

## Mansion on the Hill – A Monumental Late Neolithic House at Vinge, Zealand, Denmark

Jens Winther Johannsen

### Abstract

This paper presents the results of an excavation of the remains of a large, Late Neolithic two-aisled house in the northeastern part of Zealand, Denmark. The house shows a strong resemblance to the well-known Fosie-houses, but is almost three times as large as these structures. It is suggested that the building housed a Late Neolithic family, their farmhands and their livestock. Furthermore, the house's monumentality signalled the power and wealth of its inhabitant(s) and is thus a clear indicator of the presence of an elite in the Scandinavian Late Neolithic society. The house is contemporaneous with the flourishing Únětice-centre in the Thuringia/Saxony-Anhalt region, from where copper and bronze were imported to Scandinavia. Although rooted in a Scandinavian building tradition, the Vinge house was probably influenced by the building of monumental houses in that area. The interactions with the Continent were likely based on a surplus in the Scandinavian Late Neolithic society generated by changes in agricultural strategies. These changes are reflected to some degree in the material from Vinge.

### Introduction

In recent years, various development projects are being realized in the area around the northern half of Roskilde Fiord on Zealand, Denmark. One of these is the construction of the new town of Vinge to the southeast of the town of Frederikssund. The area is rich in prehistoric remains. More than 50 Neolithic and Bronze Age barrows are registered within in a radius of three kilometres of the planned city centre. This concentration of prehistoric monuments led to one of the earliest Danish descriptions of a prehistoric landscape (Knudsen 1839), written only decades before the massive destruction of barrows and dolmens caused by intensive farming initiated as a reaction to the Danish loss of Schleswig, Holstein and Saxe-Lauenburg in the Second Schleswig War in 1864. Only two of the 50 barrows remain today. Because of the development of Vinge, several excavations were undertaken, revealing prehistoric sites in the area including the remains of a dolmen, a Middle Neolithic axe hoard (Johannsen 2016) and several small settlements dated to the Bronze Age-Iron Age transition. The present paper presents a large Late Neolithic house, which was discovered at the site of Vinge's future train station.

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## Description

The house was located ca. 18.5 metres above sea level at the northern edge of a large plateau. The plateau is naturally well-drained and was a cultivated field in recent history. The subsoil is typical Danish moraine with various mixes of clay, sand and pebbles. North of the house, the terrain slopes down towards what was once a large, low-lying wet area with several small bogs. However, the area has been extensively drained since the late 19<sup>th</sup> century and was used for cultivation until the initiation of the development work in the area. Only the bog Tvinsmosen exits today (Fig. 1).



The house measured 45.5 metres in length by 7.2 metres in width, was two-aisled and had a SW-NE orientation. Because the house was found at the edge of a plateau, the level of the postholes was observed approximately 50 centimetres lower in the east end than in the west end, while the postholes of the northern wall was observed approximately 10 centimetres lower than the postholes of the southern wall (Fig.2). Several house structures, scattered postholes and pits were found nearby. However, none of these can be dated to the Late Neolithic, but belong to a settlement from the transition between the Late Bronze Age and the Early Iron Age (Fig. 3).

The house's eight central posts were up to 95 centimetres deep, while one apparently was set on a large stone. The largest distance between the central posts of 8.20 metres, and the shortest distance of 1.50 metres were both found in the west end. At the east end of the structure, the distances were more even with an average of 5.15 metres (Fig. 4–5). Close up against the westernmost central post, a smaller post was set, most likely as part of an interior wall (see discussion below).

The house had three gable posts at each end. The mid posts in the gables were in line with the central posts but only half as deep. The distance from the mid-gable post to the closest central post was

Fig.1. The Vinge area seen from the north. The photo was taken in the summer of 2016, the year after the excavation of the Vinge house was finished. The location of the Vinge house has been marked with a red dot. In the centre of the photo, the construction site of Vinge town can be seen. The Tvinsmosen bog is immediately to the right of the construction site, while Roskilde Fiord is in the background. The photo was taken from a plane at approximately 500 feet. Photo: Ole Kastholm/ROMU.

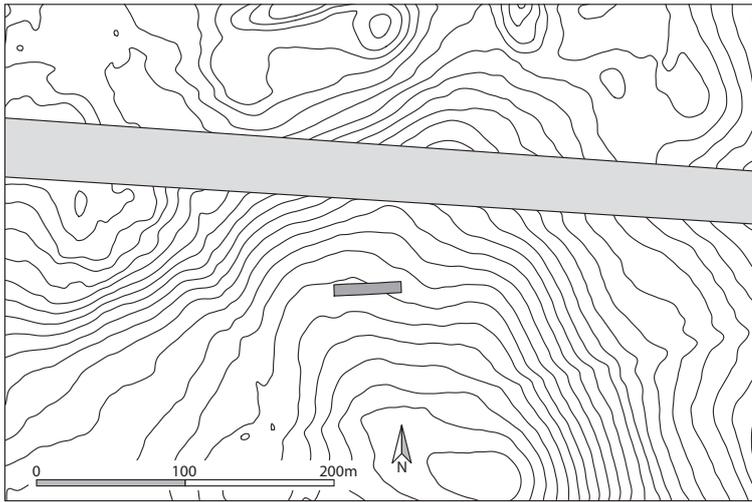


Fig. 2. The Vinge house and the surrounding area with contour lines (equidistance 0.5 metres). The grey stripe depicts a railroad track.



Fig. 3. Several pits, house structures and scattered postholes were found close to the Late Neolithic house. None of these are dated to the Late Neolithic, but mostly belong to a settlement from the Late Bronze Age/Early Iron Age.

approximately 3.15 metres at each end of the house. The central gable posts were slightly indrawn in comparison to the corner posts, whereas the corner posts were slightly indrawn in comparison to the wall posts, and were both wider and deeper than the latter.

The outer walls consisted of 28 postholes on the north side and 29 postholes on the south side, with an average depth of approximately 30 centimetres. The southern wall had a slight curve at its east end. The average distance between the wall posts was 1.57 m.

Nine indrawn posts were set approximately 0.50 metres inside the walls. Eight of these formed four pairs, centred around the central posts, but never exactly in line with these. These four pairs were found at the west end of the house, while a single indrawn post was found just inside the southern wall at the east end of the house. This



posthole had no equivalent inside the northern wall, but an equivalent post may have been set on a large stone found here. Two sets of indrawn posts were set only 1.50 metres apart at the west end of the house, possibly representing entrances (see discussion below).

A sunken floor lay at the east end of the house, measuring approximately 18 metres in length and 5.5 metres in width, with a maximum depth of 25 centimetres. The bottom of the sunken floor was uneven and may be described as trough-shaped with the deepest areas in the centre of the floor and the shallowest areas at its fringes. The sunken floor contained a layer of dark sandy clay with finds of worked flint and a small amount of ceramic sherds (see Table 1). No clear stratigraphy was observed, but towards the bottom, the layer was more compact and contained fewer finds. Traces of two central posts were identified in the section through the dark floor layer,

Fig.4. The Vinge house. The dark areas surrounding the house are clay extraction pits dated to the Late Bronze Age/ Early Iron Age. The photo was taken from west at approximately 130 feet. Photo: Martin Hamberg.

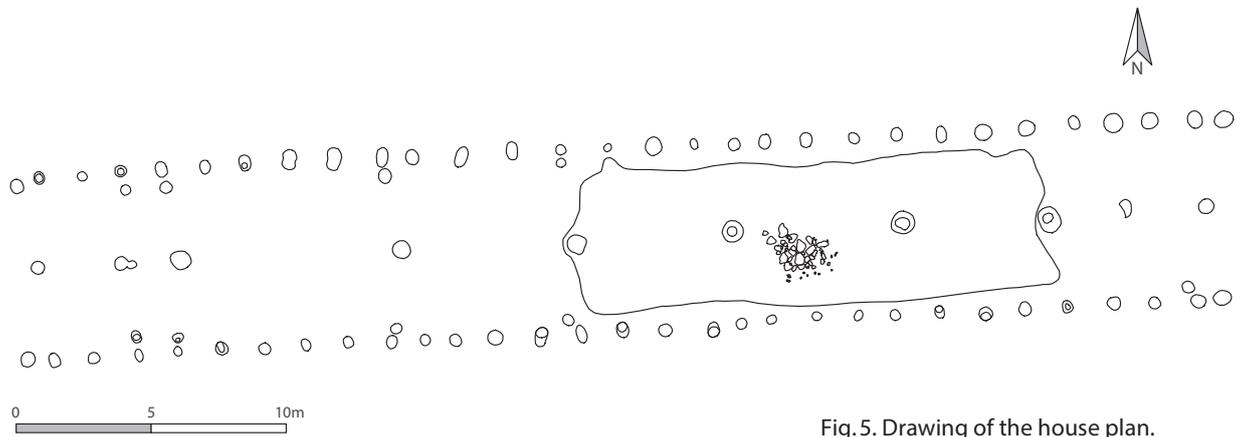


Fig. 5. Drawing of the house plan.

while the cuts for these postholes were found below it. Logically, the layer must have been generated around the standing posts (Fig. 6). Sunken floors are common in Late Neolithic houses in Jutland, but are also known on Funen, Zealand, Bornholm and in Scania, in much smaller numbers, however (Brink 2013, 447; Björhem/Säfvestad 1989, 53; Jacobsen 2012; Jensen 2006, 13; Jæger/Laursen 1983; Nielsen 1999, 156; Runge/Lundø in prep.; see also Sarauw 2006, 46–47 for further references). Some of the mentioned Late Bronze Age/Early Iron Age pits cut the sunken floor, but these were not identified until the dark floor layer was removed. That the floor layer was excavated in metre squares, however, made it possible to leave out finds and macrofossils from the contaminated areas when the find material was analysed.

Approximately in the middle of the sunken floor to the south of the house's long axis, a heap of stones was recovered. The stones were concentrated in an area of ca. 2 x 2 metres and varied in size from 5 to 50 centimetres (Fig. 5 and 7). None of the stones were fire-cracked. A loosely built, crescent-shaped frame of stones marked the southeastern boundary of the stone heap, while the rest of the stones did not follow any obvious order. The lowest-lying stones were found at the very bottom of the sunken floor, while the highest-lying stones protruded through the floor layer. No cut was observed, but one may easily have been overlooked in the dark fill. Since the top of the stone heap protruded through the floor layer, some of the stones must have been moved from their original position by ploughing in recent times. This may also explain the heap's somewhat irregular outline. Similar stone heaps have been found in sunken floors of Late Neolithic houses in Jutland (Dollar 2012; Nielsen in prep.). At least some of these must have been made after the houses were demolished, as they overlay postholes. Therefore, these stone heaps have been interpreted as a part of a ritual sealing of demolished houses (Dollar 2012, 44; Martin Egelund Poulsen, Museet på Sønderkov 2016, pers. comm.). One stone heap has been interpreted as a grave (Nielsen/Jensen 2011), and indeed the stone heap of the Vinge house shows resemblance to contemporaneous stone covered graves. However, in Vinge no finds support such an interpretation.

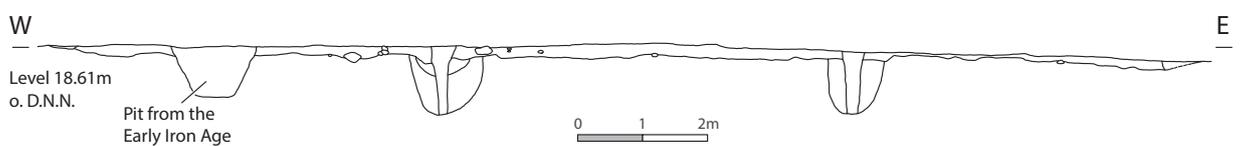


Fig. 6. Section through the sunken floor and the central posts in it.



Fig. 7. The stone heap in the sunken floor. Photo: Bo Jensen/ROMU.

### Repairs

A section through one of the wall posts of the west end of the northern outer wall revealed that the post had been replaced (Fig. 8). Several of the surrounding wall posts had oblong horizontal outlines, and may thus also have been replaced, although the sections could not substantiate this. Three small postholes in line with the possible replaced wall posts of the northern wall may be the remains of temporary posts, used when the wall posts were replaced. The oblong shapes of some of the posts of the southern wall indicate that this wall may also have been repaired, and there are indications of the renewal of two of the central posts at the east end of the house. The renewals indicate that the house stood long enough for comprehensive restorations to be necessary. The life span of earth-fast posts and longhouses is debated. Some experiments suggest that earth-fast oak posts can last for approximately 30 years (Zimmermann 1998 table 2), while other estimations reach a lifetime, which is twice as long (see further discussions in Møller 2013, 55–56 and Poulsen 2009, 160–161). A guess on the life span of the Vinge house may thus be one or two generations.

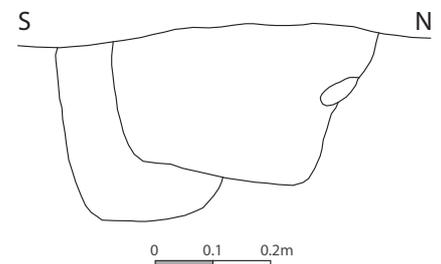


Fig. 8. Replaced post A374 of the west end of the northern outer wall.

### Finds

The vast majority of the finds from the house come from the floor layer, excavated in metre squares. The complete list of finds from the floor is found in Table 1.

A few finds deserve further description:

*A small arrowhead with a concave base* (Fig. 9): Although only re-touched along the edges, the arrowhead can be identified as belonging to Kühn's type 8 (Kühn 1979). The piece shows no damage and may thus have been discarded without use or simply lost.

*Two core tools* (Fig. 10 and 11): Both are oblong, and have an approximately triangular section. Both pieces are made of Danian flint and have small crush marks along the edges and in the pointed end. This may suggest use for knapping. Similar core tools are known as stray finds from the vicinity of Vinge and from the localities Røjle Mose, Hemmed Plantage and Fosie IV (Bjørhem/Säfvestad 1989, Pl XVIII; Boas 1993, 128 fig. 13; Jæger/Lauersen 1983 fig. 13).

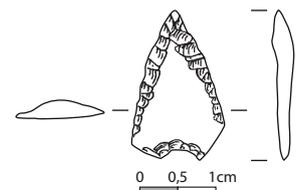


Fig. 9. Arrowhead with concave base found in the floor layer. Drawing: Rikke Lorentzen.

Type	Number
Arrowhead	1
Arrowhead, rough out	1
Spearheads, fragments	2
Borers	6
Scrabers	2
Core tools	2
Bifacial, rough-out	1
Cores	16
Retouched blades	5
Blades without retouch	39
Retouched flakes	49
Microdenticulated flakes	2
Flakes without retouch > 1 centimeter in diameter	1493
Flakes without retouch < 1 centimeter in diameter	673
Fire-cracked flakes	517
Ceramics, side sherds	44
Ceramics, rim sherds	2
Seashells, fragments	2
Bone, burnt, fragment	1
Fossilized sea urchins	2

Tab. 1. List of finds from the floor layer.

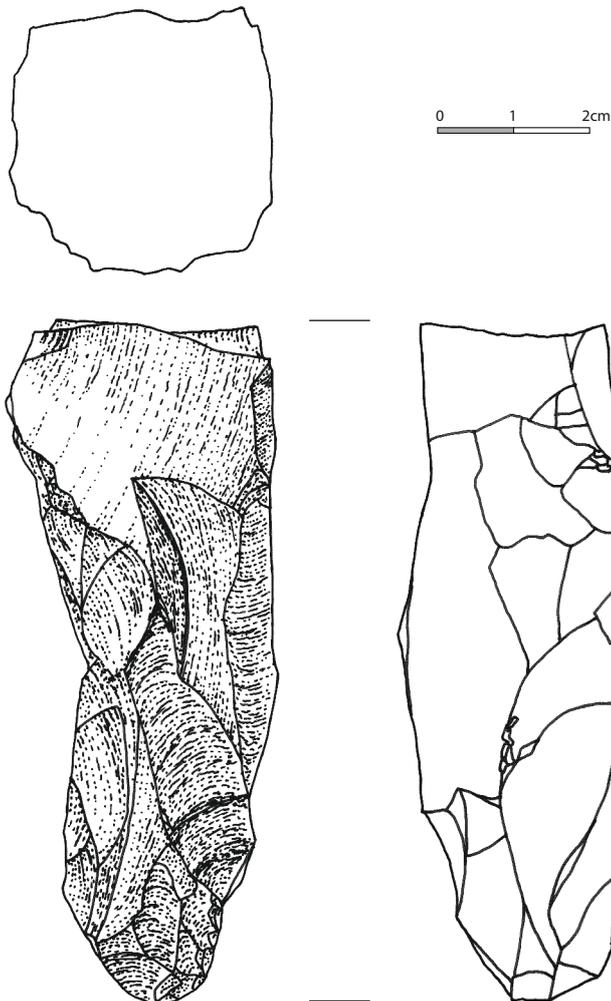


Fig. 10. Core tool found in the floor layer.  
Drawing: Rikke Lorentzen.

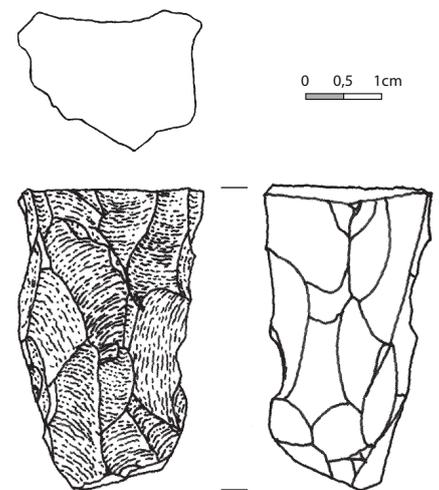


Fig. 11. Core tool found in the floor layer.  
Drawing: Rikke Lorentzen.



Fig. 12. Fragment of bifacial spear point or arrowhead found in the floor layer. Drawing: Rikke Lorentzen.

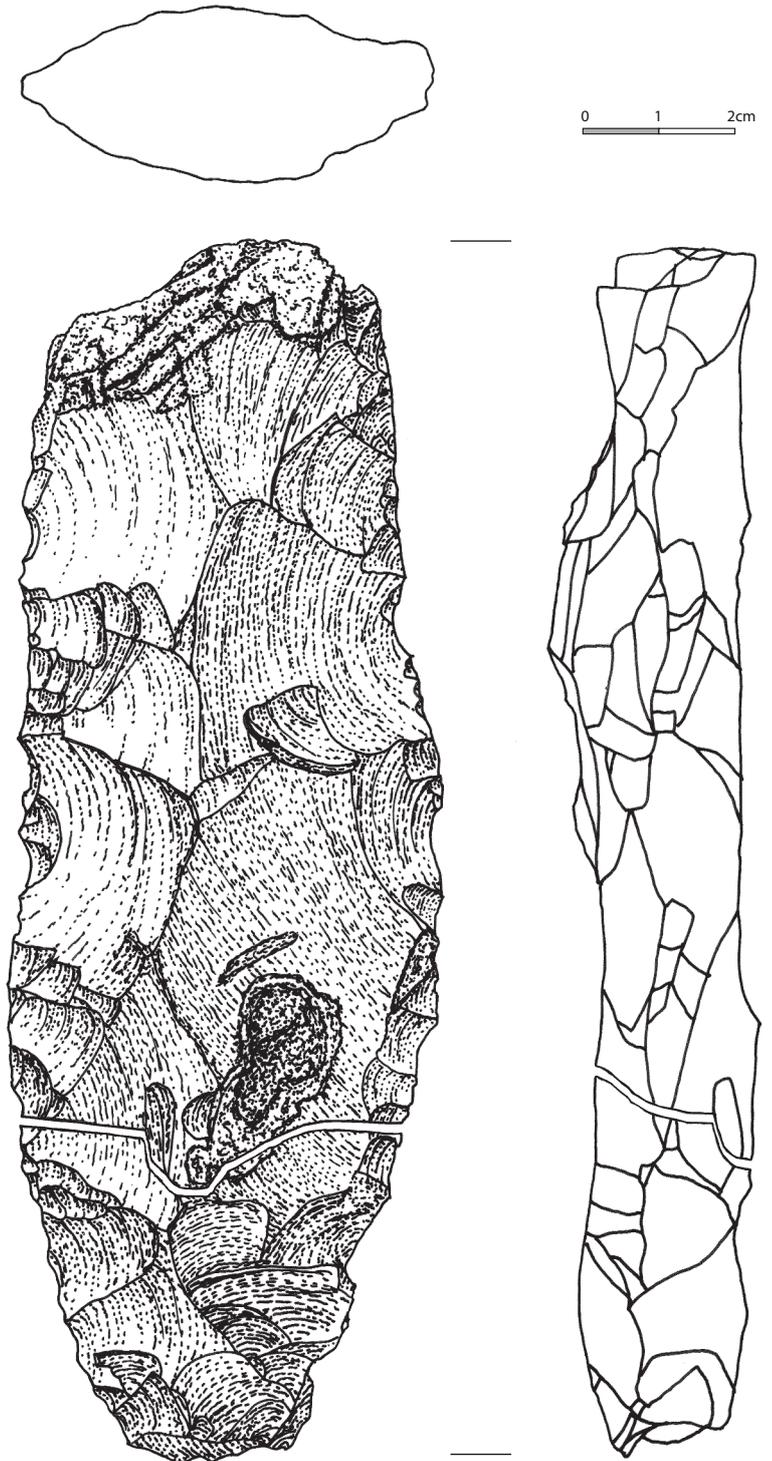


Fig. 13. Bifacial rough-out found in the floor layer. Drawing: Rikke Lorentzen.

*Two fragments of bifacial spearheads or arrowheads:* The first is a small, burnt fragment, while the other piece is broken at the base (Fig. 12).

*Bifacial rough-out* (Fig. 13): The rough-out consists of two separate pieces found within the same metre square of the floor layer. The rough-out is made of a characteristic greenish-grey Danian flint. A total of 105 flakes made of the same material were found scattered in the layer, and several of these can be refitted with the rough-out. This shows that the rough-out was made inside the house, where it broke and was discarded.

Posthole and type	Artefact type and number
A300, wall post	1 flake
A301, wall post	2 flakes, small fragments of ceramics
A309, wall post	1 flake
A351, wall post	2 flakes, 1 side sherd
A354, wall post	1 blade
A358, wall post	6 small side sherds, 2 bottom sherds
A360, wall post	4 flakes
A361, wall post	1 flake of quartz, small fragments of ceramics
A367, wall post	1 retouched flake, 1 seashell
A368, wall post	1 flake
A370, wall post	1 flake, small fragments of ceramics
A373, wall post	3 flakes
A374, wall post	2 flakes
A376, wall post	1 flake
A377, wall post	1 flake
A406, wall post	1 blade
A409, wall post	3 flakes, of which 1 is fire-cracked, 1 blade
A410, wall post	3 flakes
A425, wall post	1 flake, small fragments of ceramics
A335, corner post	1 flake, 1 blade
A428, corner post	1 flake
A342, gablepost	8 flakes, of which 5 are fire-cracked, 1 large bottom sherd
A349, frame post	1 flake
A366, frame post	1 bifacial arrowhead
A311, indrawn post	1 flake
A341, indrawn post	1 core, 2 flakes, 1 blade
A372, indrawn post	2 flakes
A404, indrawn post	1 flake
A314, central post	3 flakes
A343, central post	2 flakes
A363, central post	2 retouched flakes, 4 flakes of which one is fire-cracked, small fragments of ceramics

A smaller number of objects were found in the postholes (Table 2).

A few of these finds also require further description:

*A bifacial arrowhead* (Fig. 14): At the base of the eastern post of the doorframe in the northern entrance was found a bifacial arrowhead of Kühn's type 8.

*A seashell* (Fig. 15): The shell was found in one of the posts of the northern outer wall. It is from the species *Scrobicularia plana*, which is common in Danish waters. Thereby, it may have been collected from the Roskilde Fiord approximately two kilometres to the west. The shell has an odd appearance caused by a parasite attack, which have made it unusually thick and covered its surface with small, concentric circles.<sup>1</sup>

<sup>1</sup> Kindly identified by geologist Peter Ilsøe from Natural History Museum of Denmark

Tab.2. List of finds from the postholes.

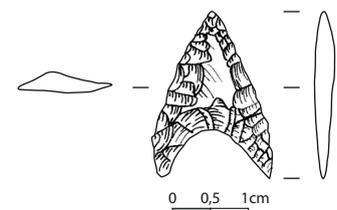


Fig. 14. Bifacial arrowhead found in post A366. Drawing: Rikke Lorentzen.



Fig. 15. Detail of the shell from wall post A367. Photo: Nikolaj Winther Johannsen.

*A ceramic vessel:* In the westernmost central gable post, the remains of a ceramic vessel were found. The vessel was placed bottom-down in the southern part of the posthole. Only parts of the bottom were preserved. The ware was thick, coarsely tempered with crushed stone, and poorly fired. The foot of the vessel protrudes slightly.

Artefacts found in postholes may have been placed as house sacrifices. House sacrifices are known, e.g., from the Late Neolithic settlement Fosie IV, where a flint dagger and a copper axe were found in different wall postholes in the same house (Björhem/Säfvestad 1989, 59). However, it is difficult to identify ordinary artefacts as ritually deposited objects, since they may have been settlement waste accidentally deposited in postholes during building, repairs or demolition. This explanation may be relevant for most of the posthole finds from the Vinge house, in particular the flakes and the small pieces of ceramics. In contrast, the character of the above-mentioned finds – the bifacial arrowhead, the odd seashell and the ceramic vessel – may indicate that these finds were deposited as house offerings.

### Macrofossils

In order to obtain material for radiocarbon dating and macrofossil analysis, soil samples were taken from every square metre of the sunken floor, from all the central and indrawn post and every third wall post. Initial macrofossil analysis revealed that the main part of the samples contained little or no charcoal, charred grains or seeds. However, a few samples, all from the west end of the house, were richer in charred grains and charcoal and were therefore chosen for thorough analysis. Grains identified in these were emmer/spelt (*Triticum dicocum/spelta*), bread wheat (*Triticum aestivum*) and naked barley (*Hordeum vulgare var. nudum*) (Jensen 2016; Thastrup et al. 2016, 6). These species have also been identified on other East Zealandic and Scanian Late Neolithic sites (Andreasen 2016; Brink 2013, 448; Jensen 2013a).

Very few weed seeds were recovered in the samples, a common observation for the Late Neolithic material (Thastrup et al. 2016, 6). This may either be due to the fact that the grain was thoroughly cleaned after harvest, or because only small amounts of weeds were present on the fields due to an agricultural strategy with long periods of fallowing, which leaves poor chances of field weeds getting established (Jensen 2013a, 20).

All analysed charcoal are from smaller branches and trunks, and thus likely originate from firewood collected in the surrounding area (Thastrup et al. 2016, 13). The identified species include alder (*Alnus sp.*), birch (*Betula sp.*), hazel (*Corylus avellana*), ash (*Fraxinus excelsior*), oak (*Quercus sp.*) and willow (*Salix sp.*). Oak was most frequent, found in all seven samples, while birch and ash were also relatively frequent. Alder, especially, but also birch, willow and ash thrive in wet soil. Hazel thrives in shady and nutrient-rich ground, such as the forest floor, while birch normally grows in open areas with plenty of light (Thastrup et al. 2016, 13). Thus, the six different species reflect a varied landscape near the house, including both dry and wet areas, and possibly both woods and open land.

The postholes with larger amounts of macrofossils were all located at the building's west end. Certain crops were concentrated in certain postholes, a pattern observed elsewhere and interpreted as an indication of the presence of small, day-to-day storage of grains (Thastrup et al. 2016, 5–6).

The westernmost central gable post and the central post closest to this were particularly rich in charred wood and grains, indicating that a fireplace was located in between them (Jensen 2016; Thastrup et al. 2016, 13). Another fireplace may be indicated by charred grains and charcoal found in the second central posthole from the west, in a nearby indrawn posthole, and in a nearby wall posthole.

## Dating

With its rectangular outline, straight gables, the indrawn posts and the one row of central posts, the house shows close similarities to the so-called Fosie-houses (Björhem/Säfvestad 1989), suggesting a Late Neolithic date. Most finds from the house have rather broad dating frames: arrowheads of Kühn's type 8 were apparently produced from the Late Neolithic to the Late Bronze Age (Ebbesen 2004, 94); the pointed core tools are characteristic of the Late Neolithic and the Early Bronze Age (Petersen 1993, 142), as are the spearheads (Becker 1957). The ceramic vessel found in the western central gable post had a slightly protruding foot, and it is identified as thick, coarsely tempered and poorly fired ware, all characteristics common during the last half of the Late Neolithic (Stilborg 2002, 78). The relative date of the house is confirmed by six <sup>14</sup>C-analyses made on grains found in postholes and in the sunken floor (Fig. 16). These date the house to the Late Neolithic Phase II, LNII, 1950–1700 BC (Vandkilde 1996, 166–175, figs. 158–159). With a somewhat larger error margin, the <sup>14</sup>C-date of the house can be narrowed down to the first century of the second millennium BC.

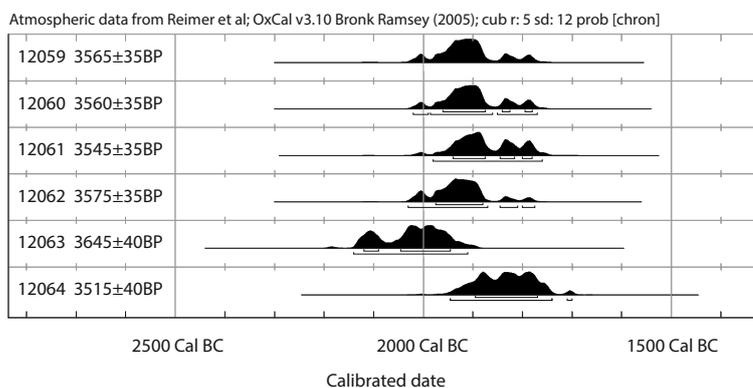


Fig. 16. <sup>14</sup>C-dates of the Vinge house. All six dates have been made on grains found in postholes and in the sunken floor.

### Related finds

A total of 7 hectares around the house have been examined through trial excavation and regular excavation. With the lack of contemporaneous, nearby buildings, the Late Neolithic house may be interpreted as a so-called single farm. However, it must be noted that the main part of the plateau, except for the northern edge where the house was located, remains uninvestigated.

Despite the lack of contemporaneous buildings, Late Neolithic activities are confirmed by a number of other finds from the area:

Approximately 160 metres to the northwest of the house, the remains of an almost completely destroyed Early Neolithic long dolmen have been excavated. The dolmen must have been intact when the house to the south was inhabited in the Late Neolithic. A find of an unpolished and unused axe of Late Neolithic type in a cobble layer marking the boundary of the megalith shows that the Early Neolithic monument was a site where rituals – possibly burials – took place during the Late Neolithic (Fig. 17). Reuse over a very long time span is common for East Danish megaliths (Iversen 2016, 123–130).

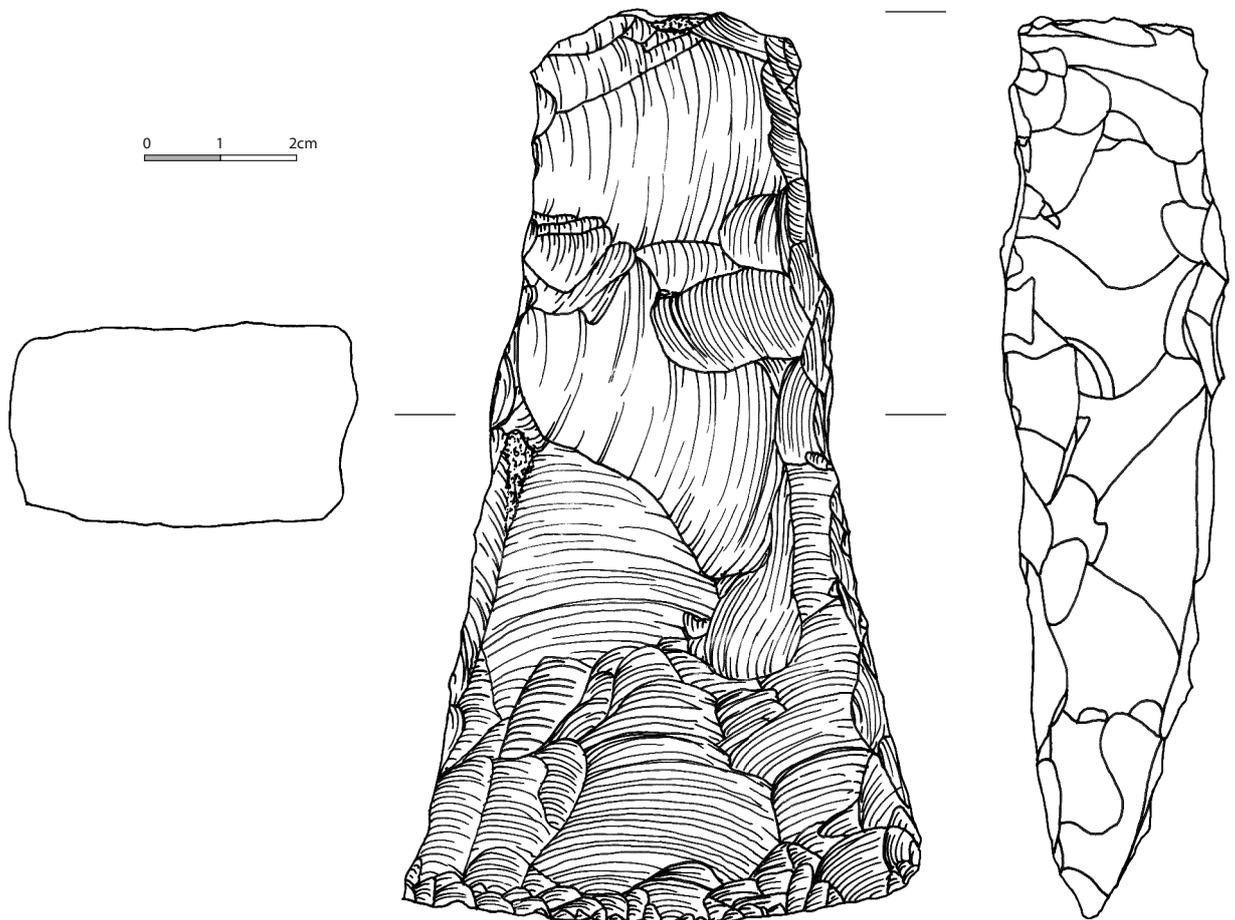


Fig. 17. Unpolished flint axe of Late Neolithic type found in the remains of an almost completely destroyed Early Neolithic long dolmen approximately 160 metres to the northwest of the house. Drawing: Rikke Lorentzen.

Other Late Neolithic evidence for rituals have been found at the edge of the earlier-mentioned bog Tvinsmosen, approximately 230 meters north of the house, including a dagger belonging to Lomborg's type IIIa and dated to the middle of the Late Neolithic, 2100–1900 BC (Lomborg 1973, 154). The dagger is 29 centimetres long and weighs only 166 grams. The beautiful, striped flint and virtuously made parallel flaking makes it a masterpiece of flint knapping (Fig. 8). Close by, a hoard consisting of four so-called spoon scrapers, characteristic Late Neolithic flint tools, was found during fieldwork in the early half of the 20<sup>th</sup> century. The objects are now lost, but a brief description and a sketch of their outline reveals that they were 13 to 16 centimetres long. This length is unusual, and may indicate extraordinary quality (The Danish National Museum, Topografisk Arkiv, jour. no. 249/46). Due to the wetland context, both the dagger and the scrapers may be interpreted as offerings, and they may very well reflect rituals carried out by the inhabitants of the monumental house on the plateau a few hundred metres to the south.

Agricultural activities are evidenced by a total of 19 stray finds of small, heavily used bifacial flint sickles from the low-lying area immediately to the north of the house. However, these cannot be dated more precisely than to the Late Neolithic or Early Bronze Age (Ebbesen 1982; Lomborg 1959). Similarly broad dates apply to several dagger fragments, arrowheads and various other bifacial flint objects included in a private collection of stone tools which were found during fieldwork throughout the 20<sup>th</sup> century in the area to the north of the house (Johannsen 2016).

## DISCUSSION

### Parallels

As mentioned, the Vinge house shows obvious similarities to the Fosie-houses, a Late Neolithic house type first found in Tingshög, near Köpinge in Southeastern Scania (Tesch 1983, 48 fig.30 A), but named after the site Fosie IV close to Malmö in western Scania (Björhem/Säfvestad 1989). Here, five almost identical houses were excavated. They ranged from 13.30 to 17.40 metres in length and 5.80 to 6.70 metres in width with three central posts in line, three sets of corresponding indrawn posts, straight outer walls, and straight gables consisting of two large corner posts and one post set in line with the row of central posts. In all five houses, the distance between the central posts was longest at the west end (Björhem/Säfvestad 1989, 70). Since the Fosie excavations, several similar houses have been found. The house type is particularly common in the areas of Denmark and Sweden around Oresund, but houses showing a strong resemblance to the Fosie-houses are also known on Djursland in Jutland, in the southern part of Zealand, on the island of Møn, in Southeast Scania and on the island of Bornholm in the Baltic Sea (Fig. 19).

The central part of the west end of the Vinge house is almost identical to the Fosie-houses: the position of the indrawn posts is slightly skewed to be in line with the central posts, the distance between the central posts is almost the same, and the total size of this incorporated Fosie-house element measures 18.30 x 7.20 metres, roughly corresponding to the size of the Fosie-houses (Fig. 20).

However, the Vinge house differs in several ways from the Fosie-scheme: The east end of the Vinge house is constructed differently with only a single indrawn post. Moreover, the sunken floor of the Vinge house is not found in the Fosie-houses. However, the most obvious difference is that the Vinge house is almost three times as long



Fig. 18. Dagger of Lomborg's type IIIa found at the edge of the bog Tvinsmosen, 230 metres north of the Vinge house. Photo: Nikolaj Winther Johannsen.

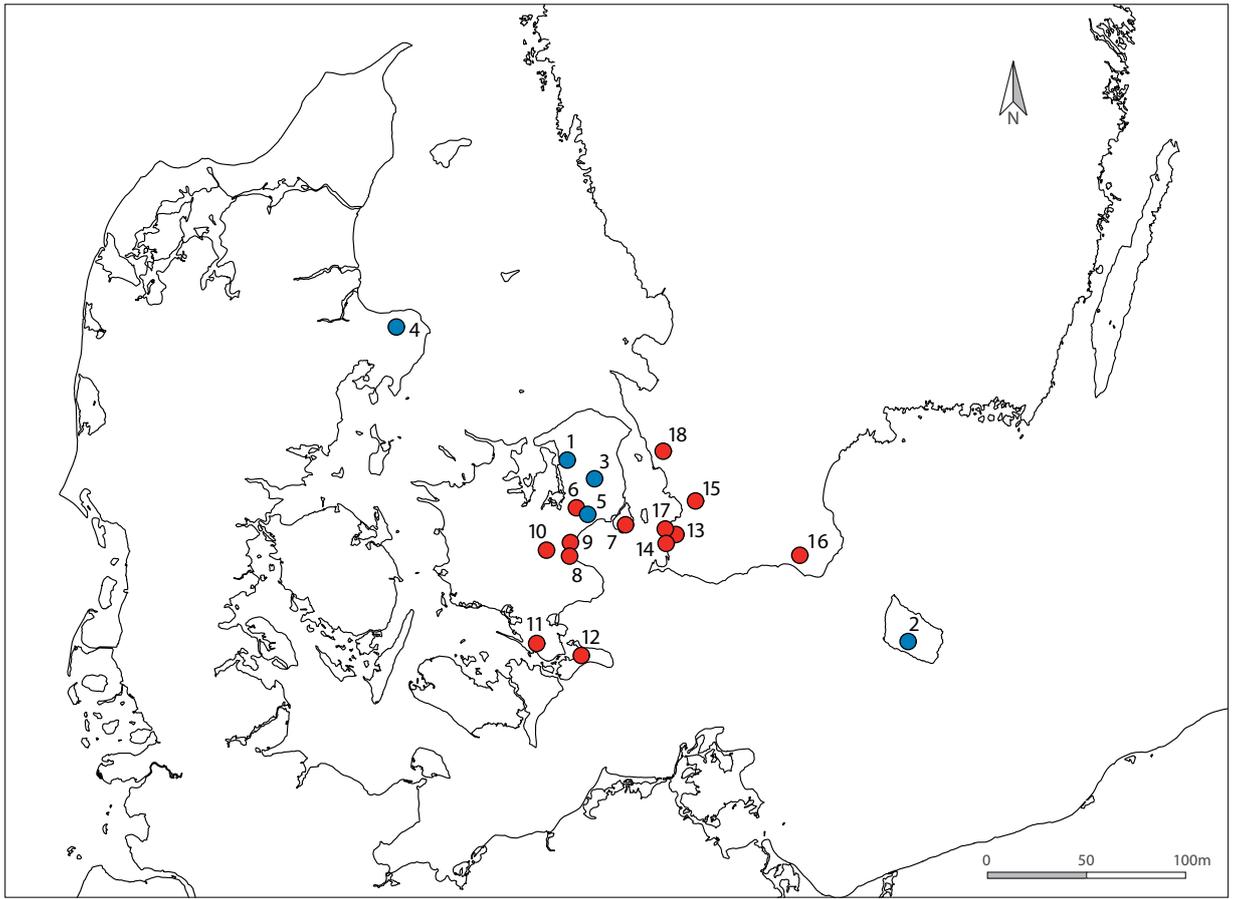


Fig. 19. House locations: The blue dots represent the monumental houses with Fosie-elements, while the red dots represent sites with Fosie-houses. No. 1: Vinge; 2: Limensgård (Nielsen 1999); 3: Stuvhøj Mark (Fonnesbech-Sandberg et al. 1991); 4: Hemmed Plantation (Boas 1993); 5: Sydvej 2 (Jensen/Stokholm 1992); 6: Jasonsminde (Jacobsen 2012); 7: Lundestien (Jensen/Stokholm 1994, 119); 8: Ølsemaglevej Nord (Madsen in prep.); 9: Ølsemagle Øst (Madsen in prep.); 10: Møllebankerne (Madsen in prep.); 11: Bakkebølle (Madsen in prep.); 12: Nymarksgård (Hansen/Christiansen 1997); 13: Fosie IV (Bjørhem/Säfvestad 1989); 14: Tygelsjö (Frejd 2013); 15: Stångby Stationssamhälle (Artursson 2000); 16: Tingshög, Stora Köpinge (Tesch 1983); 17: Kv. Anten (Kyhlerberg et al. 1995: 33); 18: Väst kustbanan, Plats 3: 7, Hilleshög (Andersson/Thörn 1996).

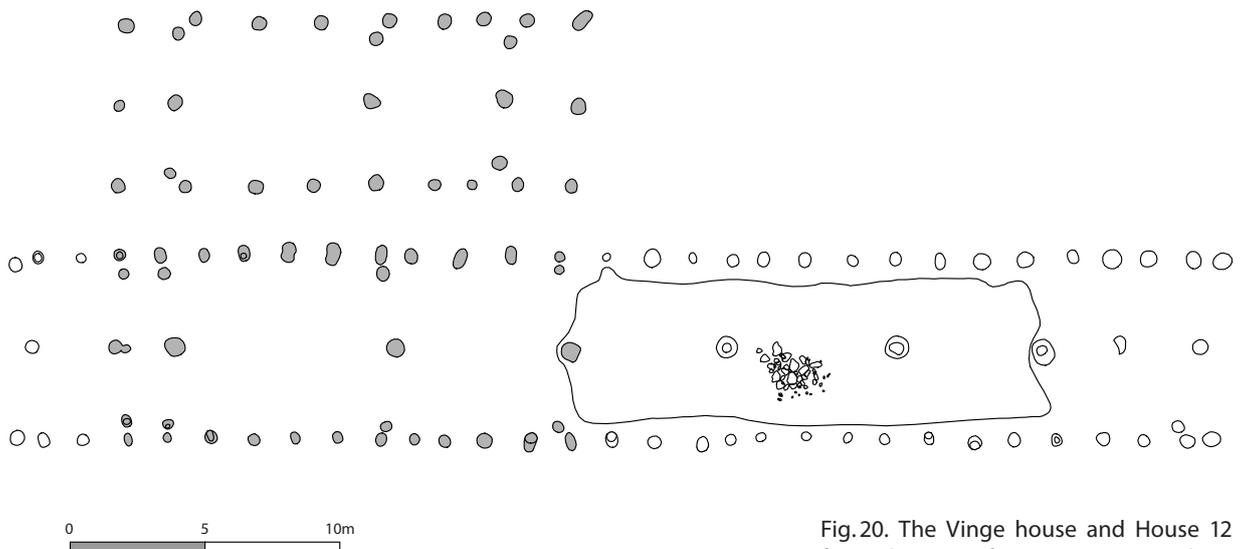


Fig. 20. The Vinge house and House 12 from the site of Fosie IV near Malmö, Scania. The Fosie elements of the Vinge house are marked with grey. Plan of House 12 is based on Bjørhem/Säfvestad 1989 Fig. 18.

as the largest of the Fosie-houses, because the westernmost part and the eastern half of the Vinge house are additional elements to the Fosie-scheme.

Four other Southern Scandinavian Late Neolithic houses reach the approximate same size as the Vinge house. These are House AB of the Limensgård site (44 metres; Nielsen 1999), House 1 from Hemmed Plantation (45 metres; Boas 1993), a house from Stuvehøj Mark close to the town of Ballerup on East Zealand (47 metres; Boye 2006, 146; Fønnesbech-Sandberg et al. 1991, 105–106) and a house from Sydvej 2 close to Hedehusene, also on East Zealand (44 metres; Jensen/Stokholm 1992, 130). The Vinge house, the Limensgård AB house and House I from Hemmed Plantation show obvious similarities to the Fosie-houses, while the houses of Sydvej 2 and Stuvehøj Mark are less similar.

Finally, House 4 of the Nymarksgård site on Møn and House 5 from the site of Jasonsminde on East Zealand must be mentioned (Jacobsen 2012, 60; Hansen/Christiansen 1997, 66). Both have Fosie-house traits, but, like the Vinge house, they only have indrawn posts at the west end.

The earliest dates of the Fosie-houses belong to the end of LN I and the house type seems to have been built throughout the LNII (Artursson 2009, 29; Frejd 2013, 25). Two <sup>14</sup>C-dates from Limensgård house AB cover almost the entire LNI, suggesting that the building of monumental two-aisled houses also commenced in this period (see Table 3). However, the house cuts House T, which is <sup>14</sup>C-dated to 1920–1740 BC, casting doubts on the <sup>14</sup>C-dates from House AB (Nielsen 1996, 323). The dates from House AB may very well be biased due to the character of the Limensgård site, with several overlapping houses and cultural layers from different periods increasing the risk of contamination. Moreover, both dates of the AB house were made on charcoal (Poul Otto Nielsen, the National Museum of Denmark, pers. comm. 2016), with the attendant risk of adding the age of the wood itself to the date.<sup>2</sup> The four other above-mentioned, monumental two-aisled houses with minor uncertainties date to Late Neolithic Phase II (see Table 3).

To conclude, the earliest Fosie-houses belong to the late LNI, while the monumental two-aisled houses were most likely a phenomenon that emerged within the LN Phase II.

Site and house	<sup>14</sup> C-date	Reference
Vinge	1975-1875 BC (1 $\sigma$ , LuS-12059, 3565 $\pm$ 35BP) 1960-1780 BC (1 $\sigma$ , LuS-12060, 3560 $\pm$ 35BP) 1940-1780 BC (1 $\sigma$ , LuS-12061, 3545 $\pm$ 35BP) 1975-1880 BC (1 $\sigma$ , LuS-12062, 3575 $\pm$ 35BP) 2120-1945 BC (1 $\sigma$ , LuS-12063, 3645 $\pm$ 40BP) 1895-1770 BC (1 $\sigma$ , LuS-12064, 3515 $\pm$ 40BP)	
Hemmed Plantation House 1	1750-1530 BC (1 $\sigma$ , K-5799, 3360 $\pm$ 80 BP) 1870-1550 BC (1 $\sigma$ , K-5798, 3390 $\pm$ 85 BP) 1900-1690 BC (1 $\sigma$ , K-5800, 3470 $\pm$ 85 BP) 1910-1700 BC (1 $\sigma$ , K-5797, 3480 $\pm$ 80 BP)	Rasmussen 1993,158.
Stuvehøj Mark House 7	1889-1667 BC (1 $\sigma$ , K-5939, 3460 $\pm$ 85 BP)	Sparrevohn in prep.
Sydvej 2 House 72	2035-1775 BC (1 $\sigma$ , K-5940, 3580 $\pm$ 85 BP)	Sparrevohn in prep.
Limensgård House AB	2458-2201 BC (1 $\sigma$ , AAR-2406, 3840 $\pm$ 90 BP) 2202-1982 BC (1 $\sigma$ , OxA-2893, 3710 $\pm$ 70 BP)	Nielsen 1996, 324.

Tab.3. List of dates of the Scandinavian Late Neolithic monumental houses.

<sup>2</sup> At the time of writing, researchers await new <sup>14</sup>C dates made on other material from the AB house (Poul Otto Nielsen, the National Museum of Denmark, pers. comm. 2016).

## Reconstructing the house

To sum up, the Vinge house was approximately 45.5 metres long by 7.2 metres wide, covering an area of approximately 320 m<sup>2</sup>. It consisted of one row of central posts, two rows of outer wall posts, two rows of indrawn posts, straight gables, and a sunken floor covering approximately 100 square metres at its east end. The following reconstruction of the house (Fig. 21) is based on a discussion of its ground plan, the results from excavations of other contemporary houses and on other people's experiences from reconstructing House 13 from Fosie IV in Skånes Djurpark (Björhem/Säfvestad 1987) and House 2 from the Nymarkgård site on the Danish island of Møn.<sup>3</sup>

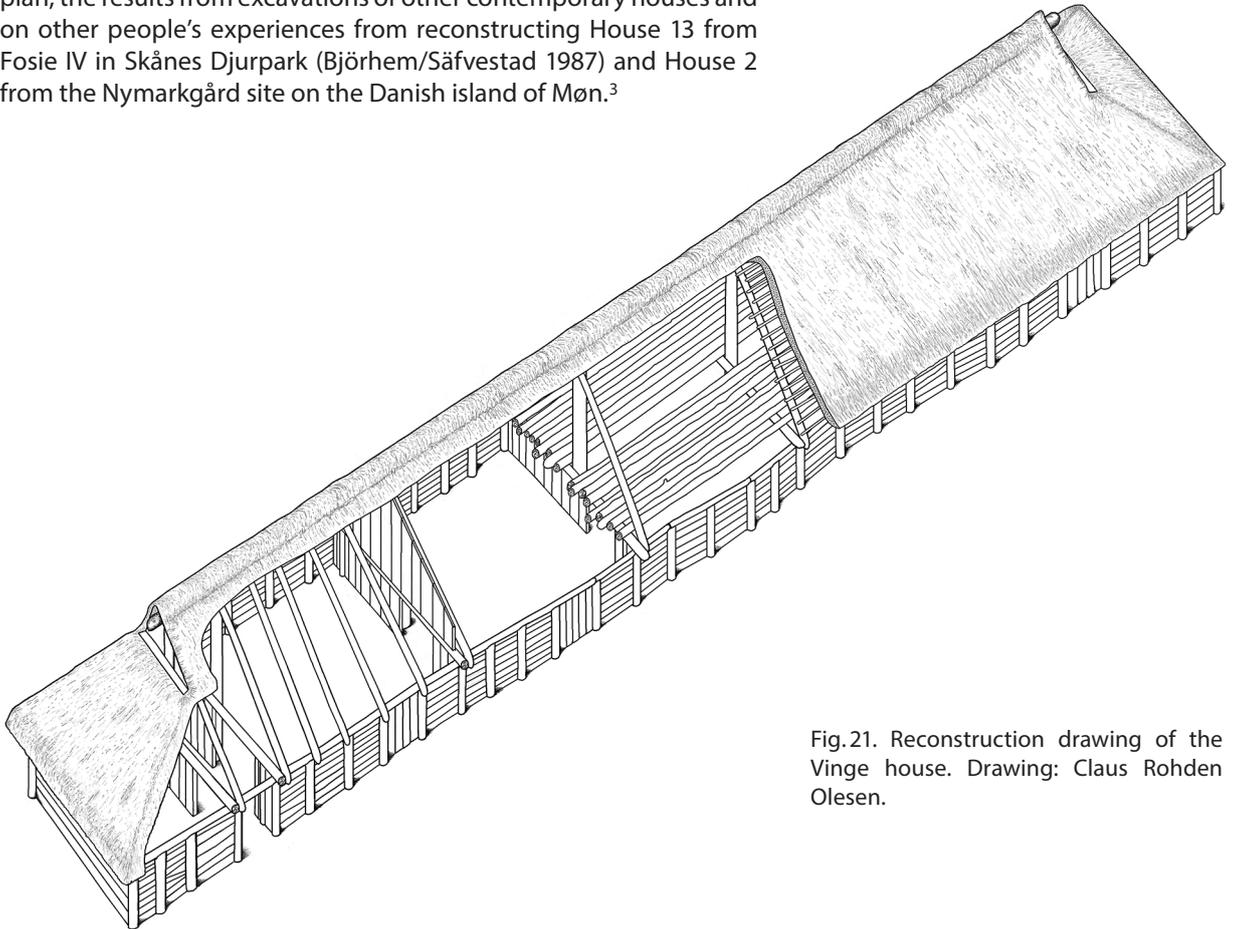


Fig.21. Reconstruction drawing of the Vinge house. Drawing: Claus Rohden Olesen.

Several interpretations of the functions of the Late Neolithic sunken floors have been presented (see discussion in Sarauw 2006, 56–61) of which the most convincing seems to be that it served to make more room under a loft (Møbjerg et al 2007, 32–34). Following this, the eastern part of the Vinge house may have been fitted with a loft, so the space immediately below the pitched roof could be used to the full. The lowering of the floor beneath the loft made it possible to stand upright in almost all parts of the house without having to build higher outer walls. The original ground level must have been approximately 25–30 centimetres above the observed level, considering the removal of the plough horizon during excavation. Thus, the sunken floor must originally have been at least 50 centimetres deep in the central parts. If the wall and gable posts stood to approximately 1.5 metres above this level, this would create a total of 2.0 verti-

<sup>3</sup> A reconstruction of House 2 from Nymarksgård was built by thatcher and artist Morten Flyverbom at the Nymarksgård School on Møn. Shortly after it was finished, the house was burned to the ground by vandals, but Morten Flyverbom has kindly assisted with his expertise in house building during the preparation of this paper.

cal metres space under the loft where the sunken floor was deepest, more than enough for an average adult person to stand upright.

The southern and northern outer wall-posts were set in almost straight lines, at a relatively regular interval of approximately 1.5 metres from each other, while the distance between the posts in the gables was the double. The long distance between the posts give an impression of open gables, but this would have made the house close to useless in the sometimes harsh Southern Scandinavian climate. More likely, the gable posts supported the outer walls, despite the long distance between them. The next question is how the gables and the long walls were covered. At least some Late Neolithic houses had plank-built walls. This claim is based on the often large distance between the wall posts and is supported by impressions of hewn planks in burnt clay fragments found in connection to the Late Neolithic House III at the settlement of Hemmed Church (Boas 1991, fig. 12). Furthermore, clay extraction pits and remains of daub are rarely found in connection to Late Neolithic houses, indicating that clay-covered outer walls were not common (Björhem/Säfvestad 1989, 100; Nielsen in prep.). This observation is also true for Vinge. The relatively large distance between the wall posts and the lack of clay extraction pits and daub, may indicate that the outer walls of the Vinge house were covered in planks, although other wall types cannot be excluded.

One or two fireplaces were present at the west end of the house. This may indicate that this section did not have a loft but was open to the roof. This would allow smoke from the fireplaces to go up under the roof and likely out of smoke holes in the hips, as suggested for the Fosie-reconstruction (Björhem/Säfvestad 1987, fig. 35). The roof may have been thatched with reeds, harvested in the nearby wetlands or in Roskilde Fiord. A 45-degree angle is ideal for a thatched roof (Hansen/Christiansen 1997, 70), and with the suggested height of the outer walls of 1.5 metres, the roof-supporting central posts can be estimated to have measured just below 5 metres in length. Likewise, the angle of the hipped gables may have been approximately 45 degrees based on the suggested height of 1.5 metres of the gable posts and the distance of 3.15 metres to the closest 5 metres tall central post.

It has been suggested that the roofs of the Fosie-houses were carried entirely by the central and the indrawn posts and this is now more or less accepted as a fact in the discussion of the Late Neolithic houses (Björhem/Säfvestad 1987; Björhem/Säfvestad 1989, 73–74; Jensen 2002, 22; Nielsen in prep.). A reconstruction of one of the Fosie houses was built in 1982–1984 in Skånes Djurpark. Its roof is entirely carried by the central and indrawn posts (Björhem/Säfvestad 1987). The house still stands, proving that the construction is long lasting, although some problems with the roof-supporting construction have occurred (Björhem/Säfvestad 1987, 45). In a reconstruction drawing of the Fosie-like House 2 of the above mentioned Nymarksgård site, it is alternatively suggested that the roof rests on the wall posts and on the central posts, while the indrawn posts are connected by cross- and side beams, which propped up the rafters (Hansen/Christiansen 1997, 70–71). In the Vinge house, the indrawn post hardly supported the roof, as only a single indrawn post was set at the east end. The roof must have rested entirely on a middle ridge resting on the central posts and on a wall plate resting on the outer walls. This begs questions about the function of the indrawn posts at the west end. Small posts, interpreted as remains of a interior wall, have been found in line with one set of indrawn posts and a central post of House 1 of Hemmed Plantation (Niels Axel Boas, Museum Østjylland, pers. comm. 2016), and in House 19 from Stångby in Scania (Ar-

tursson 2000, 25). As mentioned previously, a small post, set right up against the westernmost central post and in line with two indrawn posts, may indicate that the Vinge house also had interior walls in connection with the indrawn posts. Thus, a likely interpretation of the indrawn posts of the Vinge house is that they supported interior walls.

Two sets of the indrawn posts were set at a distance of only 1.50 metres. This may indicate the presence of an entry-room and two entrances, opposite each other in the southern and the northern walls at the west end of the house. A similar feature is seen in House 1 on the Hemmed Plantation settlement (Boas 1993, 130). The east end of the house was also most likely fitted with entrances, but their positions cannot be identified. Considering the symmetry of the house, entrances may have possibly been located at the same distance from the gables at both ends, while the lack of indrawn posts at the east end shows that the entrances here led directly to the large open room. It is also possible that an entrance was placed in the eastern gable of the house.

Accepting that the indrawn posts represent the remains of interior walls, the internal arrangement of the house can be sketched: The house had a small room at the westernmost end of the house, followed by a narrow entry-room with the two entrances. The largest room of the west end was located immediately east of the entry-room, followed by a somewhat smaller room. The east end of the house may have consisted of one large open room. However, given the sole indrawn post, it is also possible that the east end was divided into two rooms: one large room, with the sunken floor, and one smaller room at the easternmost part of the house.

## Functions

In the Fosie-houses, the largest distance between the central posts is normally found at the western end of the structures. Björhem and Säfvestad suggested that this was to make space for a fireplace. Consequently, the heated west end most likely served as the living quarters (1989, 96). This interpretation is supported by finds of a fireplace at the west end of House 2 at the Nymarksgård site on Møn and in the house from Tingshög near Köpinge in Scania (Hansen/Christiansen 1997, 64; Tesch 1992, 298). As mentioned, the presence of charcoal and charred grains in the postholes of the largest west room of the Vinge house, corresponding to the largest room of the Fosie-houses, indicates a similar location of a fireplace. Furthermore, finds of charred grains and charcoal in the postholes of the smallest, westernmost room, indicate that this room was also heated. Following Björhem and Säfvestad's interpretation, the two westernmost rooms may have been the heated living quarters, in which the residents of the house slept, where food was prepared and eaten, etc. The narrow entry-room, represented by the two sets of indrawn posts between the two westernmost rooms was likely there to prevent draughts from the entrances from entering the living quarters. There are no finds from the easternmost room of the west end, which would indicate its function. The corresponding rooms at the east end of the Fosie-houses have been interpreted as space for storage and work areas (Björhem/Säfvestad 1989, 96–98). Considering the interpretation of the east end of the house as a byre (see below), this area may well have had such barn-like functions.

Sven Nielsen (1999, 126-129) suggested that the common Late Neolithic house was inhabited by a single family unit consisting of an adult couple, one or two juveniles, one or two relatives or guests and

a undefined number of children, while Björhem and Säfvestad (1989, 106) suggested less specifically that the Fosie-house housed an extended family. Given signs of heating and food preparation in the western part of the Vinge house, and given the almost perfect resemblance of the house part to the Fosie-houses, the Vinge house may well have housed a Late Neolithic family of some undetermined composition. However, the additional heated room in the westernmost part of the house may indicate the presence of extra inhabitants in contrast to the Fosie-houses. Who they may have been is one of many open questions; one possibility is farmhands; another thralls.

While the signs of heating indicate that the western half of the house served as living quarters, the interpretation of the east end of the house is more difficult. As the stratigraphy shows that the layer in the sunken floor was accumulated while the house was in use, the finds from the floor must reflect some of the activities, which took place there. The replacements of posts show that the house likely stood for several decades. Consequently, the finds from the sunken floor were accumulated over a long time-span, making it impossible to identify specific activity areas. Yet, the finds give some overall information about the kinds of activities that took place. The flakes and the broken bifacial rough-out show that flint knapping occurred. The relatively small amount of lithics for the suggested use-period however hardly reflects a workshop. More likely, flint knapping took place in this part of the house when the need for a simple tool emerged. The scattered burnt flint found in the sunken floor could indicate the presence of a fireplace, but this is contradicted by the lack of distinct concentrations of burnt flint, charcoal, fire-cracked stones etc., which would most likely have been preserved in the sunken floor. Thus, this house area was probably not regularly heated and thereby hardly served as living quarters. Despite all reservations concerning preservation, the very small amount of grains found in the large, well-sampled sunken floor of the Vinge house does not indicate that this house area was used as a storage room for food and grains, which is most certainly the case in some Late Neolithic houses (Jensen 2013b). That the west end of the Vinge house almost exactly corresponds to the ground plan of a Fosie-house, suggests that the large open eastern room should be interpreted as an extension of this fixed Late Neolithic house unit, and the rather ordinary find material from the sunken floor indicates that the east end's function is likely to be found within the same practical, economical daily life-sphere. In light of this appraisal, it is tempting to interpret the east end of the house as a large, integrated byre, as we see in the houses of the Early Bronze Age and later parts of the Scandinavian prehistory. Phosphate analysis has been thought to be a method to identify stalled livestock (e.g. Ethelberg 2000), but the general lack of convincing results of this method is the reason why phosphate samples taken from the Vinge house were not analyzed. Except for the few lucky cases, where remains of livestock have been found inside burned prehistoric houses, the best indication of stalled livestock is thus the remains of cattle boxes. Short trenches at right angles to the outer walls, which have been found in a small amount of the numerous three-aisled houses from the Early Scandinavian Bronze Age, are interpreted as such (Bech/Olsen 2013, 16-18). That remains of cattle boxes are rare is likely a matter of differences in preservation conditions, as the small, shallow trenches are vulnerable to ploughing. Byres may thereby have been more common in Scandinavian Bronze Age houses than is possible to document from the present archaeological data. Furthermore, livestock may also have been stalled without cattle boxes. The absence of cattle box trenches can therefore

not be taken as a proof of that livestock was not stalled in the house (Bech/Olsen 2013, 17-18; Grundvad et al. 2015, 63). Therefore, there is no reason to exclude that livestock was stalled in some of the Late Neolithic two-aisled houses as well. In fact, the east end of a two-aisled house from Hesel in Northwestern Germany contained trenches similar to the ones interpreted as cattle boxes in the mentioned Danish three-aisled houses (Schwarz 1996, 31–32). However, when nothing like that is preserved, which is the case in Vinge, it is rather difficult, not to say impossible to prove the byre function. The interpretation of the east end of the Vinge House as a byre integrated in the house remains speculative. It nevertheless corresponds well to the somewhat diffuse evidence of human activity, e.g. the scattered flakes and tools found in the sunken floor and the lack of a regular fireplace, which indicates that people primarily worked in the house area. Furthermore, a reasonable interpretation of the dark, compact soil in the shallow, sunken floor may be that it derives from stalled livestock trampling in their own dung, which thereby became mixed with the clayey subsoil in the bottom of the sunken floor. With this background, it is suggested here that the east end of the Vinge house was a combination of byre and barn integrated in the house. The suggested loft above the room may have been used for storage of fodder and litter for the animals. In addition to housing the livestock, the east part of the house may however have had several other functions, especially if livestock was outside during parts of the year. The interpretation of the function of the east end of the house as a combination of byre and barn further emphasize that the east end of the house must have had entrances, although there is no direct evidence for this.

To sum up, the building may have housed a family and possibly farmhands and it was likely also used for both storage and stalling. Despite the extraordinary size of the house, there is nothing extraordinary in the finds from it to suggest any special function, comparable to the halls known from later parts of prehistory (Herschend 1993). Yet, the monumental size of the Vinge house, compared to common Late Neolithic houses, and its position on the elevated plateau with a wide view in all directions and high visibility show that the inhabitants were of special importance. This was likely the residence of a magnate, his family, his farmhands and his livestock, all included in one enormous building. In addition to its practical functions, the house was thus an imposing monument displaying the inhabitant's wealth and power, which is also reflected by the quality of the nearby contemporaneous hoard finds. Although the house was likely the residence of a single household, the monumentality of the house hardly reflects a single household's work efforts. The building of the house, and perhaps more importantly, the procurement of the needed raw materials, reflect the work efforts of a larger group of people, perhaps organized and led by the future master of the house.

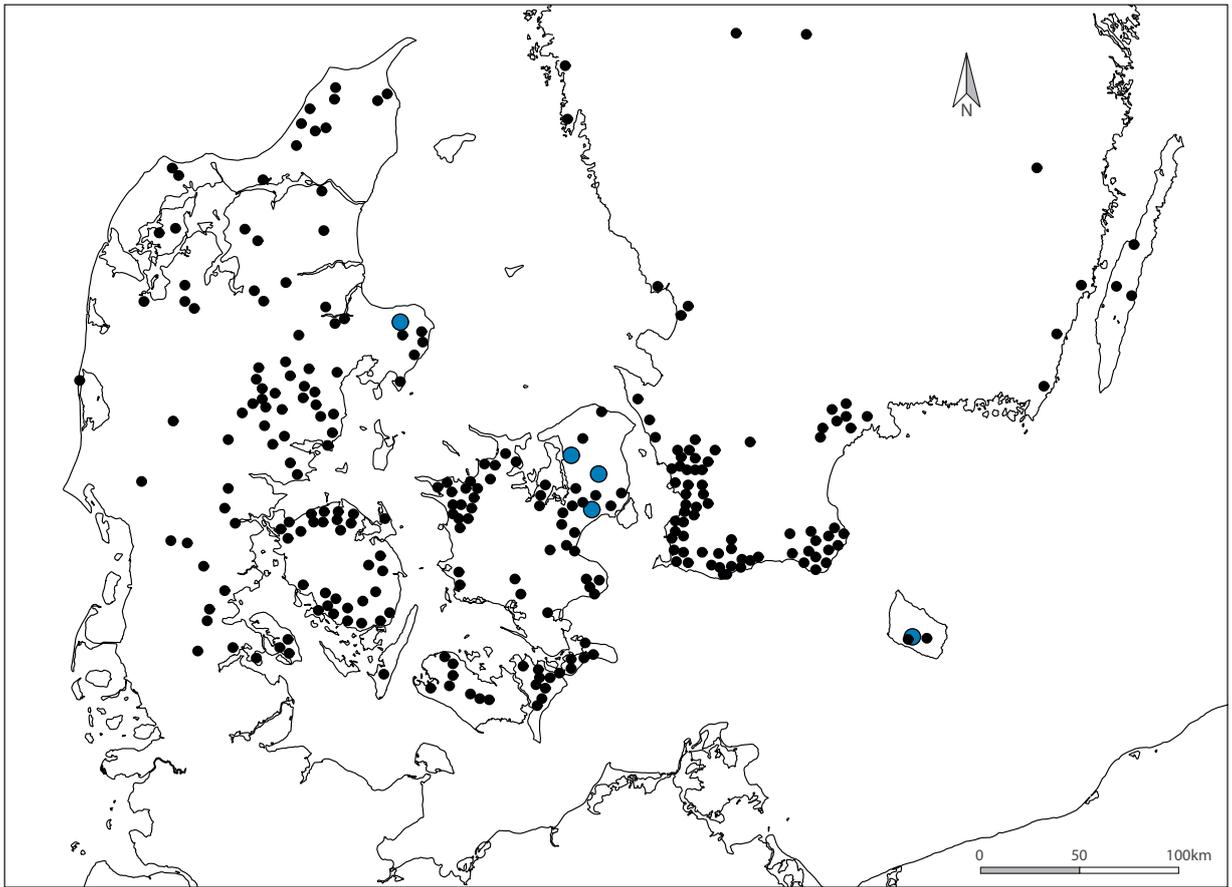
### The house in European context

The Vinge house belongs to the Late Neolithic Phase II, *LNII*, 1950–1700 BC. This roughly corresponds to Lomborg's Period SNC and to Reinecke's Br. A1b, i.e., the Classic Únětice phase in Central Germany (Vandkilde 1996, 166–175 figs. 158–159). This is a period characterized by the emergence of various rich, metal consuming societies on the Continent. Closest to Scandinavia is the centre in southern Saxony-Anhalt and Northern Thuringia, which is well-known for its rich-

ly furnished so-called princely graves covered by enormous mounds, and for hoards of large numbers of metal artefacts. These illustrate that the northern range of the Únětice culture was a centre of metal distribution in the earliest Bronze Age in Central Germany (Breddin 1969; von Bruun 1959; Meller 2004; Meller/Schunke 2016). Monumental two-aisled houses are found in the core area of the Únětice culture (see Schefzik 2010 for a recent update), while recent excavations show that monumental, three-aisled houses were introduced in the Saxony-Anhalt/Thuringia area in the Classical Únětice phase corresponding to LNII in Scandinavia (Küßner 2015; Stäuble 1997). An example is a 44 metres long and 11 metres wide three-aisled house excavated at Dermsdorf in Central Germany. This contained a hoard of approximately 25 kilos of bronze, consisting of 98 axes and two dagger rough-outs indicating that these monumental houses were inhabited by the elite who controlled metal exchange. The house was found only 3.6 kilometres from the famous Leubingen mound and belongs to the Classical Únětice phase (Küßner 2015, 197).

In the Danish LNII, contemporaneous to the apogee of the Central German Early Bronze Age centre, the amount of metal that circulated in Southeastern Scandinavia increased heavily, and local metal craftsmanship developed. The vast majority of metal objects imported during LNII originate from the northern range of the Únětice Culture or in its Baltic periphery. However, locally produced metal objects are most frequent, while the metal used for the local Scandinavian production most likely also originates from the northern range of the Únětice Culture (Vandkilde 1996, 206-210). Unique or rare imports in the Gallemose and the Skeldal hoard (Randsborg 1992; Vandkilde 1990), reflect close contacts between Late Neolithic Scandinavia and the elites of Early Bronze Age Central Europe (Vandkilde 1996, 298-302). Exchange between Scandinavia and Central Europe is also reflected by Scandinavian flint daggers of type III, IV and V found in the centre of the Únětice culture (Zápotocký 1961). Not least, the groundbreaking achievements in strontium analysis in recent years have proven that Scandinavians travelled to the core area of the Únětice culture in the Late Neolithic, substantiating theories about direct contact between Central and Northern Europe in this part of prehistory (Pokutta 2014).

Únětice influence in Scandinavia seems to have been most intense in Eastern Denmark and Scania, where the majority of LNII metal objects have been found. The monumental two-aisled houses are found within the same area (see Fig. 22 and Poulsen 2009, 163 fig. 2). As already described, the building of the monumental houses commenced in LNII, when the centre in Central Germany flourished and Únětice influence peaked in Scandinavia. It is thus tempting to perceive the monumental Scandinavian houses in the light of contemporaneous developments on the Continent. It has been claimed that the monumental Scandinavian houses are closely paralleled in contemporaneous two-aisled houses found in Central Europe (Poulsen 2009, 164; Nielsen 1999, 159-163; Nielsen in prep.). In my opinion, this is not the case. There are indeed large, two-aisled houses in Central Europe during this period, but these differ from the Scandinavian houses in form, notably with regard to the internal arrangement. The very stringent internal arrangement of the Fosie-houses and thus also of the monumental houses of Vinge, Hemmed and Limensgård, is a specific Southeastern Scandinavian phenomenon, as is the sunken floor. Furthermore, the earliest three-aisled houses of Central Europe, built in the Classical Únětice phase, are contemporaneous with Scandinavian LNII. This building tradition is not introduced to Scandinavia until the Early Bronze Age Period I. Despite these reservations, it is hardly a coincidence that monumental houses emerged



in Scandinavia at the same time as Únětice influence peaked in the centuries after 2000 BC. The people responsible were most likely inspired by the monumental houses on the Continent. They must have known, perhaps first hand, how the Central European elite built and lived, and understood the power and wealth that the monumental houses signalled. However, this new, distinct symbol of power was not copied, but translated into Scandinavian reality as new monumental houses built in the old, local building tradition.

Fig.22. Monumental houses and bronze finds: The blue dots represent the monumental houses with Fosite elements, while the black dots represent bronze finds dated to the Late Neolithic Phase II (based on Vandkilde 1996, 209 and Willroth 1985, 49).

## Economy

As often emphasized, the growing importance of metal and the interactions with new and powerful metal-consuming societies on the Continent were a catalyst of the development of the Late Neolithic/Early Bronze Age Scandinavian society (Vandkilde 1996; Poulsen 2009; Nielsen 1999). The basis of metal imports was a widespread internal Scandinavian exchange system already established in the Middle Neolithic, first and foremost based on the demand for flint, and further consolidated through an ongoing exchange of flint and other goods in the last part of the Neolithic (Apel 2001; Becker 1952; Sarauw 2008; Vandkilde 1996; Varberg 2005).

However, both internal exchange and interactions with the Continent must have been based on a surplus in the Late Neolithic economy. People's general living conditions seem to have improved in the Late Neolithic reflected by a possible 10 cm increase of the average human height compared to the Middle Neolithic (Bennike 1985, 51; Tonberg 2014, 14). This was likely based on several different factors: the introduction of the more efficient metal axes, which eased the building of boats, wheeled vehicles, houses and not least made

the clearance of farmland more efficient, may have been one factor. Nevertheless, the fundamental reasons for the economical surplus must be sought in the period's agriculture. The Vinge house yields little concrete economic evidence, but when compared to other contemporaneous materials, the house and its surroundings include several indicators of the Late Neolithic economy. The house's location at the northern edge of a plateau with large areas of dry, fertile farmland suggests the importance of field cultivation. Field cultivation is also indicated by the macrofossils from the house. These further reveal that at least three different species of crops were cultivated – a strategy which reduced the risks associated with crop failures, diseases, etc. Archaeobotanical evidence from other Late Neolithic Danish and Southern Swedish sites suggests that the reliance on several different species of crops was a widespread strategy in the Late Neolithic, which represents a change from Middle Neolithic practices (Andreasen 2009, 19–20; Andreasen 2016; Brink 2013, 448; Jensen 2013a). Manuring was also a likely component of cultivation practices. The effects of manuring were known since the Early Neolithic (Kanstrup et al. 2014; Regnell/Sjögren 2006, 138–139), while the actual use of manuring is debated (Jensen 2013b, 20). Barley, which as mentioned was identified in the Vinge material, requires a high amount of nutrients in order to provide an acceptable yield, indirectly indicating that fields in Vinge were manured in the Late Neolithic (Brink 2013, 448; Engemark 1992, 372). Furthermore, the most important reason for the suggested stalling of livestock was likely to ease the collection of manure (see discussion in Zimmerman 1999).

Little concrete evidence is available for the verification of livestock farming in the period, as Late Neolithic animal bones are rarely found. Vinge is no exception; only a single fragment of an animal bone can be related to the Late Neolithic settlement. Finds from other Late Neolithic sites, and from the preceding and following periods indicate, however, that sheep, cattle and pig were part of the Late Neolithic economy (Björhem/Säfvestad 1989, 116–117; Klassen 2014, 152–153; Nilsson 2006, 55; Nyegaard 1996; Brink 2013, 447). The importance of cattle and sheep in the Late Neolithic is also indicated by loom weights and ceramic sieves, which were relatively common in the period, as these objects reflect the production of secondary products such as wool, milk and cheese (Lundø/Hansen 2015; Ebbesen 1978; Sherratt 1981).

The areas surrounding the Late Neolithic settlements may also provide evidence of the relative importance of livestock in the period. Recent studies show that the Late Neolithic farmers generally prioritized access to wet, low-lying areas, which are more suitable for pasture and haymaking than field cultivation, indirectly indicating the importance of livestock (Brink 2013, 448; Poulsen 2009, 162; Mikkelsen 2013, 39). A brief survey of the distance of the four largest Late Neolithic houses to the nearest low-lying, wet area also emphasizes the importance of livestock farming for the inhabitants of the monumental houses (Table 4). The mentioned 19 stray finds of heavily used bifacial sickles, all found in the wet, low-lying areas to the north of the Vinge house, substantiates the importance of haymaking in this area in the Late Neolithic/Early Bronze Age and thereby indirectly indicate the presence of (stalled) livestock.

A few shells were found in the house. This suggests mussel collection and perhaps fishing, while the finds of arrowheads may relate to hunting or conflict. The importance of hunting and gathering relative to that of agricultural products is difficult to determine from such scarce evidence, but the distance of two kilometres to the closest open water, Roskilde Fiord, indicates that fishing and mussel collection only played a minor role in the economy. It must, however, be

Site	Approximate distance from site to nearest wetland	Source
Vinge	200 metres	Original-1-kort (First generation cadastral maps, 1785)
Limensgaard	320 metres	Høje målebordsblade (1st edition Danish ordnance survey 1864-1899)
Hemmed Plantation	180 metres	Høje målebordsblade (1st edition Danish ordnance survey 1864-1899)
Stuvehøj Mark	190 metres	Original-1-kort (First generation cadastral maps 1788)

Tab.4. Table of distances from the four largest Late Neolithic houses to the nearest wet, low-lying area.

mentioned that a Late Neolithic phase is found in the upper stratigraphy of several of the ancient shell middens around Roskilde Fiord.

To conclude, the economy of the inhabitants of the Vinge house likely consisted of several different elements, including the cultivation of at least three different species of crops, possibly manured with animal dung, and livestock farming, where cows and sheep likely grazed on nearby meadows. These meadows may also have provided hay for periods when the animals were stalled at the east end of the farm. Hunting and gathering may have supplied the agricultural economy to an unknown extent. The diversified economy of the inhabitants of the house ensured the best possible economical stability, and the Vinge material may thus be seen as an example of the basic elements of the Late Neolithic economy.

### Concluding remarks

The Scandinavian Late Neolithic is primarily known for its virtuously made flint daggers, while the remainder of the material culture has a somewhat humble appearance. This contrasts to the following Early Bronze Age where the presence of a flamboyant elite is so clearly reflected in the many rich graves covered by large barrows and by numerous hoards of sophisticated metalwork. The emergence of monumental houses in Scandinavia is, however, a strong indication of the rise of an elite in the last half of the Late Neolithic, as similar monumental houses were status markers of the absolute elite of the contemporary Early Bronze Age societies on the Continent. This demonstrates that close contacts to the metal producing societies were already established in the last half of the Scandinavian Late Neolithic; a network which became the catalyst of the developments of the Scandinavian Bronze Age. Together with the Scandinavian metalwork of the period, the monumental houses thereby substantiate that the Late Neolithic Phase II must be seen as a "Period 0" of the Montelian division of the Scandinavian Bronze Age. Furthermore, the new diversity of grown crops and the increasing importance of secondary products from livestock, such as wool, dairy products and manure, point to the introduction of a new economical frame. This emphasizes that the last half of the Late Neolithic was the beginning of a new era of Southern Scandinavian prehistory.

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