard slowly depriving the plot of its topsoil and repositioning it on the edges (Windelhed 1984a, 1984b). The stone baulks are on the other hand the result of the use of ard in combination with the putting up of stone (Lang 1994). The consequence is a partly different material expression, caused by a partly different practice.

In many other aspects, fields with earthen and stone baulks however show similarities. The creation of baulked plots joined together in a web-like system is similar. The same goes for many of the tasks leading forward to these expressions. The single plots are often concave, something that in combination with the presence of ard-marks and an ard point at Saha-Loo indicate that both types of fields were ploughed by ard. Further, the amount of charcoal found in connection to the fields indicates that cultivation in both cases was preceded by fire clearance (Carlsson 1979; Lang 1994; Lindquist 1974; Windelhed 1984a, 1984b). From a Gotlandic perspective systems of conjoined plots, regardless if the field baulks are of soil or stone, regular or irregular seem to be contemporaneous phenomena. On account of the visual similarities, the chronology and the task leading up to these remains, I therefore understand these kinds of field systems as expressions of the same line of thought. The systems of conjoined plots are to my mind products of the same society and mentality, and will in the following be dealt with jointly.

Cultivation as environment and daily life – some sources of inspiration

The process of cultivation was a process of reoccurring events. Time after time the ecological conditions were transformed in order to create a better setting for other types of growth. Fire and tools cleared the chosen spot, and stones were removed. The soil was then ploughed, the crop sown and harvested, and the grain was ground. Some years later, the plots lay fallow. New plots were used, while the fallow or abandoned ones might have been used for other purposes such as pasture or for carrying out different types of crafts.

Cultivation was, through its central position in people's landscape and daily life, important for people on numerous levels. It structured their days, surroundings and the organisation of society. It provided people with food and drink, simultaneously as it engaged them in mutual activities. Cultivation got people to cooperate and communicate, and thus had numerous social and cultural implications.

As pointed out, the purpose of this article is, besides presenting prior research on Gotlandic field systems, to present some of the values, except from the strictly nutritional, this type of agriculture offered people during the Pre-Roman Iron Age. This was a time when field systems were already part of the Gotlandic landscape. The aim is thus not a search of the origin this agricultural practice. In instead, focus is put on understanding how an already existing practice and landscape feature affected, and was affected by people.

A theoretical framework I believe to be fruitful in this context is present in Anthony Giddens' *Theory of Structuration.* With this theory, Giddens' gives an alternative to both strictly subjective and objective social theories, as he stresses the importance of interaction between structure and agency in the creation of society (Giddens 1984, 1987). The structure is to be understood as rules and resources in a society (Giddens 1984, p. xxxi, 185, 337). Transferred to the Gotlandic field systems, the structure comprise the physical landscape and common views connected to agriculture, while the agency is represented by the individual and his or her intentions.

The structure is, according to Giddes, created by human agency. At the same time it is the prerequisite for agency (Giddens 1984, p. 25ff). Every action is by necessity unique, even if its intention is to copy a prior action. It relates to the structure, simultaneously as it contributes to changing the structure. History will thus never repeat itself. It can however be most useful in the understanding of a society (Cassel 1998, p. 24, Wobst 2000, p. 40).

Similar acts, or attempts to repeat earlier acts, have created patterns in the archaeological material. This patterns that can be observed and given meaning through archaeology. Applied on the fossil field systems, the *Theory of Structuration* imply that the meaning of the

tasks creating the baulked fields were constant over the centuries. Even thought people's very intention might have been to adhere to an established practice, they acted in relation to a different structure and the circumstances were not completely the same. In other words, the Gotlandic people's perceptions on baulked fields were not the same during the Bronze Age when the first plots were laid out, as under the Pre-Roman Iron Age when vast fossil field systems had been made manifest parts of their landscape.

Another source of inspiration on how people acted in relation to their surroundings is found in Tim Ingold's paper "The Temporality of the Landscape" and the concept *taskscape* (2000, p. 189-208). *Task*, as defined by Ingold, is "any practical operation, carried out by a skilled agent in an environment, as part of his or her normal business of life" (Ingold 2000, p. 195). Ingold states that no task is carried out in a vacuum. Each task gets its meaning through its relation to other tasks. Besides this, tasks are often carried out by many people together. It is this web of interconnected tasks that Ingold aims at with the concept of *taskscape.*

According to Ingold, the landscape gets it physical form side by side with the activities forming the taskscape. The landscape is the taskscape embodied (Ingold 2000, p. 198). In addition, the taskscape holds knowledge of the landscape. It incorporates the past and the lives of previous generations that have contributed to its shape. Ingold writes: "(…) the landscape is constituted as an enduring record of – and testimony to – the lives and works of past generations who have dwelt in it, and in so doing, have left there something of themselves" (ibid, p. 189). The past is present in the landscape, as will the present be part of tomorrow's landscape.

Cultivation as social interaction

Food production may be regarded as the prime purpose of agriculture, but at stated, cultivation also had social and material consequences. When involved in the act of tillage, people acquired a role in relation to the surrounding society. Though one individual could, theoretically, have carried out many tasks solely, the chain from sowing to eating often involved several people - people who were in different ways connected to each other. People lived together, ate together and cultivated land together. From this perspective, tillage may be regarded as a medium for the creation social relations, and the fields as physical places for this creative act.

The fields were besides places of physical work, places of conversations and story-telling. As an area for communication, the fields might have been a place where people learned why land was worked in this way and certainly also one of the places where stories of the world and of people's places in it were told. The knowledge, completed in the progression of agricultural techniques, acquired physical form by repeatedly being handed down to the next generation. In the field systems the acts carried out were materialized - acts that over the centuries had involved a great number of people.

As a consequence, cultivation was not the concern of one generation solely, but and act linking generations together. The field systems grew through the continuous repetition of interlinked tasks and involved the majority of the people living on Gotland. The continuance of agriculture of course demanded that knowledge was transferred from generation to generation. But how was this done, and how come the same practice was accepted and overtaken by the younger members of society for over a millennium? In other words, what kind of values did this agricultural practice has that other practice did not?

The Pre-Roman Age was on Gotland an oral culture. Since no written manuals existed, we must presume that the continuance of agricultural techniques was in each and every case based on direct contact between people. In the book *Orality and Literacy. The Technologizing of the Word (*Sw. Muntlig och skriftlig kultur. Teknologiseringen av ordet (1990 [1982])), Walter J. Ong lets us know how knowledge is produced and transferred in oral and literate societies respectively. He argues that vital to the spreading of knowledge in oral societies, is the formation of story-telling techniques and other mnemonic devices. Since nothing is written down, you basically only know what you remember (ibid, p. 46ff). While memories in literate societies often are connected to a text, oral memory to a higher degree depends on somatic features. Rosaries, gestures or dances can, for example, be used to structure and recall certain memories (ibid, p.72, 82f).

For many types of crafts, such as cultivation, the learning process is dependent on memories being created in interplay between communication and bodily movements. You learn your trade by observation and practice (Ong 1990 [1982], p. 56f). Knowledge grows from experience and from people's engagement with their surroundings (Ingold 2000:189). As knowledge is not written down, it must constantly be repeated or communicated to others to not be forgotten (Ong 1990 [1982], p.47-54).

From a mnemonic point of view, the process of cultivation was ideal. Though its repetitive character with several recurrent moments and tasks, cultivation gave the young members of society, as they were working side by side with the older members, plenty of oppor-

tunities both to acquire new knowledge and to practice what they had already learned. Hence, knowledge had both to do with interaction between generations and with people's bodily engagement with the world.

The knowledge gained from agriculture was partly practical – you learned how land was cultivated in "the right way" -, partly social. Through the opening of new plots and slow creation of baulks, people were given guidelines for time and space, as well as information on the relationship between their own generation and prior ones. The knowledge, completed in the progression of agricultural techniques, acquired physical form by repeatedly being handed down to the next generation. In the field systems the acts carried out were materialized, acts that over the centuries had involved a great number of people. To use Tim Ingold's words, the fossil field systems are the taskscape visualised.

In time, the agricultural landscape could be described as a quilt, created over centuries and embodying multiple life-stories. The fields worked, like many quilts, as mnemonic devices to which stories were connected. The landscape was composed by a mosaic of fields in use, fields in fallow and fields abandoned, and the stories could include both present and previous generations. Moving through the landscape, people passed fields at different stages of their life histories, and the stories could be told over and over again.

Pre-Roman people dwelled in a landscape infused with past activity. Though cultivation, the lives of the ancestors parts of people's daily life. The direct knowledge on how the abandoned fields were formed, offered them insights in the chronological dimension of the landscape. Most certainly it also informed them that they themselves through their work would make a permanent mark on land. That they themselves were to be manifest parts of the landscape. The materialization of agriculture thus enabled people to relate their own existence to of both past life and to a future that would come (Arnberg 2004, 2005). Cultivation made people part of the surroundings – a surrounding that were partly oriented towards one's own society, partly to the lives and works of previous generations.

To make a mark on land

Already at the beginning of the Pre-Roman Iron Age, tillage had left former fertile land unfertile. Baulks framed the former plots and the act of cultivation had materialized itself in the landscape. With my early 21st century eyes, this agriculture practice would best be described as a deterioration of natural resources. But the really important question is, of course, how did the cultivators themselves perceive their depletion of fertile land?

Presumably not in such negative terms. For though some steps were taken to prolong the fertility of the plot (which may mean that people found the depletion somewhat problematic), people nevertheless continued to threat land as they had "always" done. To my mind traditions like this one do last, not because people are unable to carry out tasks in other ways, but because traditions offer something to the people maintaining them. Richard Bradley writes: "People did not make artefacts or build structures according to a traditional format because they were unable to think of anything else. Rather, they did so as one way of adhering to tradition and maintaining links with what they knew of their past. Making a decorated pot to a time-honoured formula was an act of remembering as much as visiting and maintaining a burial mound" (Bradley 2002, p.11). The quote is applicable to the Gotlandic fields as well. The Pre-Roman People took, in their agricultural practice, consideration to traditions and made them part of the present. Through agriculture, people related both to long-established customs and existing landscape features. Cultivation connected people, at the same time as it connected people and place.

With the aim to portray the relationship between the Pre-Roman cultivators and they land cultivated, I have once again turned to Tim Ingold - this time to his work on *tenure* as expressed in the article "Territoriality and Tenure". Tenure is, according to Ingold, a form of land-maintenance in which the land is metonymical to its cultivator. The cultivated land is thus so much more than an object to be exploited. By the work invested it gets involved in social relationships (Ingold 1986, p.136ff). To sum up, tenure is "about the ways in which a resource locale is worked or bound into the biography of the subject, or into the developmental trajectory of those groups, domestic or otherwise, of which he is a member" (ibid, p. 137).Another important part of the concept of tenure, is that the relationships between man and land are neither stable nor fixed. It is the result of an ongoing process and constituted by the performance of certain tasks accepted by the society (Ingold 1986, p.136ff).

When clearing, ploughing, sowing and harvesting the soil, Pre-Roman people invested work in a place. In a contemporaneous perspective, the clearance and continuous maintenance of a plot might have been what gave people the right to its offspring. The land cultivated was as not viewed as a fixed territory, but as areas to be maintained to be used. Through the work infused in the fields tasks, the cultivators were tied to the arable

land - a relationship visualized and manifested by the creation baulks.

Land maintenance was thus related to practices of ancient origin. It was linked ancestors and to the upholding of traditions – traditions that, through being maintained over the centuries, remained socially active and vital in the constitution of society. To act on land in other ways meant breaking with existing praxis's and values. The picture was thus both intricate and complicated. Since the agricultural technique had its roots in bygone times, a change in cultivation would not only have questioned the rules and values of one's own society. It would also have called for a change in the relationship between the past and the present, i.e. in the links between the cultivators and their ancestors.

The values the systems of conjoined baulked plots offered people in the Pre-Roman Iron Age, besides providing them with food, might thus partly explained as involving them in a historically established process. It was a way of maintaining land that as a phenomenon and material expression reached beyond the individual and the individual's lifetime. The tradition did not just connect people in a contemporary perspective. In the landscape of conjoined plots, relation between people, between past and present, and between people and place attained physical form. Through the continuance of agricultural techniques, the cultivators were literary woven into these materialized relations, at the same time as these cross-generational connections were preserved. What might be considered, with my own values, as the deterioration of fertile land, might with these associations instead have been perceived as something attractive and desirable. It was these associations that, according to me, not just "justified", but "necessitated" the waste of productive land.

Summary

If you make your way through the Gotlandic landscape today, you can still see traces of the agriculture carried out more than two thousand years ago. The cultivated areas consist of plots surrounded by ridges that are conjoined into what often are large systems of areas up to two square kilometres.

Fundamental to the understanding of these fields is when they were formed and how the large areas of conjoined plots came into being. The paper therefore starts with a presentation of the surveys and excavations carried out mainly by the Department of Human Geography at Stockholm University and Valter Lang and his colleagues in Estonia, and the results of these projects. As a complement to these research projects, I then turn to questions regarding the social consequences of agriculture. I am mainly interested in why people chose to maintain this kind of agricultural practice for a thousand years or more. Why did people continue to cultivate their fields in a manner which they knew from experience would deprive the fields of their fertility? What values, apart from the strictly nutritional, did cultivation and its material effects offer people in the pre-Roman Iron Age?

The area on Gotland most intensely investigated regarding this kind of agricultural feature is Uggårde-Vinarve in the parish of Rone, where excavations started in 1973. After the topsoil had been removed, criss-crossing ard marks were visible in the light subsoil. In connection with these marks, charcoal was found in such large amounts that it was presumed to derive from the clearance of the plot. The ^{14}C values indicated that the field systems were in use at least from the Bronze Age to the Roman Iron Age (figure 4). They also indicated that the majority of the plots were not in use at the same time. The vast areas of conjoined plots should instead be looked upon as a result of successive growth; they were created over a long period of time. The field systems had developed out of sequences of interlinked tasks carried out in a similar way over the centuries. Time after time the ecological conditions were transformed in order to create a better setting for other types of growth. Fire and tools cleared the chosen spot, and stones were removed. The soil was then ploughed, the crop sown and harvested, and the grain was ground. Some years later, the plots lay fallow. New plots were used, while the fallow or abandoned ones might have been used for other purposes such as pasture or for carrying out different types of crafts.

Food production may be regarded as the primary purpose of agriculture, but in a pre-Roman perspective tillage also had social and material consequences. When involved in the act of cultivation, people acquired a role in relation to the surrounding society. Though many tasks could, theoretically, have been carried out by one individual, the chain from clearing the fields to putting food on the table often involved several people, who were connected to each other in different ways. People lived together, ate together, and cultivated land together. In this perspective, cultivation may be regarded as a medium for the creation of relations between people, and the fields as physical places for this creative act.

The field systems, as they are visible today, are the result of a process in time. The procedure stayed more or less the same for up to a thousand years or longer. As a consequence, cultivation was not the concern of one generation solely, but an act that linked generations together. The older members of society passed the tradition on to the younger members while working side by

side with them. Hence, knowledge has in this context as much to do with conversations and with people's bodily engagements with the world, as with abstract thought. As a place for labour, the fields were the arenas where the youth were taught how to carry out the relevant tasks in a proper manner. As an arena for communication, the fields might also have been the place where the youth learned why land was worked in this way. The knowledge, completed in the progression of agricultural techniques, acquired physical form by repeatedly being handed down to the next generation. In the field systems the acts carried out were materialized, acts that over the centuries involved a great number of people.

Because the ard depleted the soil of the plot, areas formerly used for cultivation were eventually transformed into infertile land. To my mind this kind of agricultural technique could best be described as the deterioration of natural resources. But the question is: how did the cultivators perceive their depletion of fertile land? Presumably it was not in such negative terms. For though some steps were taken to prolong the fertility of the plot, which may mean that people found the depletion somewhat problematic, they nevertheless continued to treat the land as they always had done. In my view, traditions like this one do last, not because people are unable to carry out tasks in other ways, but because traditions offer something to the people maintaining them. The values that agriculture offered people in the pre-Roman Iron Age, besides providing them with food, might partly be explained as involving them in a historically established process. It was a way of maintaining land that as a phenomenon and material expression reached beyond the individual and the individual's lifetime. In other words, this tradition did not just connect people in a contemporary perspective. In the landscape of conjoined plots, relations between people, between present and past, and between people and place attained physical form. Through the continuance of the agrarian techniques, the cultivators were literally woven into these materialized relations, at the same time as these cross-generational connections were preserved. What might be considered, with my own values, as the deterioration of fertile land, might with these associations instead have been perceived as something attractive and desirable. Perhaps it was these associations that "justified" the waste of productive land.

Literature

ARNBERG, A., Horisontell monumentalitet. Några tankar kring det förromerska landskapet på Gotland. *Aktuell arkeologi VIII.* Eds. Von Hackwitz, K & Werner, T. Stockholm. XXX

ARNBERG, A., 2005. Fields, Funerals and Furnaces. On the Use of Fire during the Pre-Roman Iron Age on the Island of Gotland. *Current Swedish Archaeology. Vol 13.* Ed. Cassel, K. & Gustafsson, A. Stockholm., 7-24.

ARNBERG, A., 2007. *Där människor, handling och tid möts. En studie av det förromerska landskapet på Gotland.* Stockholm.

BRADLEY, R., 2002. *The Past in Prehistoric Societies.* London.

CARLSSON, D., 1979. *Kulturlandskapets utveckling på Gotland. En studie av jordbruks- och bebyggelseförändringar under järnåldern.* Visby.

CASSEL, K., 1998. *Från grav till gård. Romersk järnålder på Gotland.* Stockholm.

GIDDENS, A., 1984. *The Construction of Society. Outline of the Theory of Structuration.* Cambridge.

GIDDENS, A., 1987. *Social Theory and Modern Sociology.* Stanford.

GREN, L., 1997. *Fossil åkermark. Äldre tiders jordbruk – spåren i landskapet och de historiska sammanhangen.* Stockholm.

HALLIN, G., 2002. *Kummel, skepp och koksten. En studie om bosättningsområden och social struktur under bronsåldern på Gotland.* Stockholm.

INGOLD, T., 1986. Territoriality and Tenure. The Appropriation of Space in Huntering and Gathering Societies. *The Appropriation of Nature. Essays of Human Ecology and Social Relations.* Manchester. Ingold, T., 2000. *The Perception of the Environment. Essays of Livelihood, Dwelling and Skill.* London, New York.

JOHANSSON, S., 1993. *Fossil åkermark i Kräklingbo och Alskogs socknar, Gotland. En jämförande analys av två fossila åkerområden.* Stockholm.

JÖNSSON, S. & LÖTHMAN, L., 1978. Gotländska fornlämningar, gotländska kulturminnen. Inventering 40 år efteråt. *Fornvännen*, 108-120.

LANG, V,, KALTRE, H. & LANEMAN, M., 2005. Fossil Fields at Saha-Loo, North Estonia, as Revealed by New Excavations. *Archaeological Fieldwork in Estonia 2004.*

LANG, V. & LANEMAN, M., 2006. New Investigations at Fossil Fields at Proosa, North Estonia. *Archaeological Fieldwork in Estonia 2005.* LANG, V., 1994. Celtic and Baltic fields in North Estonia. Fossil Field Systems of the Late Bronze and Pre-Roman Iron Age at Saha-Loo and Proosa. *Acta Archaeologica. Vol 65,* 203-219.

LINDQUIST, S.-O., CARLSSON, D. & WINDELHED, B., 1973. Gotländskt kulturlandskap under äldre järnåldern. Ett forskningsprojekt. *Gotländskt arkiv,* 9-12.

LINDQUIST, S.-O., 1974. The Development of the Agrarian Landscape on Gotland during the Early Iron Age. *Norwegian Archaeological Review, Vol 7:1,* 6-32.

MANNEKE, P., 1974. Aerial photography of "Celtic Fields" on Gotland. *Norwegian Archaeological Review, Vol 7:1.* Pp 32-38.

Ong, W. J., 1990[1982]. *Muntlig och skriftlig kultur. Teknologiseringen av ordet.* Göteborg.

PEDERSEN, E. A. & WIDGREN, M., 1998. Järnålder 500 f.Kr-1000 e.Kr. *Det svenska jordbrukets historia. Jordbrukets första femtusen år, 4000 f.Kr-1000 e.Kr.* Ed. Myrdal, J. Stockholm.

WICKMAN-NYDOLF, G., ATA dnr 413-2493-1998. *Kartering och undersökning. Gotland, Visby, Stadsäga 769, 906, 907, fornlämning.* Topografiska serien, fasta fornlämningar, Gotland, Visby.

WIDGREN, M., 1997. *Fossila landskap. En forskningsöversikt over odlingslandskapets utveckling från yngre bronsålder till tidig medeltid.* Stockholm.

WINDELHED, B., 1984a. Tidiga gotländska produktionsenheter och deras markanvändning. Erfarenheter från en lokal studie av förändringar av kulturlandskap från förhistorisk tid till tidig medeltid vid Vinarve i Rone socken på Gotland. *Gård och kulturlandskap under järnåldern. Svensk-norskt seminarium i Hudiksvall 18-20 augusti 1983.* Eds. Liedgren, L & Widgren, M. Stockholm, 173-195.

WINDELHED, B., 1984b. "Celtic fields" and Prehistoric Agrarian Landscapes. Approach, Methods and Results from a Human Geographical Study of Reasons for the Development of the Agrarian Society at Vinarve in Rone Parish on Gotland, Sweden. *Settlement and Economy in Later Scandinavian Prehistory.* Ed. KRISTIANSEN, K. Oxford, 85-110.

WOBST, M., 2000. Agency in (Spite of) Material Culture. *Agency in Archaeology.* Eds. Dobres, M-A & ROBB, J. E., London. New York.

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ŽEMĖJE LIKĘ ŽYMENYS. GOTLANDO (ŠVEDIJA) ANKSTYVOJO GELEŽIES AMŽIAUS SENOSIOS LAUKŲ SISTEMOS IR JŲ SOCIALINĖ REIKŠMĖ ŽEMDIRBYSTEI

Anna Arnberg

Santrauka

Keliaujant per Gotlando teritoriją, galima pamatyti prieš du tūkstantmečius vykdytos žemdirbystės pėdsakus. Apdirbami žemės arealai, susidedantys iš nedidelių laukelių, apjuostų ežiomis, sudaro didžiules sistemas, kartais apimančias dviejų kvadratinių kilometrų plotą. Svarbu yra suprasti, kada šie laukai formavosi ir kaip iš nedidelių laukelių susiformavo ši sistema. Todėl šis straipsnis pradedamas tyrinėjimų, vykdytų Stokholmo universiteto Geografijos skyriaus ir Valterio Lango su kolegomis iš Estijos, apžvalga. Pagarbiai atsižvelgdama į šiuos projektus, straipsnio autorė žemdirbystės formavimąsi nagrinėja socialinių santykių kontekste. Svarbiausia, ką reikėtų suprasti, yra tai, kodėl tūkstantį ar daugiau metų žmonės rinkosi tokią žemdirbystės sistemą, kodėl jos nenutraukė, iš patirties žinodami apie greitą šių laukų žemės nualinimą? Kokią vertę, išskyrus prasimaitinimą, toks žemės kultivavimas turėjo ankstyvojo geležies amžiaus laikotarpiu?

Tokios sudėties žemdirbystės laukai Gotlande Uggårde-Vinarve vietovėje Ronos apylinkėje buvo pradėti tyrinėti 1973 metais. Pašalinus viršutinį žemės sluoksnį, atsidengė kryžmai arklu suartas dirvožemis. Suartoje dirvoje buvo aptikta daug anglių, kurios išliko valant laukelius nuo augmenijos. Radiokarboniniai duomenys rodo, kad ši laukų sistema buvo naudojama nuo bronzos iki romėniškojo geležies amžiaus laikotarpio. Radiokarbonu gautas laukelių datavimas taip pat rodo, kad dauguma jų kurį laiką buvo nenaudojami. Dideli žemdirbystei naudojami plotai, susidedantys iš mažesnių laukelių, susidarė per ilgą laiką. Laukų sistemos vystėsi ištisus šimtmečius, nuosekliai susijungiant laukeliams. Laukų plėtra kito pakartotinai keičiantis ekologinėms sąlygoms. Iš laukų buvo šalinami akmenys, ugnimi ir darbo įrankiais išvalomos laukelių vietos. Tada dirva buvo suariama, apsėjama, derlius nuimamas, o grūdai sumalami. Po kelerių metų laukelis paliekamas pūdymui. Paskui, kai buvo įdirbami nauji laukeliai, pūdymas ar apleistas laukelis galėjo būti panaudojamas kitiems tikslams – ganiavai ar atliekant juose kitus darbus.

Svarbiausias žemdirbystės tikslas buvo maisto produkcijos gamyba, tačiau ikiromėniškuoju laikotarpiu su žemės kultivavimu buvo glaudžiai susiję ir socialiniai klausimai. Kai žmonės įsitraukė į žemės apdirbimą, didelę reikšmę jiems turėjo ryšiai su aplinkinėmis bendruomenėmis. Vis dėlto teoriškai laukeliuose daugelį dalykų galėjo atlikti vienas žmogus, tačiau procese nuo derliaus nuėmimo iki maisto patekimo ant stalo dalyvauta keleto žmonių, kurie vienas su kitu buvo įvairiai susiję. Žmonės gyveno kartu, kartu valgė ir kartu apdirbo žemę. Vėliau, apdirbant žemę, santykiuose tarp žmonių ir žemės priklausomumo atsirado problemų.

Laukų sistemos, kurios pastebimos šiandien, yra ilgo proceso rezultatas. Šis procesas tęsėsi daugmaž tūkstantmetį ar ilgiau. Todėl žemės apdirbimas buvo ne vienos žmonių kartos rūpestis. Vyresni bendruomenės nariai savo laukų įdirbimo tradicijas perduodavo jaunesnei kartai, kuri juose dirbo kartu su vyresniąja karta.

Laukas buvo ta darbo vieta, kur jaunimas mokėsi deramai atlikti svarbias žemės apdirbimo užduotis. Žmonių kartoms bendraujant, laukai galėjo būti ta vieta, kur jaunimas mokėsi įdirbti žemę. Patyrimas, sukauptas vystantis žemės apdirbimo technikai, tapo verte, kuri žmonių buvo perduodama iš kartos į kartą. Šimtmečiais formavosi laukų sistemos, įsitraukiant didelėms žmonių grupėms.

Galiausiai intensyviai kultivuojama žemė tapo nederlinga. Autorės nuomone, technikos tobulėjimas sumažino gamtinius išteklius. Tačiau kyla klausimas, kodėl žmonės išsekino derlingą žemę perprasdami žemės apdirbimo technologiją? Matyt, tai nebuvo nepalankių žemdirbystei sąlygų rezultatas. Žmonės stengėsi kuo ilgiau pratęsti plotelių derlingumą, o tai reiškė, kad jie rado kažką dirvos derlingumui išsaugoti, nes ir toliau žemės derlingumas kilo. Autorės nuomone, vėliau laikydamiesi tradicijų jie nieko negalėjo padaryti tolesniam žemės derlingumui pakelti. Žemdirbystės raida ankstyvajame geležies amžiuje gali iš dalies paaiškinti, kaip jie dalyvavo šiame istoriniame procese, nes jo metu žemė tapo privačia nuosavybe.

Gotlando kraštovaizdyje pastebimi žemės ploteliai yra socialinių santykių tarp žmonių rezultatas, ryšių tarp praeities ir dabarties, tarp žmonių ir žemės pasekmė. Taikant agrarinės technologijos tęstinumą, žemdirbiai buvo įtraukti į to meto visuomenės santykius, kurių jungtys tarp atskirų kartų tuo metu buvo išlikusios ir suvokiamos kaip kažkas patrauklaus ir pageidautino. Galbūt tai buvo visuomenės santykių pasekmė, „pateisinanti“, kodėl to meto žemdirbių liko nepanaudota derlinga žemė.

Vertė Algirdas Girininkas