MINISTERO PER I BENI CULTURALI E AMBIENTALI

Quaderni
della Soprintendenza Archeologica del Lazio
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Problematiche di scavo delle strutture abitative dell'età del ferro

Roma 1988

BETWEEN VAST LAGOONS AND THE PILLARS OF HERCULES: settlement recovery techniques in Noord-Holland

The inhabitants of the northern Netherlands did not receive much attention from the classical writers. In his specific but short discussion of the Frisii, Tacitus (*Germania* XXXIV), after mentioning that settlement was around "vast lagoons", goes on to speculate on reports on the "Pillars of Hercules" further to the north. Although the latter remain a matter of speculation, the number of known settlements has been considerably increased during a recent regional archaeological project in the province of Noord-Holland.

The Albert Egges van Giffen Institute for Pre- and Protohistory (IPP), University of Amsterdam, completed the survey and excavation stage of the Assendelver Polders Project during 1979-1981 (fig. 1). The 2200 ha arbitrarily bounded Assendelver polders have a number of palaeo-geographical and ecological zones with about 95 known findspots. Including the five sites excavated previous to the project, rather more than 25% of these sites have been excavated (fig. 2). Under discussion here are those thirteen sites excavated during the project which had clear habitation traces relating to the period c. 700 BC to 100 AD.

During this Iron Age and Early (1st c. AD) Roman Iron Age period, settlement consisted of dispersed single farmsteads. Most of the sites were occupied during the latter period and Brandt (1983) has estimated that there were 12 to 14 contemporary househoulds living within the area during the first half of the 1st c AD, the period which coincided with unsuccessful Roman attempts to include Germania above the Old Rhine within the Empire. During the (Roman) Iron Age as in other periods, the polder area and the North Sea coastal area in general was subject to long term geological/ecological, marine-influenced transformations up to the Medieval period when dyke building began. The cycle of transgressions and regressions resulted in sedimentation and peat growth due to drained, draining or stagnated conditions. Creek levee formation and draining/drained peat expanses provided the two main types of sites chosen for habitation.

A total of six months fieldwork was expended on defining the nature of this habitation. When the project was at its most organized and in full-swing during the 1980 and 1981 seasons, four field teams, in total an average of 35 people, were involved in:

1. extensive levee site excavation
2. smaller site, mainly single farmstead, excavation
3. survey, using a 70 cm in diameter drill or smaller core bore
4. finds administration including washing, flotation, cataloguing

Further, "inside" work was done on pottery analysis, restoration and daily field and find analysis data entry.

Here, we would like to just briefly discuss the combination of excavation technique and the opportunities afforded by the field recording system for computer analysis. For discussions on the project's aims and some of the results as well as these in the larger prehistoric perspective of the Netherlands, reference can be made to Brandt et al. (1983), Brandt and Slofstra (1983), Brandt et al. (1984), Groenman van Waateringen and Pals (1983), Therkorn et al. (in press), and Therkorn (forthcoming).

Although there is a great difference in the geological circumstance of the two types of site, levee or peat site, we shall also not deal with the question of complicated inter-relationships of cultural and perceived natural environments and choices made during prehistory and the reasons behind

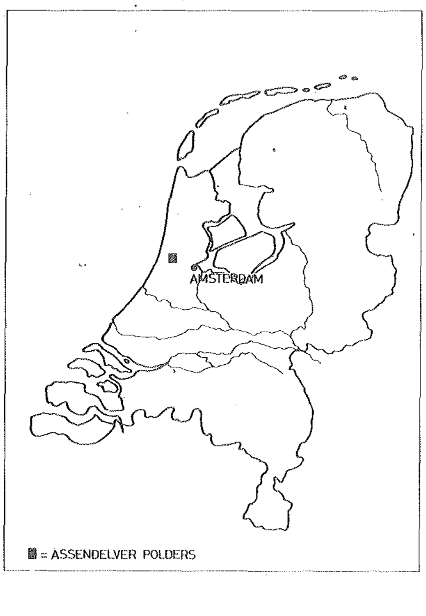

Fig. 1: The Netherlands with the position of the Assendelder Polders shown.

Fig. 2: The Assendelver Polders: sites and geology. 1) find spots 2) sites excavated 3) creek and natural levee deposits 4) lagoonal and back-swamp deposits 5) back-swamp deposits 6) fen peat 7) oligotrophic peat 8) fen peat on top of Dunkirk I clayey deposits 9) maximum extent of oligotrophic peat between the Dunkirk 0 and the Dunkirk I transgression phases.

them (cf Abbink 1984). Rather, we will concentrate on the archaeological choices made in technique as regards the opportunities offered by the two palaeo-geographical environmental settings for recording and analyzing habitation traces.

Use was made of experience gained mainly in America, England and the Netherlands when formulating the excavation techniques and recording system. This led to a rather eclectic approach which cannot be said to adhere to any one nationally fortified, through tradition evolved, conception of excavation "standards" and habits. Within the same recording and find collecting/administrative system, two very different sets of excavation techniques were used. The geological and post-depositional conditions were determinative for how sites were revealed. Particularly, the limitations of these imposed conditions were decisive in determining strategy: why waste time trying to squeeze certain types of information from one type of site, while another kilometer away a site was being, or would be, excavated which would reveal similar types of information whereby little or no guesswork was needed for interpretation. This is the old archaeological problem of the balance between detail and overview; of the necessity of understanding the one, to understand the other. Fortunately, within a limited area having many sites, interpretation of one site does not stand alone but can be seen in conjunction and is interpreted in combination with information retrieved from others. The relatively small polder area and short time span make assumptions realistic on spatial and chronological cultural continuity.

The relative merits of the site type could be weighed. Certainly after the short exploratory (1978) and first (1979) project season, experience in dealing with the soil types and knowledge of what to expect as far as features, served to increase the pace of excavation, interpretation and retrieval during the last two seasons.

The Levee Sites

This applies most importantly to the creek levee sites, which were more extensive than the peat sites being characterized by house plot ditches, field and garden plot systems, and phased occupation. Farmsteads were found interspersed among the field systems, and sometimes their plan was very clear, such as that example shown from site F (fig. 3). However, these sites were also characterized by sometimes very vague feature and layer interfaces (grey on grey) and a sandy-clay or clayey-sand little easier to dig than concrete or non-draining sticky mud, depending on the weather conditions. We chose the following strategy to deal with these eight interesting sites with their less than optimal soil conditions.

Levee sites were excavated by back-actor machine with a two meter wide bucket. For the most part deposits were level, facilitating controlled, no--mess removal of minimally 1 cm over the surfaces, which was also made possible by the presence of machine operators very experienced in archaeological excavation. The site supervisor and machine operator worked closely together: immediately seeing freshly uncovered strata was indispensible at these levee sites as the drying out process soon made interpretation more difficult than necessary. Junctions of ditches, for example had to be immediately shovel cleaned.

As shown by the sections, those sites not damaged by deep-ploughing could inevitably be seen as more stratified than was visible when layers were being taken off by machine. For this reason, a 2 m wide trench was first made along the length of the planned trench to gain an idea of the general layering to be removed over the larger area.

After the top soil and Medieval clay deposits had been removed, the grid system was set out over the trench by core-boring holes at two meter intervals to the depth of non-occupied natural deposits. The holes were filled with sand and in this way, collection units and points for drawing could be quickly recognized when the machine had removed the next layer. "Real" layers rather than arbitrary levels were taken off, or levels thereof if the layer was thicker than 10 cm. Trenches were usually not wider than 6 m for vertical section control and stratigraphy interpretation; they were up to 20 m long. Trench dimension was not standardized, but depended on what was being found; that is, the policy was to change policy/planning according to the archaeological traces. This was also a characteristic of the excavation of features, for the most part field or wall ditches.

Ditches were not usually completely excavated. For recording their shape and fill, box sections were made at a few points along the ditch length.

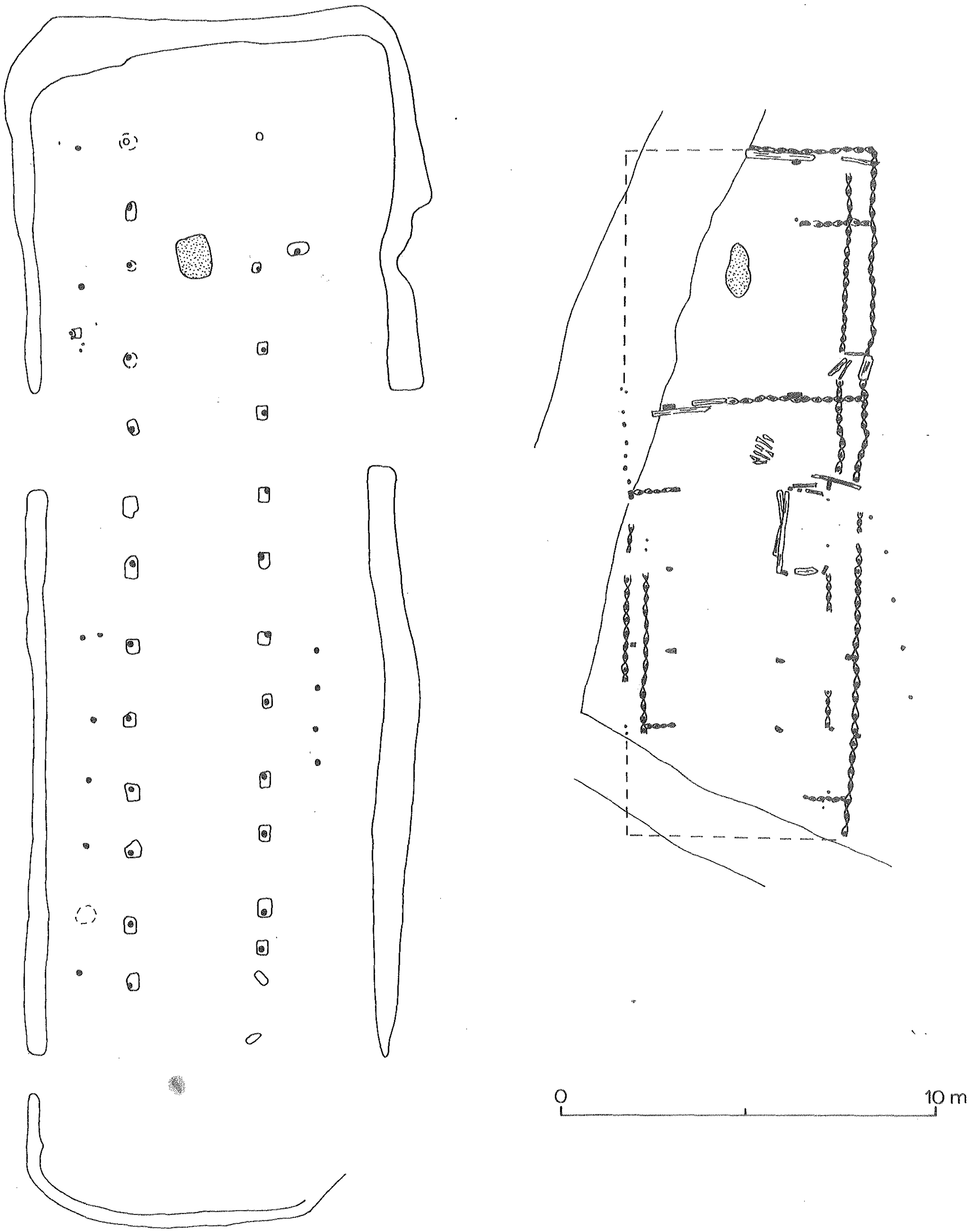

Fig. 3: Two examples of farmsteads excavated during the Assendelver Polders Project. On the left is a plan from the levee site F with postholes and house ditch. On the right, is that of farmstead Q, recovered in the peat, with lengths of actual posts and wattle walling. The dwelling end of the farmsteads is above, with hearth, while the stall makes up about two-thirds of the total farmstead structure area.

The same excavated sections also served to fulfill the requirements of the minimax sampling strategy used for finds collection from ditches (Abbink & Voorrips 1980). The minimax strategy involved numbers per find category — mainly pottery and bone — for at least three 0.5 m ditch lengths. The variation between numbers was calculated to determine whether or not more sections should be excavated. In this way, it was established if a representative picture had been obtained for the finds per category as distributed in the ditch. This "control" group of finds received its own administrative designation for later comparison between this quantitative sample and the qualitative. Sections of ditches with many finds were excavated completely for the qualitative sample used to define within find-category variation (types of pots, animal species, etc.). The distinction between quantitative and qualitative collection was also the procedure used for pollen and macro-organic remains. Flotation and sieving samples were taken from the control sections as well as larger samples taken from obviously interesting ditch lengths with quantities of floral or small faunal remains.

Again, as with layer removal and trench size, completeness of feature excavation and find collection was contingent on immediate feedback: choices were made according to the information generated through the general procedure sequence. In this way we tried to formalize the creative decision making process in excavating the levee sites. In addition to previous experience, experience accumulated through excavating the levee sites in the polders was important for perceiving what decisions were available, and which would enhance the information-time relationship for this type of site. Drawbacks associated with the large scale, mainly mechanical removal strategy were not being able to precisely follow the layers, and the number of finds that wound up on the spoil tip, or were broken during machining. We chose however to increase the scale of such excavations to the detriment of total finds collection and lens definition.

The Peat Sites

The peat sites on the other hand compensated for this type of definition as well as providing alternative types of information due to preservation conditions. These sites consisted of farmstead remains only, without accompanying field and garden plot systems. Stratigraphically, they lent themselves to detailed horizontal layer definition. Aside from removal of the topsoil and clay overburden when present by machine, these sites were dug by hand. Layers and lenses were removed by trowel or shovel. Finds collection and ecological sampling could proceed in a very controlled manner according to interpretation — with little guesswork — on the nature of the layer: distinctions could be made between build-up on floor levels as opposed to finds and organic remains from layers used to heighten floor levels, for example.

Site Q (fig. 3), an Early Iron Age farmstead, was the best preserved peat site found in the polder and although it was excavated in ten days, numerous analyses are still in progress. Analyses of materials from the different matrices have so far included parasites, floral macro-remains and pollen, insects, wood species and woodworking marks, as well as the usual analysis of bones and pottery. Quantities of fodder, stall litter, animal dung — goat and cattle — as well as building materials and other wooden objects and wood working waste could all be distinguished in the field. With the help of analyses of the many facets of materials from this and the other peat sites, a filled-out model may be formed by which less clear-cut remains from other sites can be interpreted and compared.

The Recording System

An equivalent recording system for both types of sites was used for facilitating inter-site and intrasite analyses. The description and interpretation of layers and features as well as information on the samples taken was entered in the field on forms developed for the project. Particularly for finds administration and analysis, part of the collected data was immediately stored in a computer. The Assendelver excavation project was the first dig where the IPP used a microcomputer (a Data General Nova 3) in the field. Since then, the there developed procedure for the storage and retrieval of archaeological data has become standard.

All the retrieved data is entered and temporarily stored in a microcomputer. It monitors the "off line" data entry and it does some preliminary sorting and printing, mainly for correcting the data. Then, when feasible, it is linked to the big Amsterdam host system and the "clean" data are quickly transmitted to be stored in a database residing in the host system. From this database further information can be retrieved, be it for administrative purposes or for analytical ones.

The general field procedure produces three different data flows. The *first data flow* consists of the information which is irretrievably lost as the excavation proceeds: the spatial location of finds and features and the relations between the observed phenomena. Two labels are filled in with findnumber, site and trench designation, feature number and x, y, z coordinates and, if samples are taken, sample type. One label goes in the bag with finds to the field lab, the other goes to the computer.

The *second data flow* consists of further information which is normally collected during the excavation campaign itself, and which, together with the first flow, provides the excavator with the necessary feedback to regulate the excavation process. In the field lab finds are washed, numbered, weighed, counted, and assigned to categories like pottery, bone, wood, etc. This information is written on sheets and these sheets go to the computer.

The fieldcomputer is set up somewhere safe and warm within reach of the excavation. Someone is sitting there for part of the day to enter the data into the microcomputer from the first and second flow. Everybody who can type can enter the data. In the evening the data can be sorted and printed and the printout checked and mistakes corrected. The data from the field and from the lab are easily linked by their corresponding find number. The field supervisor then has sorted and corrected data such as is useful for answering questions like: Where did we find *Terra Sigillata;* from where are our phosphate samples; may I please have a list of all finds from feature 453, etc.

The *third data flow* contains the information specific to a particular find category and/or to a particular research method. Pottery is analyzed in a different way from pollen samples, or charcoal, and so on. In Assendelver, these data were collected during the field season and were entered into the fieldcomputer. In the end, all the corrected data was either stored on tape or floppy discs or was transferred by telephone to the host computer system in Amsterdam to be readily available for retrieval, statistical analysis and graphical applications (Kamermans & Voorrips, in press).

Conclusion

As mentioned, numerous general and specialist analyses must still be carried out on the vast amount of data recovered during the project. Through these and from information gained on settlements excavated by other institutions in other regions of the Netherlands, quite a bit is being learned about those inhabitants of the (Roman) Iron Age period about which Tacitus had so little to say. Continuous alteration is necessary in excavation techniques for filling in the types of information to be retrieved, and use of computers has proved indispensible for storing and analyzing the data collected.

Note

1. The first author was primarily involved with excavation supervision while the second has dealt mainly with data management for the project. Roel Brandt, Sander van der Leeuw and Bert Voorrips were the project directors.

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