

## House plans from Late Medieval settlements in the Dutch central river area: looking for a needle in a haystack

Hoch und spätmittelalterliche Gebäudegrundrisse aus dem Niederländischen Flussgebiet:  
Suchen nach einer Stecknadel im Heuhaufel

Structures d'habitation d'établissement du Haut Moyen-Âge dans la région des rivières  
centrales néerlandaises: chercher une aiguille dans une meule de foin

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### 1. Introduction

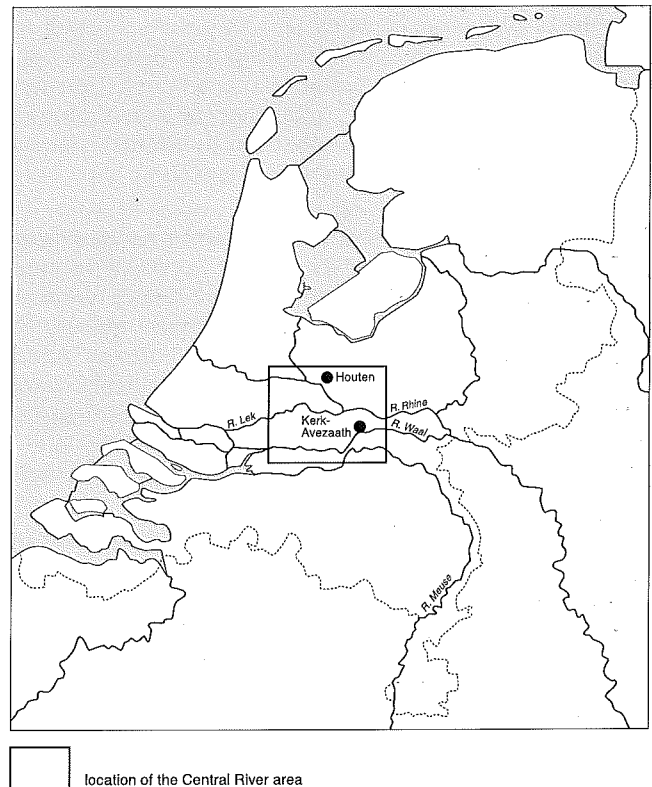
Since the Late Middle Ages the three-aisled house has dominated the scene in most parts of Northwestern-Europe. The three-aisled house is thought to have developed from the boat-shaped building from the Carolingian period, which in its turn is thought to derive from the late Roman Germanic house<sup>1</sup>. In the Netherlands some research has been done on the development from the single-aisled house with a rectangular shape to the three-aisled boat-shaped house. In this context we may refer to the results of the study on Dommelen (province of North Brabant) by Theuws, Verhoeven and Van Regteren Altena, on Kootwijk (province of Gelderland) by Heidinga and especially the studies on Gasselte, Peeloo and Pesse (province of Drenthe) by Waterbolk and Huijts<sup>2</sup>.

From a brief comparison of the houses in those parts of the Netherlands from the period 1000-1300 A.D. it is apparent that there are major differences between the north and northeast on one side and the south on the other side. They belong to two different traditions of house

construction. The Dutch central river area seems to be the region where these two traditions meet or overlap. This is not only the case for the Late Medieval period, but is already apparent the Early Middle Ages and in Roman times<sup>3</sup>.

The Dutch central river area is bound roughly by the Pleistocene coversand-area of the southern part of the Netherlands, a extensive peat area to the west, the eastern river area to the east and the sandy soils of the Utrechtse heuvelrug and the Veluwe to the north and northeast (*fig. 1*). The rivers Meuse, Waal and Rhine-Lek cut from east to west through the area. It forms a geographical unit which is characterised by the alteration of stream ridges and flood-bassins. It is a highly dynamic landscape which has seen many changes over the centuries.

Until recently little was known about the Late Medi-



**Fig. 1.** The Netherlands: location of the sites discussed in the text.

eval tradition of house construction in this area. Only a few house plans from this period were excavated and even less were published<sup>4</sup>. This situation changed radically about five years ago. In connection with some major infrastructural projects of a destructive nature as far as the buried archaeological record is concerned, it was necessary to carry out rescue excavations on several archaeological sites in the central river area. During the excavations in Kerk-Avezaath near Tiel and on two sites in Houten near Utrecht traces of several farmsteads from the Late Middle Ages were found. The

<sup>1</sup> Van Es 1967; Van Es 1973; Waterbolk 1999.

<sup>2</sup> Theuws, Verhoeven Van Regteren Altena 1988; Heidinga 1987; Waterbolk 1979; 1982; Huijts 1992.

<sup>3</sup> Van Es Verwers 1995.

<sup>4</sup> Odijk-Dalenoord: Van Tent 1996, 17-19; Houten-Tielland: Van Es Hessing, 1985, 49-52; 1986, 54-57; 1987, 46-9; Van der Velde 2001, 113; Oud-Leusden: Van Tent 1988; Tiel-Achterweg; Bartels - De Haan - Jansen - Verhelst 1995; Wijk bij Duurstede - De Heul: plans unpublished.

house plans of the buildings at these sites have recently been published.

This contribution addresses the Late Medieval house-plans from Kerk-Avezaath and Houten, and compares them with contemporary house plans from other parts of the Netherlands.

## 2. Late Medieval house plans in the Dutch central river area

### 2.1. Kerk- Avezaath-'huis Malburg'

In the period 1997-1999 two sites called 'huis Malburg' and 'Stenen Kamer/Linge' south of the present village of Kerk-Avezaath (province of Gelderland) were examined. The large scale excavations were a result of the planned construction of the freight railway line between Rotterdam and Zevenaar near the Dutch-German border. The results of the archaeological investigations at 'huis Malburg' have recently been published.<sup>5</sup> Those of the excavations at 'Stenen Kamer/Linge' are currently in preparation<sup>6</sup>.

The Medieval settlement at 'huis Malburg' was located on a streamridge of the Daver, a small stream which originally linked up with the river Linge, but over time gradually silted up. One characteristic feature of the site is the extremely high density of features. All in all about 9000 postholes, ditches, pits and wells were discovered within an area of c. 6600 m<sup>2</sup>. The majority of the features dates from the period 1050-1250 A.D., but several finds indicate occupation in the Merovingian en Carolingian period.

The exact extent of the settlement area is difficult to assess, because it extends beyond the limits of the excavation. The long occupation history on the site and later land use make it extremely difficult to reconstruct the development of the settlement and distinguish individual house plans. The site was especially in the 11<sup>th</sup> century intensively used which led to disturbance of most of the older features. After the abandonment of the settlement the location was turned into arable land. Due to ploughing, all superficial and shallow features, like floors, hearths and traces of walls, have gone. Only features that were sunk more than half a metre into the soil have been preserved.

The settlement consisted in the Late Medieval period at least of two farmsteads, each with a main building, an outbuilding, a well and several granaries or haystacks. Most house plans are not intact but fragmentary. The ground-plans of seven large buildings and seven granaries or haystacks have been recognised<sup>7</sup>. Judging by the considerable amount of remaining

postholes on the site it is not unthinkable that there are still house plans hidden in this tangle of features.

**Building 1** The traces of the first building are unfortunately partly disturbed by later digging activities and the ground plan is therefore difficult to reconstruct (*fig. 2.1*). The building is northeast-southwest oriented. The building is 6.6 m wide. The length is estimated at c. 20 m. The main construction consists of five trusses. The roof-posts stand in a straight line. The long walls are slightly curved and marked by a row of postholes. No indication for the location of entrances are found.

**Building 2** Of building 2 only a small fragment has been preserved and this makes it impossible to reconstruct the ground plan (*fig. 2.2*). The building is northeast-southwest oriented and probably continued eastward as well as westward. The width of the building is 6.5 m and the minimal length 9 m. The remaining part of the construction consists of six trusses. The roof-posts are placed in a straight line. No wall-posts are encountered.

**Building 3** This building is northwest-southeast oriented (*fig. 2.3*) The ground plan is different from those of the buildings 1 and 2. Building 3 has a rectangular shape and is 12 m long and 5.3 m wide. The main framework consists two rows of seven postholes placed opposite each other in a straight line. On the north-westerly side there is a small rectangular extension or annex of 6.6 by 2.4 m. The building is interpreted as a barn.<sup>8</sup>

**Building 4** Building 4 is a three-aisled building with a boat-shaped form, its length being 26 m and its width 13 m (*fig. 2.4*). The main framework consists of nine trusses. The roof- and wall-posts stand in curved lines. In the western short side there are indications for the presence of an entrance.

**Building 5** Building 5 also has a boat-shaped plan, measuring at least 18 m by 8 m (*fig. 2.5*). The eastern part of the ground plan is disturbed by a younger ditch. The main construction consists of at least seven trusses. There are no indications for the presence of wall-posts. The building is surrounded by a rectangular ditch.

**Building 6** Also the ground plan of building 6 is not intact (*fig. 2.6*). A number of postholes is probably missing on the east side. The minimal length of the building is 25 m and the maximum width is c. 10m. The main framework consists of at least eleven trusses. On one long side remains of wall-posts are found. Both wall- and roof-post are placed in a curved line. The wall- and roof posts do not stand opposite each other, which means that the wall-posts would scarcely have had a carrying function.

**Building 7** The ground plan of this building lies for the biggest part outside the part of the site that will be disturbed and could not be completely excavated (*fig. 2.7*).

<sup>5</sup> Oudhof - Dijkstra - Verhoeven (eds.) 2000.

<sup>6</sup> The results were published three months after this lecture was held at the Ruralia IV conference. The house plans of the Late Medieval buildings at 'Stenen Kamer/Linge' belong to the same type as those from the excavation 'huis Malburg', Verhoeven Brinkkemper 2001.

<sup>7</sup> Oudhof 2000a, 70-7.

<sup>8</sup> Oudhof 2000a, 75-7.



**Fig. 2.** House plans *Kerk-Avezaath-'huis Malburg'*:(1-3) 11th century; (4-7) 12th century. After Oudhof 2000a. Scale 1:400.

In the building, the length of which could not be established, are at least six trusses. The roof-posts stand more or less in a straight line. The wall-posts are placed in a curved line. The ground plan of building 7 is probably comparable to those of the buildings 4, 5 and 6.

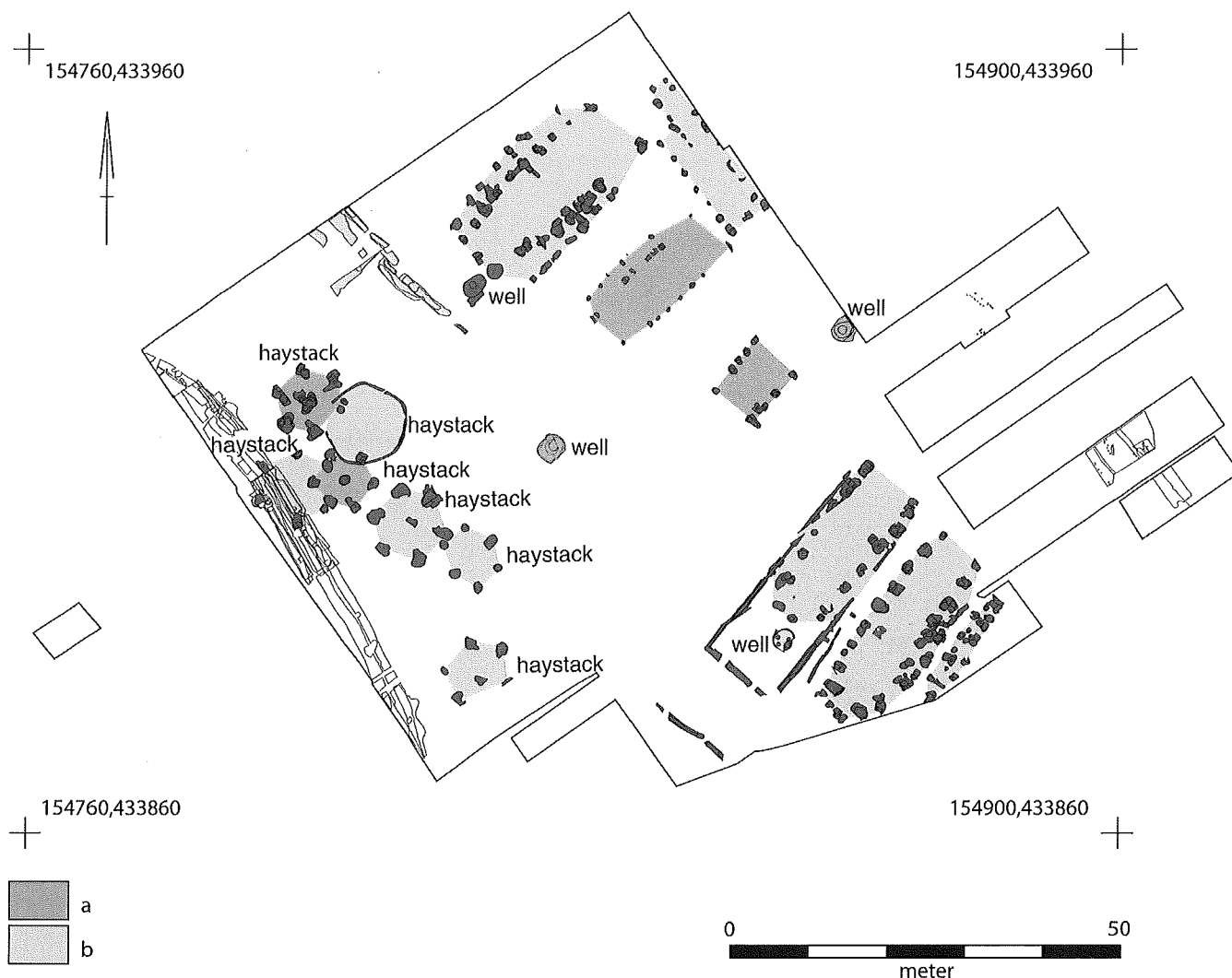
The house plans have been presented more or less in a typological order which might, however, at the same time represent to some extent a chronological sequence. From the middle of the 11<sup>th</sup> century onward there seem to have been at least two farmsteads at the site, each consisting of a main building (buildings 1 and 2), a well and one or more granaries or haystacks (fig. 3). In the early 12<sup>th</sup> century the buildings 1 and 2 were replaced by the buildings 3 and 4. Furthermore on each farmstead a outbuilding was built (buildings 5 and 6).

There exists a clear difference between the ground plans of on the one hand buildings 1 and 2 and on the other hand the younger buildings. The latter are not only longer and wider but also have a more sturdy construction. Furthermore they have a more pronounced boat-shaped form. The reasons for these differences are not completely clear<sup>9</sup>.

## 2.2. Houten

During rescue excavations of two sites near Houten called Houten-'Hoogdijk' and Houten-'site 8A', traces of several Late Medieval farmsteads were found. The excavations were made as a result of a planned large scale

<sup>9</sup> Oudhof 2000b, 343-6.



**Fig. 3.** Layout and development of the settlement Kerk-Avezaath-'huis Malburg' between c. 1050-1250 A.D.: (a) 11th century; (b) 12th century.

housing development around the village of Houten, one of the main centres of urban growth southeast of the city of Utrecht.

**Houten-'Hoogdijk'** The site is situated on a streamridge east of the present village of Houten<sup>10</sup>. Traces were found from the Roman and late Carolingian period and especially from the Late Middle Ages. The Late Medieval site probably started in the early 12<sup>th</sup> century as a reclamation settlement and consisted in the beginning of four farmsteads (*fig. 4*). Each farmstead was surrounded by east-west oriented ditches and consisted of a large building (buildings, 1, 2, 3 and 4), a well and one or more granaries or haystacks. Most large buildings were rebuilt after c. 50 years (buildings 5, 6 and 7). Only building 1 probably stayed in use over a longer period. Around c. 1175 most farmsteads ceased to exist. Only the northern farmstead remained in use and a new large building was erected here (building 8). In c. 1250 also this last farmstead was abandoned.

The ground plans of most large buildings are irregu-

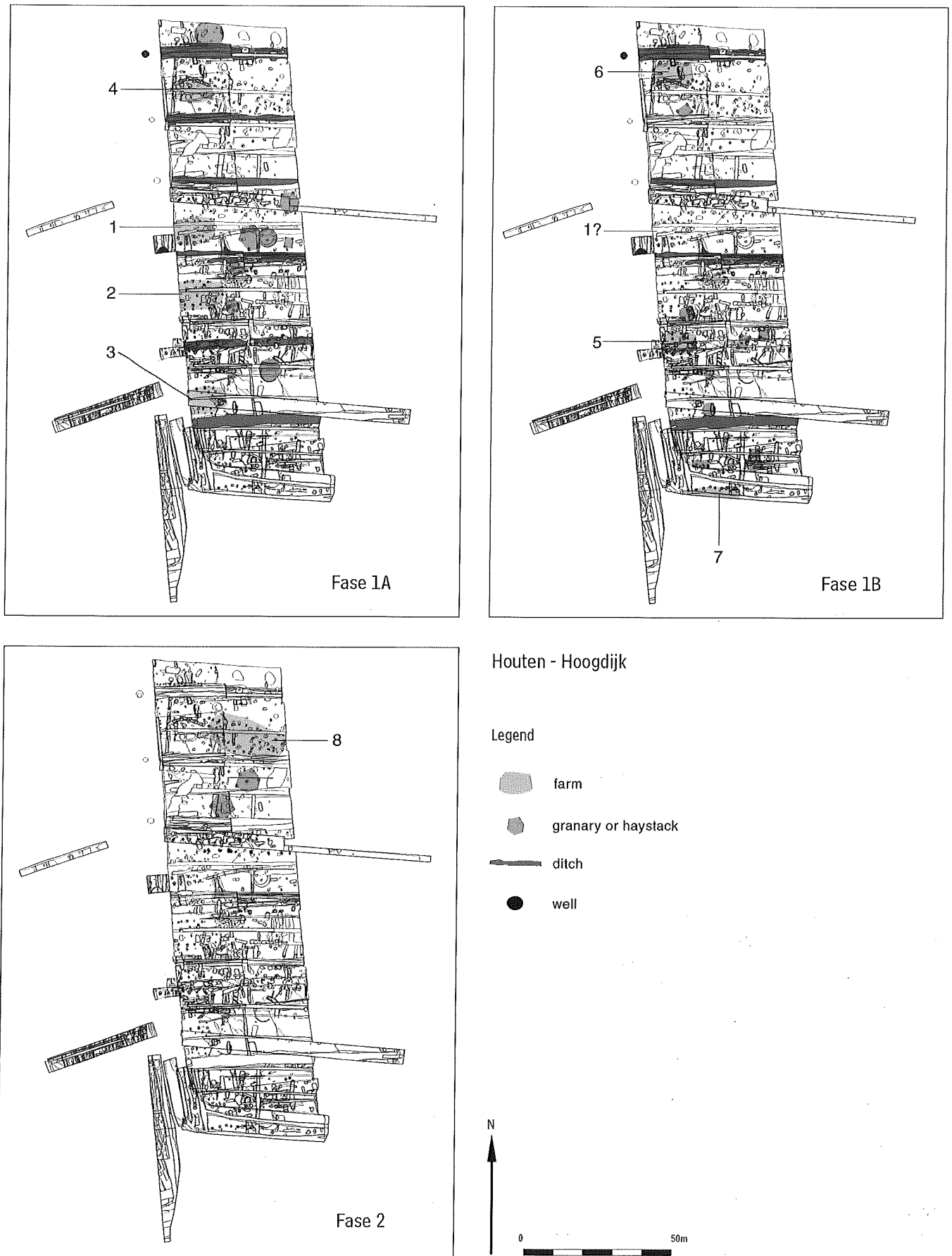
lar, since both roof- and wall-posts stand in irregular rows and are not placed in pairs. Only the buildings 2 and 4 have a more regular ground plan. The irregular patterns of the ground-plans is further enhanced by the fact that there are many repairs.

The plans are partly disturbed by later digging activities. This hampers the reconstruction of the individual ground plans.

**Building 1** The building is 14.5 m long and 9 m wide (*fig. 5.1*). The main construction consists of five trusses. The distance between the trusses is relatively small. On the southern side runs a row of wall-posts. The wall-posts stand in a slightly curved line. Wall-posts are missing on the northern side. The distance between wall- and roof-posts is 2.2 m. Parts of the walls were repaired. It is likely that the building could be entered through the short walls.

**Building 2** The layout of building 2 measures 15 by 8.7 m (*fig. 5.2*). The building has a main construction encompassing four trusses. The heavy roof-post stand in a straight line. In comparison the wall-posts are

<sup>10</sup> Van der Velde 2001.



**Fig. 4.** Layout and development of the settlement Houten-'Hoogdijk' in the period c. 1125-1225: (Fase 1A and Fase 1B) 1125-1175; (Fase 2) 1175-1225.



**Fig. 5.** House plans from Houten-'Hoogdijk': (1-7) c. 1125-1175; (8) c. 1175-1225. After Van der Velde 2001. Scale 1:400.

smaller and stand in a slightly curved line. The distance between wall- and roof-posts varies from 1.7 to 2 m. Inside the building the remains of a hearth and a rectangular cellar or storage pit were found. Entrances may have been in the short walls.

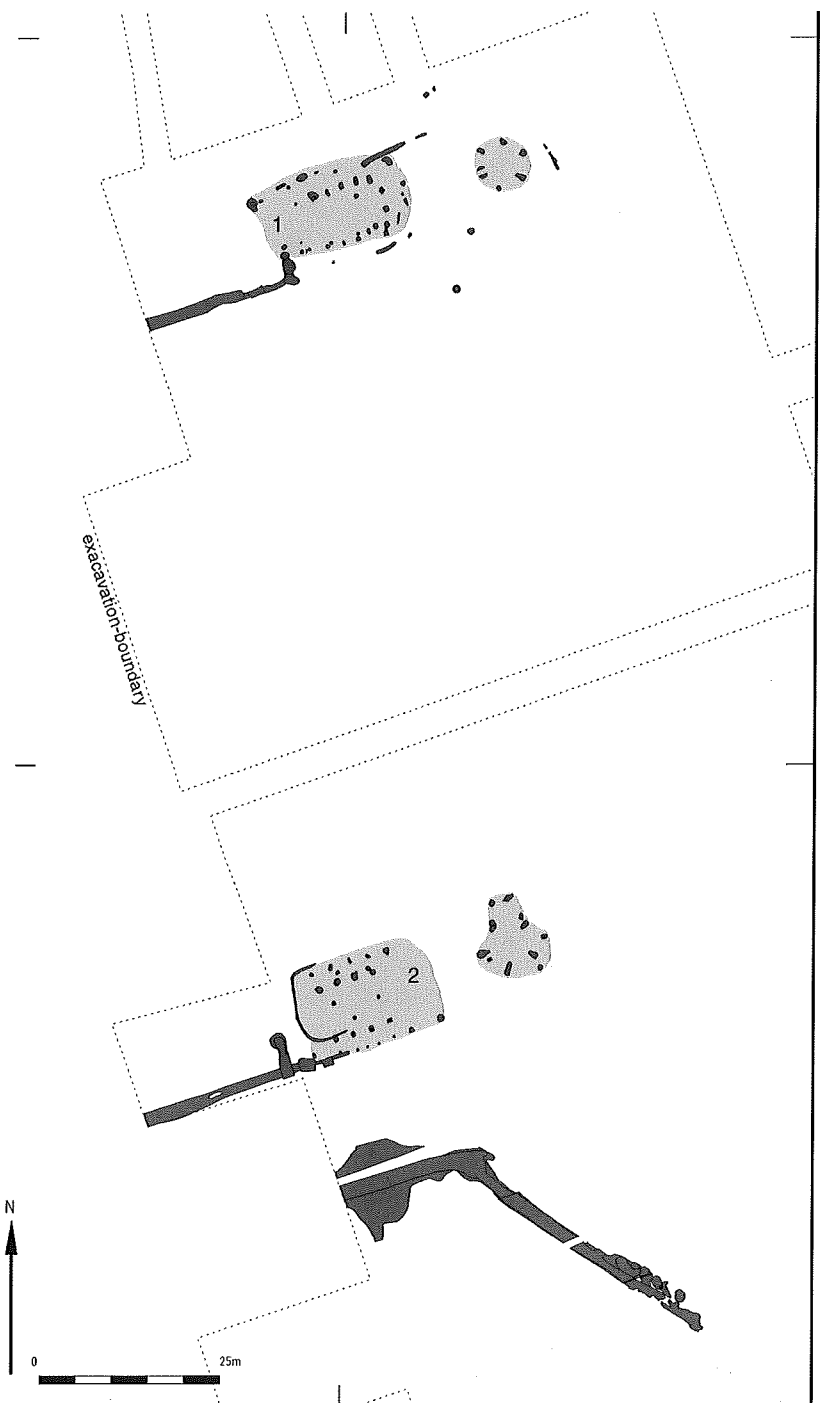
**Building 3** This building could not completely be excavated. The western part is missing. The minimal length of the building is 12 m and the maximum width is 8.5 m (fig. 5.3). There are indications for incidental repairs. Entrances were probably situated in both short walls. Close to the eastern entrance the remains of a cellar or storage pit were found.

**Building 4** As apposed to the previous buildings, building 4 is not three-aisled but one-aisled. The building is 14 m long and 7.5 m wide (fig. 5.4). Nothing indicates the location of an entrance.

**Building 5** The length of the building is 11.5 m and the width 7.5 m (fig. 5.5). The main construction consists of two rows of five heavy roof-posts placed in a more or less straight line. The slightly smaller wall-posts stand in curved lines. Several indications for repairs are found. There may have been entrances between the heavy posts of the short walls.

**Building 6** The construction of this building is comparable to that of building 4, as the main construction consists of two rows of each four heavy posts placed in the long walls (fig. 5.6). The building is 14.5 m long and 8 m wide. Entrances are probably situated in the long walls and in the western short wall.

**Building 7** Of this probably one-aisled building only one long wall could be excavated. The building has a length of 16.5 m; its width as well as the location of the entrance(s) are unknown (fig 5.7).



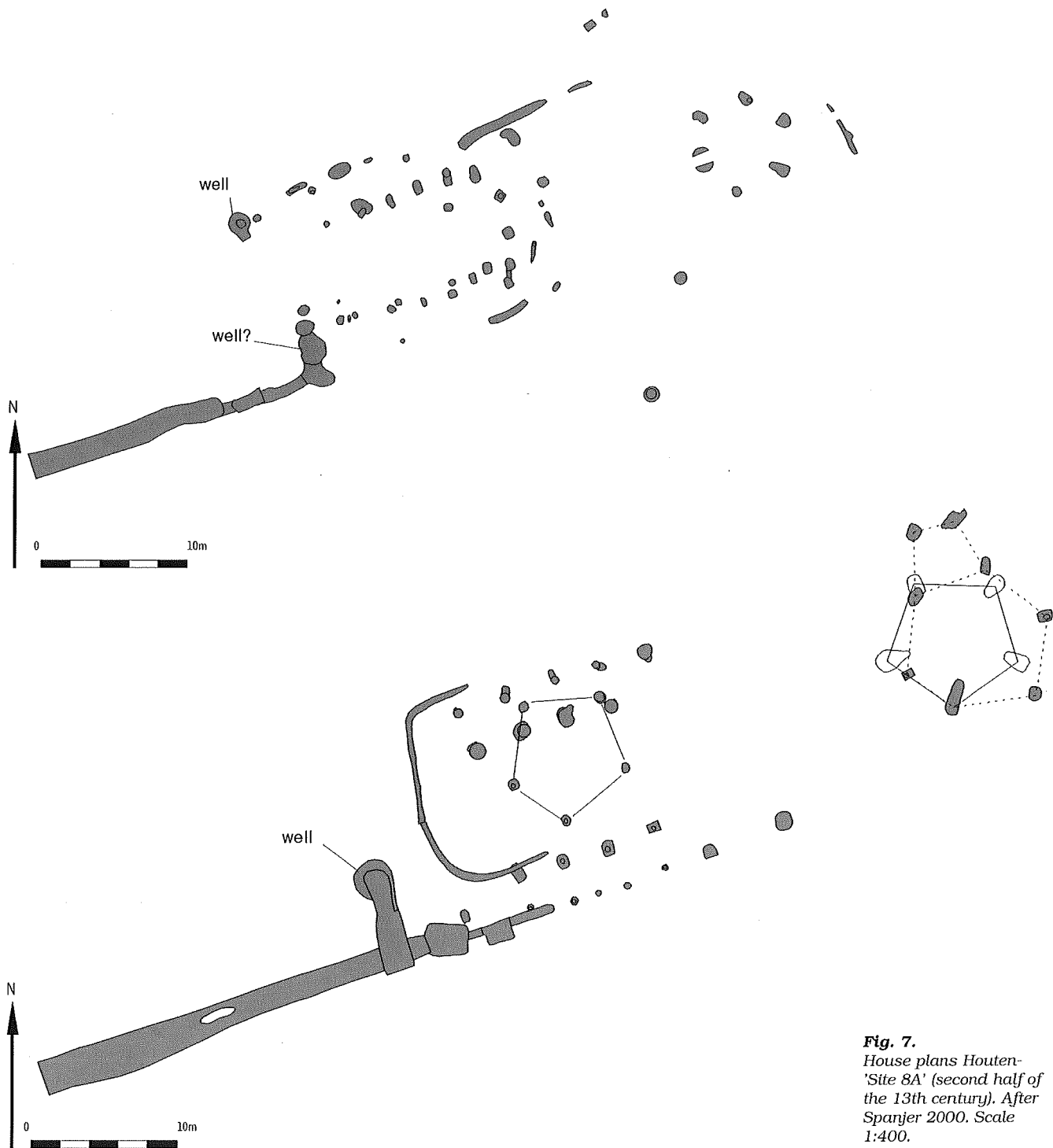
**Fig. 6.** Layout of the settlement Houten-'Site 8A'.

**Building 8** It concerns the ground-plan of an exceptional building. Firstly, because of its northwest-southeast orientation which contrasts to the east-west direction of the other buildings. Secondly it is with a length of almost 27 substantially larger. Finally it has a deviant ground-plan: the northern part is one-aisled and the southern part three-aisled (*fig. 5.8*). Both parts being separated by a partition wall. The one-aisled part is interpreted as living area, the three-aisled part may have served as a stable<sup>11</sup>. There are indications for the presence of an entrance in the western short wall and both long walls.

<sup>11</sup> Van der Velde 2001.

**Houten-'site 8A'** The excavations on 'site 8A' south of the village of Houten yielded apart from Roman settlement traces a Late Medieval settlement<sup>12</sup>. The settlement belongs to the second half of the 13<sup>th</sup> century and consists of two farmsteads. Both farmsteads comprise a large building, presumably the farmhouse, a well and a granary or haystack (*fig. 6*). The location of the farmsteads is marked by ditches. Presumably it concerns the remains of a short-time occupation of c. 50 years. There is no evidence for repair or large scale rebuilding activities. Only the granary or haystack in the vicinity of building 2 was rebuilt. The site is interpreted as a

<sup>12</sup> Vos 2000.



**Fig. 7.**  
House plans Houten-  
'Site 8A' (second half of  
the 13th century). After  
Spanjer 2000. Scale  
1:400.

reclamation settlement of which the inhabitants were mainly occupied with the herding of sheep for wool production<sup>13</sup>.

**Building 1** The buildings is irregular, two rows of seven heavy roof-post forming its main construction (fig. 7.1). Both roof- and wall-posts stand in slightly cur-

ved lines The building is possibly 17 m long and maximum c. 12.4 m wide. Four heavy postholes in the eastern short wall suggest the presense of an entrance.

**Building 2** Building 2 is probably 15 m long and 12 m wide. The main construction consists of five trusses (fig. 7.2). The roof-posts are placed in a straight line. The posts are interspaced rather evenly. There are no indications for the location of entrances.

<sup>13</sup> Spanjer 2000, 128-9.



### 3. A comparison between the Late Medieval house plans from the central river area and those from other areas of the Netherlands

In order to study building construction in rural areas and the regional differences therein, it is necessary to compare the buildings from the Dutch central river area with those of contemporary settlements elsewhere. Attention should be given to settlements dating from the 11<sup>th</sup> to 13<sup>th</sup> centuries. In looking for parallels for the buildings in the central river area we are confronted with the relative scarcity of published information. Ground plans of Late Medieval buildings are available from several sites on the sandy soils in the southern (province of North Brabant, and Limburg), northern (province of Drenthe) and eastern (province of Overijssel and Gelderland) parts of the Netherlands. The number of Late Medieval house plans from the coastal area, the peat district and the eastern river area is unfortunately rather limited. We will focus therefore our attention especially on the first three areas.

#### 3.1. Southern part of the Netherlands: Dommelen-type houses

Up to the present a considerable amount of rural settlements that have yielded Late Medieval house plans have been excavated in the provinces of North Brabant and Limburg and the neighbouring Belgian Pleistocene coversand-area.<sup>14</sup> The number of excavated Late Medieval house plans from the southwestern coastal part of the Netherlands is rather low, however.<sup>15</sup>

The main construction of the houses from the southern sandy soils consists of four, five or six trusses. The roof-posts are placed in a straight or slightly curved line (fig. 8). Walls have a more or less curved shape, as postholes often show. The walls are in most cases marked by posts, but sometimes these are absent. The entrances were often marked by two heavy posts in each short wall. The aisles extend along the entire length of the building. The eponyme site of this house-type is Dommelen.<sup>16</sup> Dommelen-type houses are usually are between 15 and 25 m long and 4.70 to 8.30 m wide.

#### 3.2. Northern part of the Netherlands: Gasselte-type houses

In Drenthe three late Medieval settlements have been investigated: Gasselte. Peelo and Pesse.<sup>17</sup> The

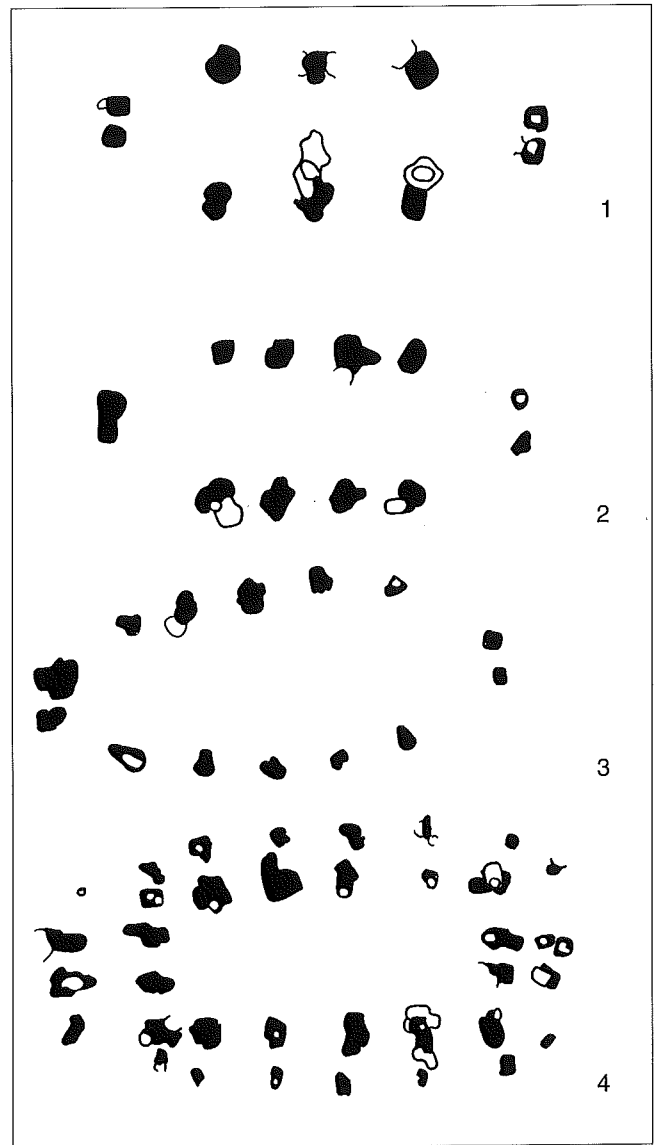


Fig. 8. House plans from North Brabant: (1-4) Dommelen (11th-13th century). After Theuws, Verhoeven & Van Regteren Altena 1988. Scale 1:400.

farmhouses of these settlements belong the Gasselte B- (900-1300 A.D.) and Gasselte B1-type (1100-1400 A.D.) houses (fig. 9).<sup>18</sup> These houses developed from the single aisled-farmhouse with curved walls (Gasselte A-type) dating to the late Carolingian period. After c. 1000 A.D. the single-aisled houses were enlarged by adding aisles, thus creating a new house-type: Gasselte B. The main differences between Gasselte A- and Gasselte B-type houses are the total length and width of the building and the dimensions of the posts. Gasselte B-type houses are much larger and heavily constructed than Gasselte A-type houses. The average dimensions of Gasselte B-type houses are c. 26.5 by c. 11 m, the width of the aisles going from 1.5 to 1.9 m. Due to the fact that wall-posts were placed on a sill-beam traces of walls are sometimes missing. Gasselte B1-type houses are longer than Gasselte B-type hou-

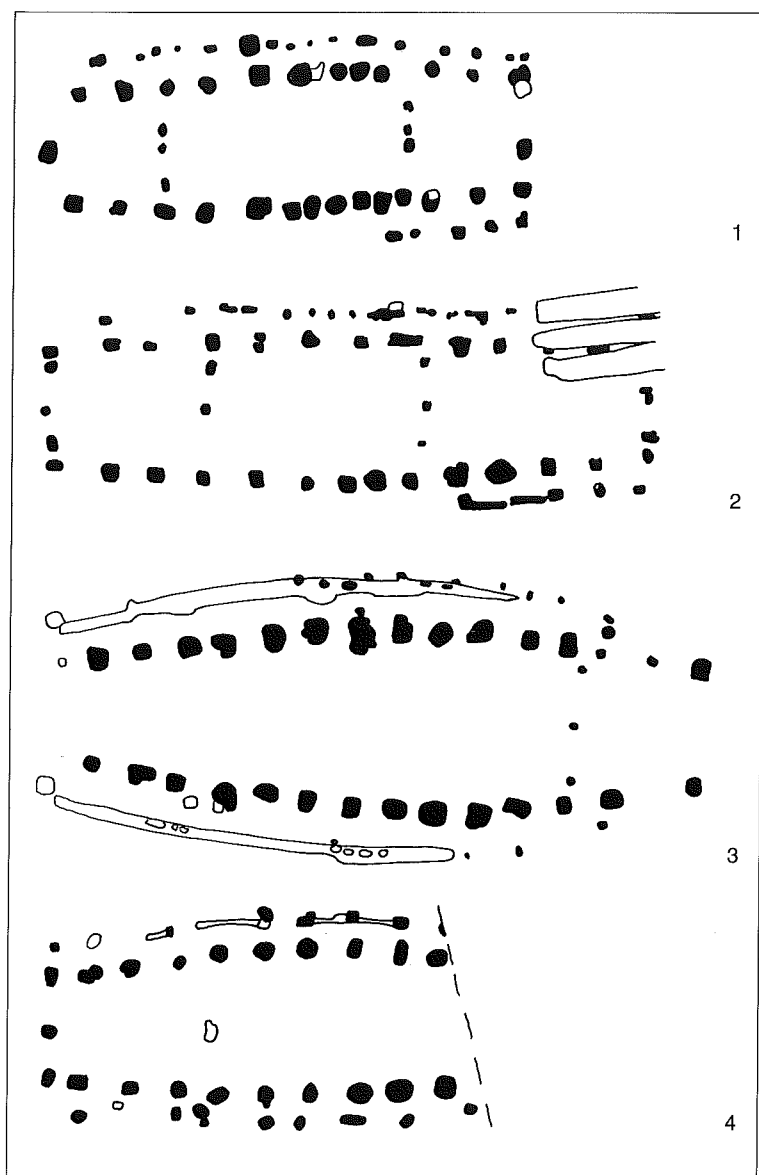
<sup>14</sup> Dommelen: Theuws - Verhoeven - Van Regteren Altena 1988; Sint-Oedenrod: Heesters 1973; 1976; Grubbenvorst: Schotten 1990; Blerick: Schotten 1991; Bladel-Kriekeschoor: Van Die-rendonck 1989; Eindhoven-Blixenbosch: Arts 1994; Someren: Roymans Kortlang 1993; Schabbink 1996; Geldrop: Ostkamp 1998; Wijnegem (Flanders): Cuyt 1984.

<sup>15</sup> Spijkernisse: Van Veen 1992.

<sup>16</sup> Theuws - Verhoeven - Van Regteren Altena 1988.

<sup>17</sup> Gasselte: Waterbolk - Harsema 1979; Peelo: Kooi 1984; Pesse: Harsema 1984.

<sup>18</sup> Waterbolk 1982.

**Fig. 9.**

House plans from Drenthe: (1-2) Gasselte, Gasselte B-type (900-1300 A.D.); (3) Peelo, Gasselte B1-type (1100-1300 A.D.); (4) Gasselte, Gasselte B1-type. After Huijts 1992. Scale 1:400.

ses, their average length being c. 30 m. Without exception their aisles are c. 2 m wide.<sup>19</sup>

### 3.3. Eastern parts of the Netherlands (fig. 10)

Typologically more or less comparable house plans to those from Drenthe have come to light on several sites in the province of Overijssel.<sup>20</sup> The main difference between both groups is in the dimensions of the buildings, as the ones from Overijssel are shorter (20 to 25 m) and less wide (between 9 and 12 m).

This also holds for the Late Medieval house plans

<sup>19</sup> Huijts 1992, 183.

<sup>20</sup> Ankum: Van Vilsteren 1990; Baalder: Verlinde 1980; Bathmen - Bathmense Enk: Groenewoudt 2000; Colmsgate: Verlinde - Groenewoudt 1986; Schotten - Groenewoudt 1988; Gramsbergen: Van Beek - Klarenbeek 1990; Hengelo-Roershoek: Van Nuenen 1992; Raalte: Groenewoudt 1994; Groenewoudt - Verlinde 1994; Weerselo-Deurningen: Verlinde 1991.

from the Veluwe (province of Gelderland).<sup>21</sup> The length of the buildings from this area varies from 19 m to 26 m, the width from 7 to 8.5 m. In Kootwijk, one of the largest settlements that was investigated here, indications are found that from the 11<sup>th</sup> century onwards there was a development to moderate the boat-shape of the houses.<sup>22</sup> This tendency does not appear to have become firmly established on the rest of the Veluwe, as most contemporary houses in the area have a stronger boat-shaped form than those in Kootwijk.<sup>23</sup>

The number of Late Medieval house plans from the eastern part of the Dutch river area (province of Gelderland) is rather limited and most of them have not been published. Some, like the ones excavated in Beuningen, resemble those from the southern part and

<sup>21</sup> Kootwijk: Heidinga 1987; Horst: Heidinga 1987; Van Rooijen 1993; Putten: Modderman - Montforts 1991; Apeldoorn- Van Haafenterrein: Dijkstra 2001.

<sup>22</sup> Heidinga 1987; Waterbolk - Harsema 1979.

<sup>23</sup> Heidinga 1987; Van Rooijen 1993.

others, like the house-plans from Elst and Huissen, are similar to those from the eastern part of the Netherlands.<sup>24</sup>

Also the number of house-plans from the IJssel-area is rather small. Their construction and dimensions differ from those in Drenthe and the Veluwe. This applies especially to those from Eme near Zutphen.<sup>25</sup>

#### 4. Discussion

It will be clear from this short overview that in the Netherlands in the period between c. 1000 and 1300 A.D. two house building traditions can be distinguished: the Gasselte-type houses in the northern and eastern part and the Dommelen-type house in the southern and southwestern part of the Netherlands. Important differences between the Gasselte- and Dommelen-type houses are that in the latter the number of trusses is small (4 to 6), the entrances in the short walls are marked by heavy posts and the roof-posts stand in a straight line while the wall-posts have a curved line well. Furthermore, the Dommelen-type houses are relatively shorter and less wide than their contemporaries from the northern Netherlands.

Recently it has been suggested that the boundary between these two house building traditions should be drawn at the river Waal.<sup>26</sup> The occurrence of both house-types in the central river area contradicts this. Gasselte-type houses are found both in Kerk-Avezaath and Houten. Dommelen-type houses occur in Houten. The dimensions of the buildings of the Kerk-Avezaath excavation fit well within the range of those from the eastern part of the Netherlands and most buildings from Houten show close resemblance to those from the southern part of the Netherlands (fig. 11).

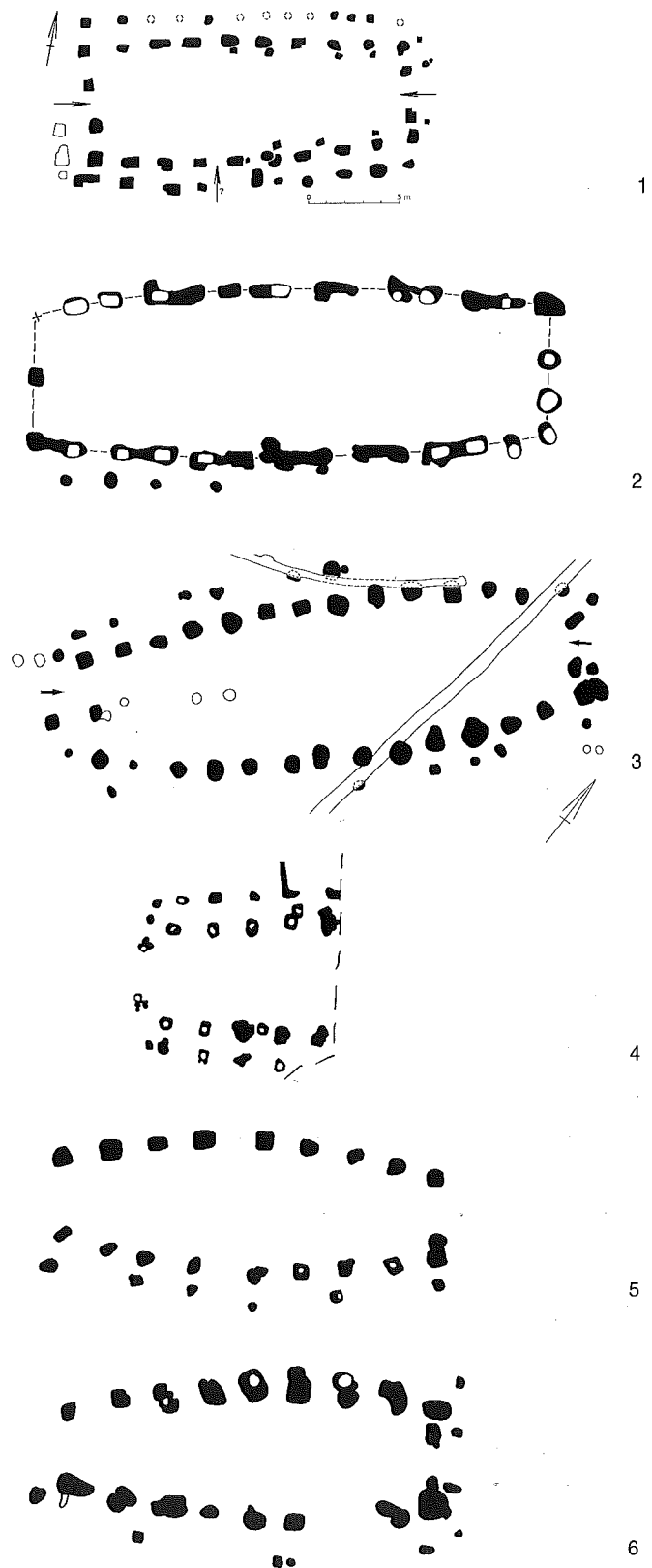
There are not only similarities but also differences between the Late Medieval houses from the central river area and those from other areas in the Netherlands. One of the most striking is the fact that most houses in the central river area have a very irregular ground-plan in contrast with the fairly regular ground-plans of their contemporaries in other regions. The reason for this is not totally clear. In some cases, as in Kerk-Avezaath-'huis Malburg', it may be caused by the fact that the settlement was occupied and used over a long period of time, but this can not have been the only reason. Some house plans show signs of frequent repair. The ecological data of the excavations indicate that the settlements were located in an open more or less deforested landscape.<sup>27</sup> There are several indications that wood was already a scarce commodity in the Roman period and it is not inconceivable that after a period of reforestation the late Medieval high populati-

<sup>24</sup> Oudhof 2000a, 73, noot 39; Dijkstra - Van der Heiden 2000, 20, afb. 11.

<sup>25</sup> Reuselaars 1996, 94-102.

<sup>26</sup> Oudhof 2000a, 73.

<sup>27</sup> Van der Velde 2001, 86-7; Van Haaster - Kooistra - Vermeeren 2000, 309-11.



**Fig. 10.** House plans from Overijssel and Gelderland: (1) Baalder (c. 1100); (2) Bathmen (12th-early 13th century); (3) Colmsgate (12th century); (4) Kootwijk (10th-early 11th century); (5-6) Horst (11th-12th century). After Verlinde 1980; Groenewoudt & Verlinde 1997; Verlinde & Groenewoudt 1986; Heidinga 1987. Scale 1:400.

on density again lead to woodscarcity.<sup>28</sup> A combination of the use of poor quality timbers and the wet soil conditions leading to frequent repairs may be an additional expansion for the occurrence of irregular ground plans.

There are also some differences in construction between the houses in the central river area and those in other parts of the Netherlands. This indicates that there was a certain level of regional diversity. This diversity was probably the result of several aspects, like differences in land use, size of the agrarian units, the level of feudal organisation and so on. It seems that the house building concepts were adopted to suit local or even individual demands. This explains more or less why both house-types could occur, as in Houten - 'site 8A', literally next to each other.

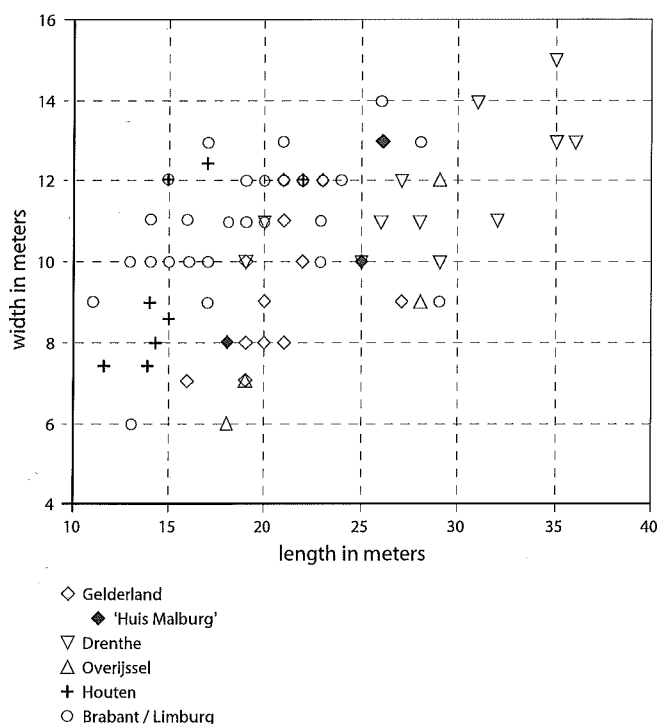


Fig. 11. The relation between length and width of Late Medieval houses.

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