

MEGALITHS AND FUNNEL BEAKERS:  
SOCIETIES IN CHANGE 4100-2700 BC

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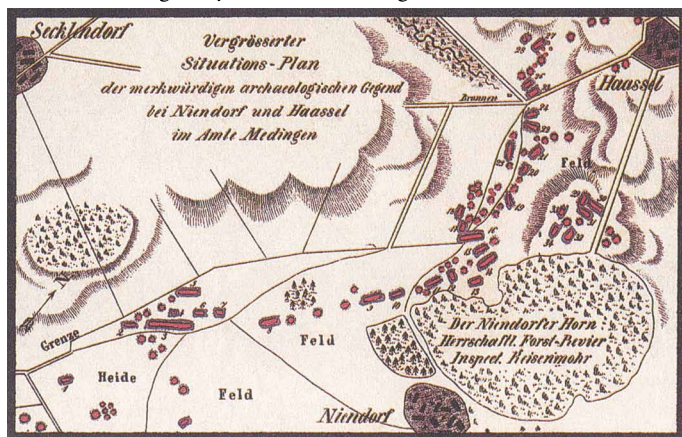
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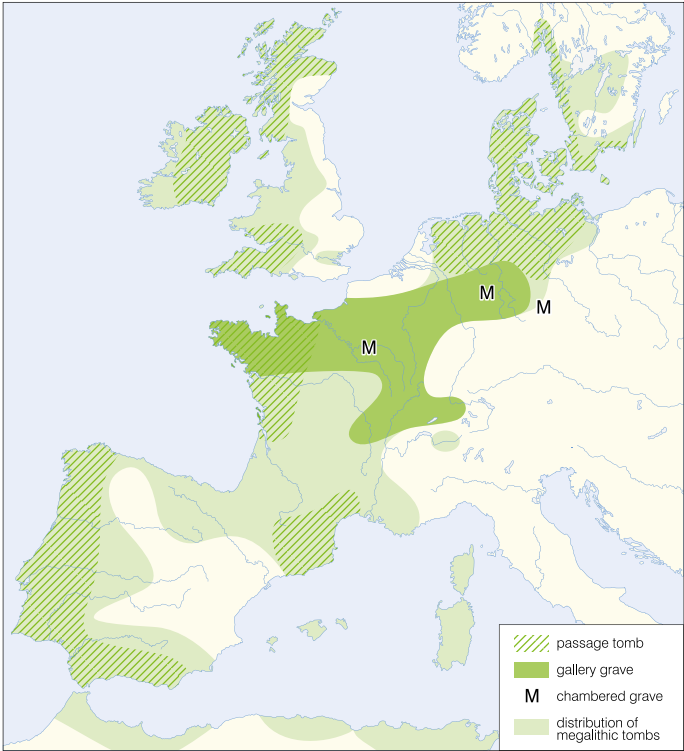


## INTRODUCTION

For generations, above ground, visible monuments from the past have fascinated human beings: relicts from long ago still design contemporary landscapes and remind us that very different societal forms are possible and are worth living in. The oldest monuments of this type known in numerous regions in Western, Central and Northern Europe are the so-called megaliths, in most cases megalithic tombs consisting of uprights and capstones. European societies have directed their attention to these megaliths since the Renaissance and the Enlightenment and they have been the center of scientific study and documentation for approximately 250 years (MIDGLEY 2009; BAKKER 2010). In addition to the monuments, which have been preserved to date, there are also old maps in many regions of Europe that stem from periods before industrialized agriculture (VON ESTORFF 1846). These maps give us a better idea of the number of monuments which were originally in existence. (Fig. 1) It can be assumed from



*Fig. 1. In some TRB regions monuments were documented before the appearance of industrial agriculture. Near Niendorf in North-west Germany (district Uelzen) G.O.C. von Estorff mapped many mounds, which are destroyed today (source: VON ESTORFF 1846).*



*Fig. 2. The distribution of megaliths in Western, Central and Northern Europe (after MÜLLER 2006; graphic: Holger Dieterich).*

the current state of documentation that ca. 15.000 more or less well-preserved megalithic tombs are in existence, although originally almost at least a half a million megalithic tombs probably had been erected.

Apart from the distribution of megalithic tombs along the Western Mediterranean they can also be principally found along the so-called Atlantic Facade as well as in Northern Central Europe

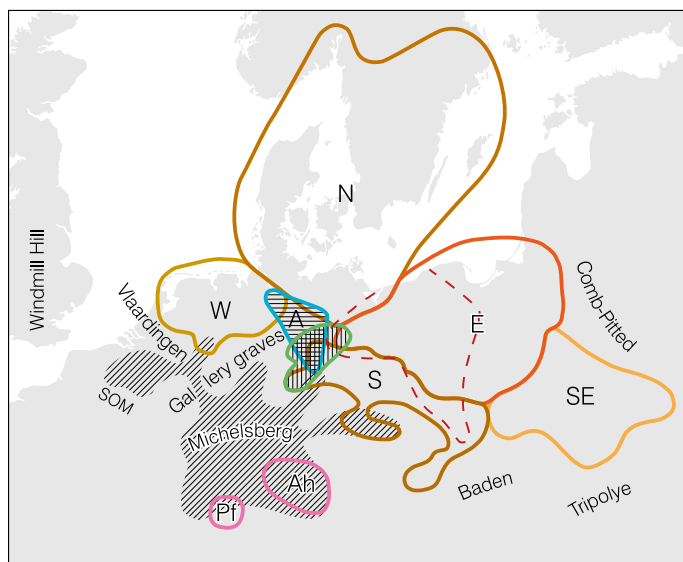
and Southern Scandinavia, respectively (FISCHER 1979). Their distribution (Fig. 2) stretches from Portugal to Galicia and from the Basque region to Northwest France, from Southern England and Ireland to the North Atlantic Shetland Islands, and from Drenthe in the Netherlands to Pomerania and Central Sweden. Even though they are difficult to date due to methodological reasons, the oldest facilities are to be found in the Vendée and on the Armorican Peninsula. Radiometric dating and Chasséen pottery from the earliest grave chambers indicate a construction phase beginning ca. 4700 BC (LAPORTE 2005; MÜLLER 1997; CASSEN/LANOS/DUFRESNE/OBERLIN/DELQUÉ-KOLIC/LE GOFFIC 2009). Indeed, the Breton development appears to be a reaction to different influences. We know that at approximately the same time non-megalithic long barrows of the Passy type in the Blique/Epi-Rössen tradition were erected in the Paris Basin and the concept of trapezoidal-rectangular long barrows coming from the east reached the area on the Northwest coast of France (CHAMBON/THOMAS 2010). At the same time stone cists and early passage graves, whose polygonal form appears similar in Epi-Cardial and Cerny grave traditions further to the south, are to be found in these and other mounds. From a mixture of a variety of influences - surely based on an indigenous substratum and in connection with the transition to agriculture - the oldest preserved monuments in Europe emerged. These monuments leave their imprint on the landscape and, for example, in the Gulf of Morbihan they cluster to ritual centers of trans-regional significance. In cists within non-megalithic long barrows interred humans were richly furnished with alpine jadeite axes (CASSEN/PÉTREQUIN/BOUJOT/DOMÍNGUEZ-BELLA/GUIAVARCH/QUERRÉ 2010), whereby menhirs as tall as 21m were ceremoniously broken and used as capstones, for example at the famous facility Table des Marchand (CASSEN 2009). In Brittany and Normandy a centuries-long tradition of the construction of megalithic tombs develops - until ca. 3200 BC dolmen, passage graves, gallery graves, and menhirs were built (BOUJOT /CASSEN 1993).

Not all megalithic facilities in Europe are as old as those in North-western France. In the Mediterranean region, for example on Corsica and Sardinia, simple dolmen appear first as of 4200 BC, whereas on the British Isles they first emerge as of approximately 4000 BC and in North Central Europe and Southern Scandinavia regions, which are to be the center of attention here, they exist only as early as 3650 BC (WHITTLE/HEALY/BAYLISS 2011; MÜLLER 2009a; LEANDRI/GILABERT/DEMOUCHE 2007) . In fact, according to the current state of research we cannot state with any certainty how strong the high mobility of the Neolithic societies promoted a diffusion of the idea of erecting and linteling large stones while using them for collective graves or whether we must assume convergent architectural developments in different regions from the outset. Whereas it is relatively clear that the allées couvertes or gallery graves both developed as of 3600 BC in rather continental inland surroundings from Brittany over the Paris Basin to Central Germany, the northern Central European-Scandinavian area appears to have passed through a spatially and culturally autonomous development - separated from the west -, naturally accompanied by a reception of outside innovations. Why and from which date were megalithic graves built on the North Central European lowlands and in Southern Scandinavia? How can the different phases of monumental development be explained for the addressed area? Why did this tradition cease after approximately 500 years?

## FUNNEL BEAKERS AND MONUMENTS

When speaking of megalithic graves in North Central Europe and Southern Scandinavia one is simultaneously taking Funnel Beaker societies into account as well (Fig. 3). Since the early 19<sup>th</sup> century we know that megalithic graves in the Netherlands, Northern Germany as well as in Denmark and Sweden are associated with a specific form of ceramics: so-called Funnel Beaker

pottery. Defined recurring central features of material culture characterize Funnel Beaker societies (TRB or *Trichterbecher*) and set them apart from remaining Neolithic societies to the South and to the West (see e.g. BAKKER 1979; MIDGLEY 1992). Precisely this autonomy within the material culture of TRB societies will occupy us in the following investigation. The development of monumentality is closely related to that of TRB societies and the key to understanding the phenomenon of megalithic tombs lies in deciphering the social conditions and ritual practices of these societies.



*Fig. 3 Regional groups of the TRB societies (after BAKKER 1979, fig. 1; graphic: Andrzej Link). W = West Group, N = North Group, E = East Group, S = South Group, SE = Southeast Group, Ah = Altheim Group or Culture, Pf = Pfyn Group, A and horizontally hatched = Altmark Group, vertically hatched = Walternienburg-Bernburg Group. The broken line indicates the occurrence of the Luboň decoration of three-strand cord impressions. Diagonal hatching indicates related Michelsberg. SOM = Seine-Oise-Marne.*

The Funnel Beaker itself is a “beaker” ranging between 5-45 cm high. It commonly has a bellied body resting on a flat bottom and a contrasting, conical funnel brim which bends outwards. The defining name of the TRB culture was first coined by G. Kossinna in 1910. Due to regional variations T. Wislanski and J. A. Bakker differentiated between the TRB groups (BAKKER/VOGEL/WISLANSKI 1969; BAKKER 1979). This differentiation still stays valid. The focus here rests primarily on the TRB groups in the North, the West and the Altmark, across which the distribution area of megalithic tombs will be accounted for.

That the area to be discussed here possesses a different dynamic than that in areas of Britain and North Western France can already be seen in that neolithization in the mentioned regions was simultaneously connected with the dispersion of megalithic tombs, while in the North German-Scandinavian area they first appeared about 500 years after neolithization commenced, which however was connected with the occurrence of early Funnel Beakers. It is all the more fascinating to compile old and new evidence in order to gain an impression of the dynamics of the centuries in question.

## FUNNEL BEAKER CERAMICS: SPATIAL GROUPS AND DEVELOPMENTS

Since the beginning of research on TRB societies in North Central Europe and Southern Scandinavia, the development of pottery and monuments play an important role (KNÖLL 1959; BAKKER 1979; MADSEN 1975; HOIKA 1987; PREUSS 1980; NILIUS 1971; LARSSON 1984; STRÖMBERG 1971). With regard to regional pottery groups, a differentiation between the definition of the TRB culture in a wide sense and in a narrow sense was made relatively early. Whereas the former included numerous groups in which Funnel Beakers appeared along with other vessel forms (e.g. from



central German regions or also from southern German groups), the latter refers primarily to a West-, North- and East group of Funnel Beakers with the group of the Altmark Tiefstich pottery in addition. The following deals primarily with the areas of the TRB group, in which megalithic tombs also appear, i.e. with the North-, West- and Tiefstich pottery group. In fact, pottery and other elements of the material culture show that the primary innovations of TRB societies took place in particularly these areas of Southern Scandinavia and North Central Europe (MÜLLER 2009a).

In terms of pottery it was the Danish researcher S. Müller (MÜLLER 1918) who spoke in a rather vivid manner of the first style, the large and beautiful styles, the last bloom and then from styles of decline: TRB vessels undergo a manifold design development between 4100 and 2700 BC which encompasses regional variations. (Fig. 4-5)

When first observing the TRB North Group whose distribution area extends from Southern Sweden across the Danish Isles and the Jutland Peninsula and throughout Northeastern Germany, we recognize trans-regional developments and small regional connections of approximately 100km diameter (MADSEN 1982; MADSEN 1994; MÜLLER et al. 2010). The latter obviously represent compact communication focal points and mark jointly acting hamlets and farmyards.

In general the emergence of the slightly distinctive and only rarely decorated Funnel Beakers can be observed in the southern areas of the North Group beginning ca. 4100 BC, which appeared together with ceramic disks in settlements as well as early graves. An intensive survey on Funnel Beakers from depositions in Zealand which were primarily undertaken in wetland motivated Eva Koch to draw up a clear-cut typological outline which is chronologically safeguarded by means of radiometric dating (KOCH 1998). Accordingly it is clear that the earliest A0 Funnel Beaker

Southern Scandinavia / Northern Plain Chronology		Northern Lower Mountain Range Chronology								
cal B.C.	Period	Northern Jutland	Seeland / Scania	Southern Jutland / Mecklenburg	Lower Countries / NW Germany	Altmark	Middle-Elbe-Saale	Westfalia / Hestia	Period	cal B.C.
-2600	YN 1	Early Single Grave groups				ESG / Schönfeld	Early Corded Ware		Endneolithic	-2600
-2700										-2700
-2800	MN V	Store Valby		GA	Brindley 7	Haldensleben 4	TRB-MES V Bernburg/ Globular Amphorae	Late Wartberg	Late Neolithic	-2800
-2900	MN III-IV	Bundstø / Lindø		Bostholm	Brindley 6	Haldensleben 3				-2900
-3000	MN II	Blandebjerg		Oldenburg	Brindley 5	Haldensleben 2				-3000
-3100	MN Ib	Klimatebakke		Wolkenwehe 2	Brindley 4	Haldensleben 1	TRB-MES IV Salzmünde	Early Wartberg		-3100
-3200	MN Ia	Troldebjerg			Brindley 3					-3200
-3300	EN II	Fuchsberg	Fuchsberg/ Vrum	Wolkenwehe 1	Brindley 1/2	Düsedau 2	TRB-MES III Baalberge			-3300
-3400						Düsedau 1				-3400
-3500					Late Swifterbant / Hazendonk 3	Lüdensen	TRB-MES II Baalberge	MKV	Younger Neolithic	-3500
-3600	EN Ib	Oxie / Volling	Oxie / Svenstorp	Satrup / Siggeneben- Süd						-3600
-3700								MK IV		-3700
-3800	EN Ia	Volling	Swaleklint	Wangels / Flintbek			TRB-MES I Spätengyel	MK III		-3800
-3900					Middle Swifterbant			MK II		-3900
-4000	Final Mesolithic	Final Ertebølle					Gatersleben	MK I		-4000
-4100										-4100
-4200										-4200

Fig. 4. The chronological periodization of Funnel Beaker societies (source: MÜLLER et al. 2010, fig. 1; graphic: Ines Reese/Martin Hinz).



*Fig. 5. Two Funnel Beakers from Borgstedt, Schleswig-Holstein (photo: Agnes Heitmann).*

was produced in all regions of the TRB North Group within 200 years.

While in the South of the Jutland Peninsula rather undecorated pottery was longer in existence, in Northern Denmark distinctively decorated pottery designated as Volling or Svaleklint can be observed. Then the pottery which S. Müller originally named “first style” commences: the regional differentiation and many-faceted distinction of small regional groups of the TRB North Group. As of approximately 3800 BC the Oxie Group develops with totally decorated vessels in Scania, the Danish Isles and the eastern Jutland Peninsula. In contrast, pottery with a lack of decoration characterizes Siggeneben Süd/Stengade in the south. The Satrup Group with marked decorations follows so that even here one soon has a group with pronounced décor.

Consequently, it becomes evident that until 3600 BC in all regions of the TRB North Group, pottery decoration becomes

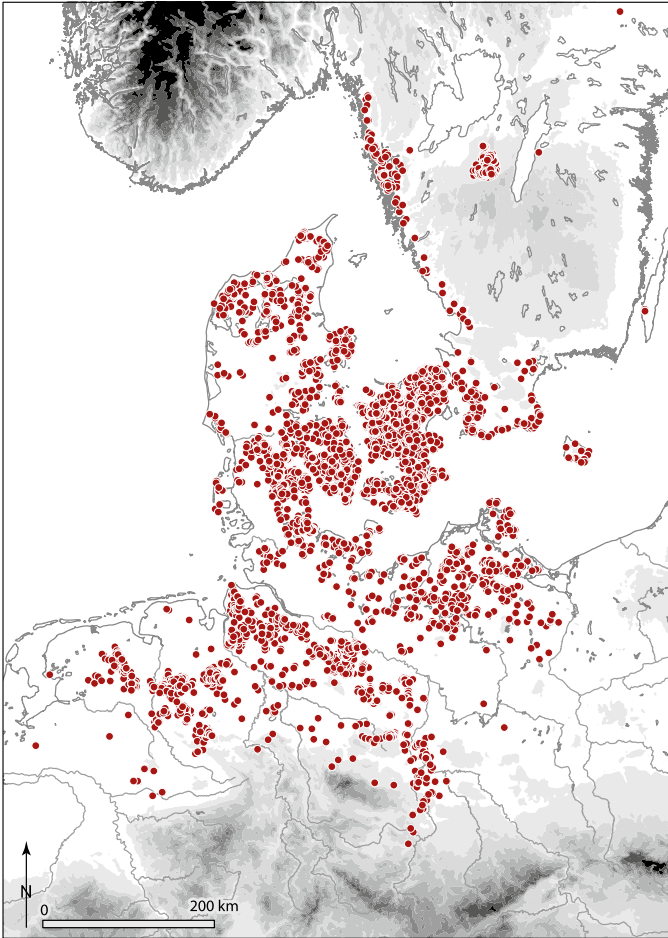
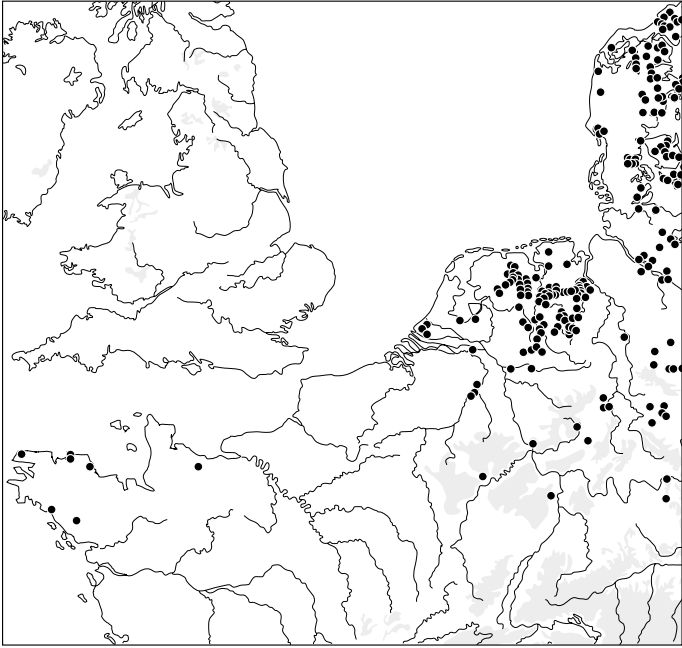


Fig. 6. The distribution of megaliths in northern Central Europe and southern Scandinavia (FRITSCH *et al.* 2010a). Important sites mentioned in the article are marked. 1 Barkær, 2 Vroue Heide, 3 Bygholm, 4 Dragsholm, 5 Sarup, 6 Frälsegården, 7 Saxtorp, 8 Dagstorp, 9 Almhov, 10 Trolasten, 11 Tinnum, 12 Schwesing, 13 Büdelsdorf-Borgstedt, 14 Rastorf, 15 Flintbek, 16 Albersdorf-Dieksknöll, 17 Albersdorf-Brutkamp, 18 Oldenburg, 19 Wangels, 20 Bad Oldesloe-Wolkenwehe, 21 Triwalk, 22 Ostorf, 23 Parchim-Löddigsee, 24 Flügeln, 25 Himmelporten, 26 Hunte 1, 27 Kassel-Calden, 28 Lüdelsen, 29 Haldensleben, 30 Hundisburg-Olbetal, 31 Halle-Dölauer Heide.

established and differing regional decoration styles exist which definitely served as a demarcation between groups. Interestingly, a stronger standardization – the Fuchsberg style - can be noticed in the whole western Baltic region not later than 3500 BC.

The TRB societies enter a “megalithic” phase. Dolmen were built in all areas of the northern TRB Groups (Fig. 6). Of interest is the simultaneous appearance of collared flasks in Brittany which had a distribution area in the territory of the central and southern TRB groups and existed here since at least 3800 BC (compare KNÖLL 1981; fig. 7). In Brittany they are known from lateral passage graves and *allées couvertes*, i.e. from megalithic tombs, which were erected beginning 3600 BC. It is highly likely that they attest for contacts between the TRB region and Northwest France. This in turn enables one to associate the emergence of megalithic graves in North Central Europe and South Scandinavia with the intersections which are documented in the material culture. Recent studies of Lutz Klassen (KLASSEN/PÉTREQUIN/CASSEN 2011) point to the same direction, as he carves out a connection between the import of alpine jadeite axes and the distribution of TRB “Urdolmen” via North West France.

From this point on the developments become multifaceted and can be traced in numerous subgroups. In Northern Germany, most parts of Jutland and the western Danish Isles, flasks with elongated necks, Funnel Beakers with cylindrical to conical rims are found. Bowls are in many cases completely ornamented with geometrical patterns, i.e. with bands of chevrons, ladder-like vertical patterns, vertical stripe groups and plastic mouldings. Collared flasks are now highly elaborated and clay plates are also decorated. The new intensity of decoration and the more normative shapes of the vessels (also visible in the Virum style of Scania and Zealand) clearly describe a tendency in ceramic development, which is continued in the Middle Neolithic. Middle Neolithic pottery is dated from 3300 cal BC – 2800 cal BC and linked to



*Fig. 7. The distribution of collared flasks indicate contact between Brittany and TRB societies since 3600 BC (after KNÖLL 1981, map 2; graphic: Ines Reese).*

the construction of megaliths until ca. 3100 cal BC and later the change from TRB to Early Corded Ware designs. 5 phases could be separated in the Northern group. The MN Ia Troldeberg- and the MN Ib Klintebakke-styles (ca. 3300-3100 cal BC) are again highly decorated with patterns of ladders and bands of chevrons, and complex alterations of different bands, lines and metopic patterns. First drums and three-limbed pots appear.

The MN II Blandjeberg/Oldenburg style is represented by three-limbed cups and jars, furthermore pedestalled bowls and decorated clay discs. Ornamentation is fine, but not as dense on the pot then it was in the MN I. In the MN III-Bundsö and the

MN IV-Lindo style this tendency continues: decoration patterns are still complex, but simpler and mainly containing different forms of triangles or simple chevron stitches. Pots are not any longer as clear three-compartmented but more and more two-compartmented.

The MN V-Store Valby style is again more or less distributed equally in the whole area. Ceramic is much different now: undecorated thick-walled ton-like pots with only a few plastic applications and simple conical beakers are quite different from what was known until now.

While Early Neolithic pottery indicates during many centuries a regionalization of local and regional ceramic traditions, Middle Neolithic pottery reflects an intensification in ornamentation and thus a will to representative efforts (connected to pots), already starting in the EN II (Fig. 8). Design of ornamentation and shapes comes to a peak around 3100 cal BC, the time until which megaliths were constructed. Afterwards again a diversification of ceramic styles and a reduction in impressive design is detectable, ending in a period of coarse and “ugly” ceramic.

This development which has primarily been examined here for the regions of Southern Scandinavia and Schleswig-Holstein also occurred in the other areas of the narrower TRB societies but primarily under varied conditions. Thus, at the outset we can observe the influences of the earlier neolithicized southern territories. From Mecklenburg-Western Pomerania, for example, we know of imports from the Linear Pottery Ceramic region in quite early Mesolithic contexts (KLASSEN 2004; HARTZ/LÜBKE 2004), whereas further south in areas of Brandenburg LBK long houses were erected without being able to assume a fully agrarian lifestyle (CZIESLA 2008). A multifaceted transition from agrarian and non-agrarian groups should be recognized here and the role of the late Oder Linear Pottery has not yet been clarified. All the

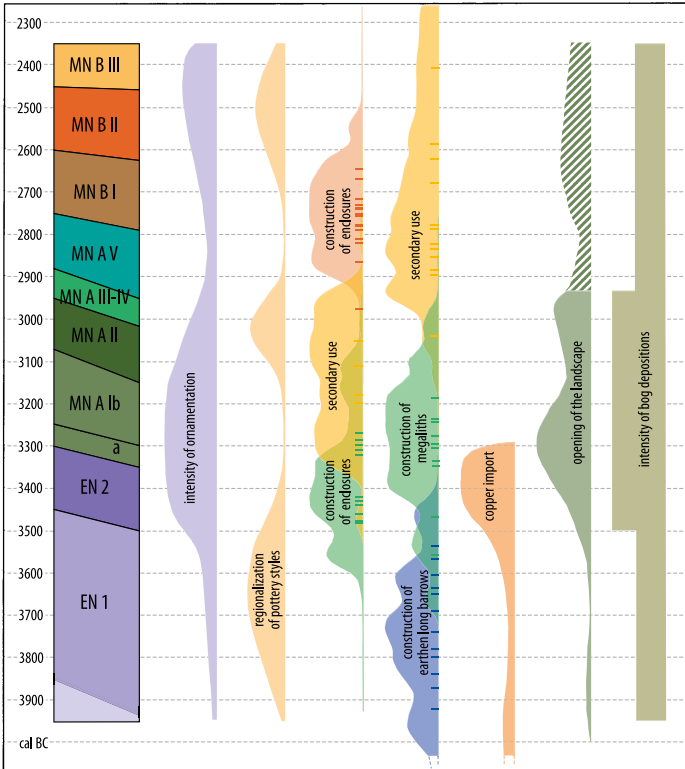


Fig. 8. The development of different site categories and items during TRB (after KLATT 2009, fig. 4; graphic: Ines Reese).

same, in the oldest sites with TRB pottery we find imports from the south which point to the considerable influence of continental groups in the northern region (KLASSEN 2004; CZEKAJ-ZASTAWNY/KABACINSKI/TERBERGER 2011). TRB pottery in the proper sense is known here primarily later. Beginning approximately 4100 BC as well can it be found in the upper layers of Endmesolithic sites, i.e. on the island of Rügen or in the Bay of Wismar (JÖNS/LÜBKE/LÜTH/TERBERGER 2009). We can finally



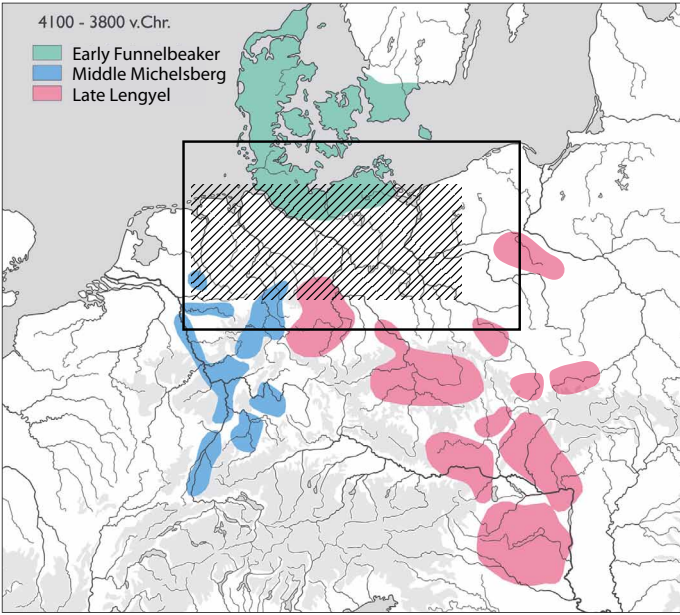
recognize contacts to the densely populated Central German region as of 3800 BC at the latest. Amphorae from Baalberge are found in an early grave of the grave group of Ostorf, situated on an island in the Lake of Schwerin, or also in the Uckermark group with Baalberge pottery (LÜBKE/LÜTH/TERBERGER 2009; PREUSS 1966). Still relatively unresolved is the development of the TRB groups here in the northeast German region, which around 3500 BC finally follow the trend which we were able to describe for the north group, i.e. in the newly trenched site at Triwalk all pottery developments stand out which are so known from the north (STAUDE forthcoming).

In northwestern Central Europe the development could have taken a somewhat delayed course. If we observe the development of pottery on the one hand, repeatedly pottery imports and the transition to pottery production can be shown under Mesolithic groups in Lower Saxony and the eastern Netherlands, however an overall development to TRB pottery first commences around 3600 BC parallel to the Northern Middle Neolithic: the Funnel Beaker west group emerges (LOUWE KOIJMANS 1998; RAEMAEEKERS 1999; RAEMAEEKERS/MOLTHOF/SMITS 2009; BAKKER 1999; 1979; BRINDLEY 1986. - GESCHWINDE/RAETZEL-FABIAN 2009). Being Tiefstich pottery it obviously underlies related impulses which have been described here for the northern TRB, i.e. a similar vessel development and a comparable development of decoration patterns is discernible.

Quasi in the spatial triangle between the northern, western and southern developments the Altmark group of Tiefstich pottery is found (PREUSS 1980; MÜLLER 2001; DEMNICK/DIERS/BORK/FRITSCH/MÜLLER 2008). Similar to Mecklenburg it involves an area here that at least in parts of the Altmark had already experienced neolithization through the influence of succeeding Linear Pottery groups, but then apparently disappears again out of the neolithized groups. We believe we are able to divide the pot-

tery development of the Tiefstich pottery in the Altmark into six phases which begins with the emergence of Funnel Beakers around 3600 BC and then displays developments which finally flow into the local Corded Ware Schönfeld group around 2800 BC (WETZEL 1979).

The implied pottery developments are embedded in the processes which are observable in its vicinity. Michelsberg pottery which develops beginning ca. 4300 BC becomes a determining element to the west and to the southwest (JEUNESSE/LEFRANC/DENAIRE 2004). Numerous pottery forms can be discerned which, certainly from a typological standpoint, are in accordance with the early TRB development, although they are flat-bottomed. Additionally, the so-called tulip-beaker which ranks as the leading form of Michelsberg pottery can be placed here. Michelsberg pottery developed until ca. 3500 BC and had above all an essential influence on South Central European groups, particularly on the Wartberg which was adjacent to the TRB sphere. Further to the southeast pottery groups from Southeast Central Europe which can be identified as Late Lengyel become noticeable at the time of the evolution of northern TRB pottery (KLASSEN 2004). In the Central German or in the Oder region groups such as the Gatersleben and the Jordansmühl lead to new groups, for example the Baalberge pottery (MÜLLER 2001). Stemming from this dense context such correlations develop which we formatively experience in Central Germany: the Baalberge-Salzmünde-Bernburg stylistic groups which fit into an autonomous TRB development in the Central German region. Also in the east of the region observed, the TRB East group and the Southeast group can be regarded as the successor of the similar Lengyel groups which pass through a comparable development (Fig. 9). To the north and northeast a situation is known, where the TRB group is adjacent to hunter-gatherer groups, which do not use pottery or haven't integrated pottery in their lifestyle. For example in Central Sweden the situation existed in which pottery was first



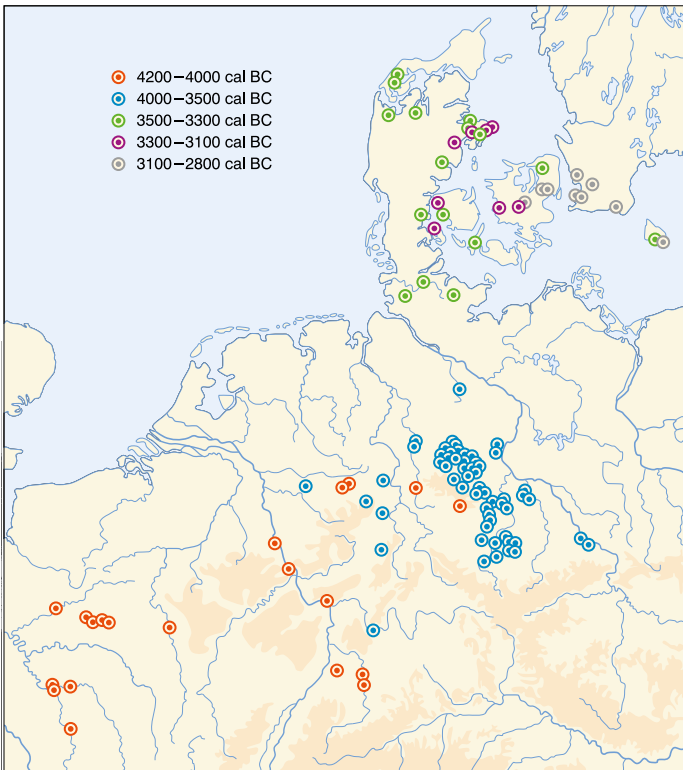
*Fig. 9. The main area of early Funnel Beakers and the spatial distribution of Late Lengyel and Middle Michelsberg (graphic: Holger Dieterich).*

adopted only to be abandoned again as perceived in the case of Pitted ware (MALMER 2002; LARSSON 2006; HALLGREN 2008).

The development of pottery delineates the emergence of TRB pottery beginning in 4100 BC in a wide region between Schleswig-Holstein and the veer of the Vistula estuary, after which regional developments and proliferation to the north, southeast and south follow. Middle and Late TRB pottery are to be found closely related to monuments.

## MONUMENTS 1: CAUSEWAYED ENCLOSURES

To the most impressive monumental constructions of Neolithic Europe belong ditch systems, or the so-called *causewayed enclosures* (ANDERSEN 1997). Scattered all over Europe they are also to be found in TRB regions. On the basis of typo-chronological and radiometric datings we know by now that the typical enclosures with earthen bridges, i.e. the causewayed enclosures, developed



*Fig. 10. Distribution and dating of causewayed enclosures (after MÜLLER 2010a; graphic: Holger Dieterich).*

first in the Paris Basin and can be viewed there in connection with the late Chasséen and the early Michelsberg. In general, Michelsberg can be described as a society, in which the construction of grave fields (as in Southeast Europe) or megalithic tombs (as in Western Europe and later in Northern Europe) played no role (JEUNESSE 2010). Instead, one can associate Michelsberg with the described ditch systems, which appear in very divergent sizes. These ditch systems originate evidently at some time at first in the west of the Michelsberg distribution and spread then to the eastern distribution areas of the Michelsberg societies. Figure 10 shows this trend and also for the Central German region (Baalberge) the acquisition of the idea of building ditch systems at the latest beginning around 3800 BC. Consequently, we observe a large territory during the entire 4<sup>th</sup> millennium in which such ditch systems appear in most different forms – after the idea of building them was adopted in a west to east movement like a “weather front”.

The emergence of causewayed enclosures stands for societal transformations. Investigations of most ditch systems have shown that with adequate excavation techniques we are dealing with a succession of elongated single pits that were possibly dug collectively by individual small groups like families (Fig. 11). In some well-documented cases it is evident that either complete human skeletons or rather human bones found their way into the graves and thereby also apparently played a specific role in the passage rites to death.

While no causewayed enclosures are known in the western, south-eastern and eastern TRB group until now, corresponding enclosures are known in the Middle Elbe-Saale region as well as in eastern Lower Saxony in connection with Michelsberg or Baalberge pottery, then however with a certain temporal and spatial gap in the TRB North group: first from 3600 BC at the earliest 16 enclosures can be located here (KLATT 2009). Büdelsdorf in

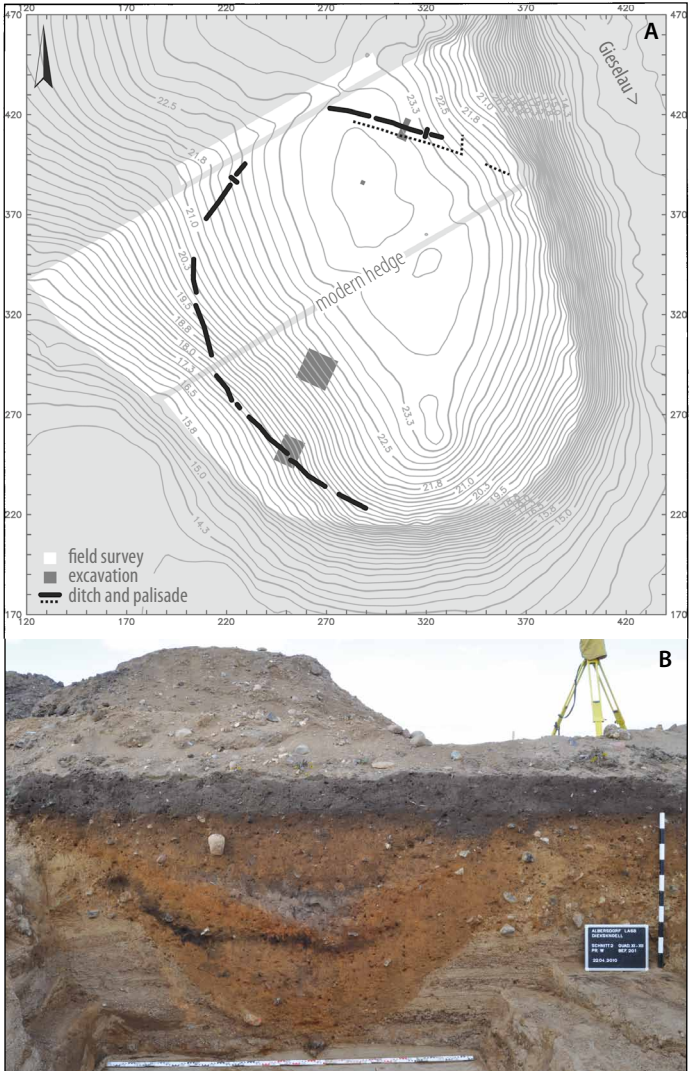
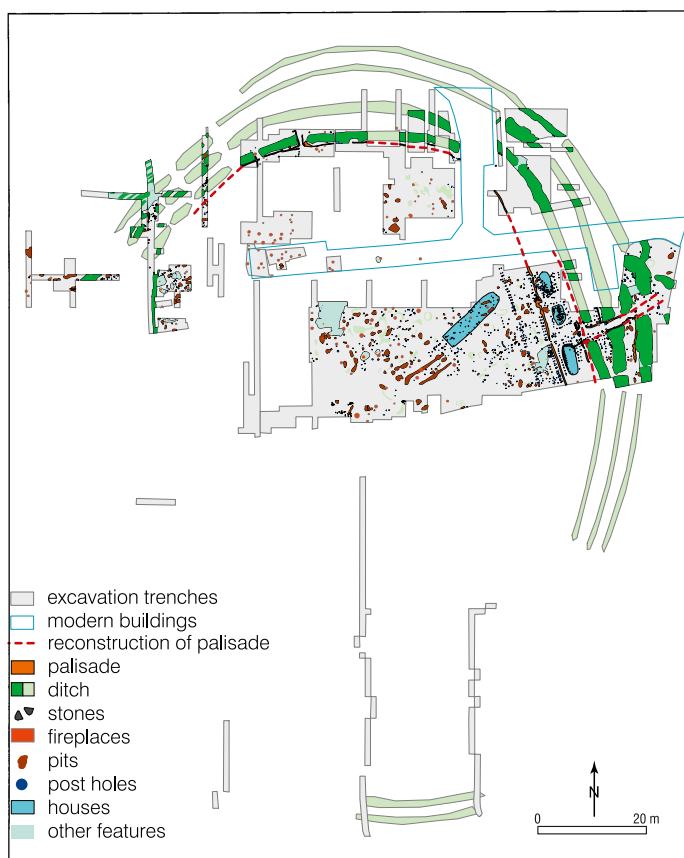


Fig. 11. The causewayed enclosure Alberdsorf-Dieksknöll and the profile of a ditch with signs of re-cuttings and in-fillings (after Hauke Dibbern/Franziska Hage; DIBBERN/HAGE 2010).

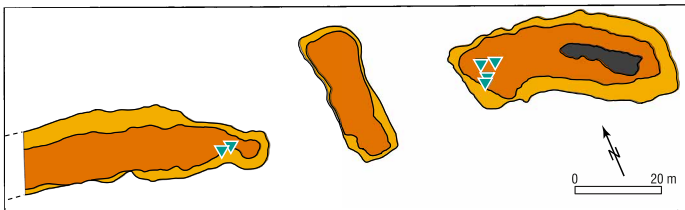
Schleswig-Holstein (Fig. 12) and Sarup on Funen belong to the earliest excavated enclosures here (ANDERSEN 1997). For the latter facility Niels Andersen was not only able to work out two different phases with a larger and a downscaled enclosure at the end of the development, rather also able to clarify the function of the construction. Again we are dealing with elongated pits which, in connection with a complex palisade system and depositions of



*Fig. 12. The causewayed enclosure Büdelsdorf (after Hauke Dibbern/ Franziska Hage).*

artifacts, served ritual purposes. Burying and renewed digging in the ditches played an important role in this context which could be followed across a number of phases and also played a role in the pits within the interior of the enclosure.

The facility Albersdorf-Dieksknöll is a newly excavated ditch system which uncloses a similar picture (DIBBERN/HAGE 2010). On a spur-like setting protruding into a wetland area, pit ditches were dug whose earthen bridges were connected in the sphere of a supposed entranceway through a further deep, crosswise-placed pit. The excavation results show that the inside of the causewayed enclosure is virtually free of findings and structures, what, according to pedological information, can in no way be attributed to erosion. A palisade, which is continuous even in the area of the openings, can be found within the enclosure. It either became a victim of a fire or was purposefully set on fire around ca. 3500 BC. The actual ditches can be placed according to radiometric datings and the few archeological finds within the time span of ca. 3650 and 3300 BC. 8 burying and renewed digging phases can be reconstructed for this period. Accordingly, in approximately every second generation such processes were carried out on the ditch system. In light of the assumed settlement pattern in single farmyard compounds or at the most small hamlets (see below) we assume that at intervals farmyard inhabitants convened in order to reassure their cooperation at particular celebrations (Fig. 13).



*Fig. 13. The deliberate breaking and deposition of one pot in the ditches of the causewayed enclosure Albersdorf-Dieksknöll (after Hauke Dibbern/Franziska Hage).*



In detail these celebrations were associated with the demolition of vessels (perhaps libation) and their placement in pits. One such vessel, for example, is broken and deposited in both parts of the northern and southern head ends of the ditch, whereby the 2m deep pit was omitted. Due to its heavy wood posts it was obviously covered up in a tent-like fashion and was reserved for other special purposes, still connected to re-cuttings and in-fillings. The activities which we attribute to the ditch system correspond surely to temporary gatherings. The quantity of archeological finds is absolutely meager and cannot be compared to that what we know from domestic sites. The deposition of clay dishes and Funnel Beakers verify from my point of view that only temporal activities (e.g. feasting) took place here. The archaeobotanical results show that above all gathered and not cultivated plants played a role in these rituals comparable to the evidence from burial sites (Fig. 14). Furthermore, it is interesting that the pits were repeatedly dug out perhaps until a time around 3300 BC. However, afterwards a phase began in which the ritual was no longer maintained. The renewed pit diggings around 2800 BC verify however, that knowledge of the assumed activities was still present over the centuries and here at the end of the TRB societies and the beginning of the development of Single Grave societies was shortly practiced once again.

Taking the causewayed enclosure Alberdorf-Dieksknöll as an example for ritual gatherings which primarily took place among neighboring communities including “strange” activities within the palisade and pit ditch area in the phase between 3600 and 3300 BC, we can compare it to other causewayed enclosures where productive activities took place in connection with the ditch systems. The production of adzes directly on-site next to the pits at Sarup, Büdelsdorf and also in Rastorf can be mentioned here (ANDERSEN 1997; HASSMANN 2000; STEFFENS 2009). In Rastorf, for example, the production led to the development of a 40cm thick “occupation layer”. The production of flint adzes

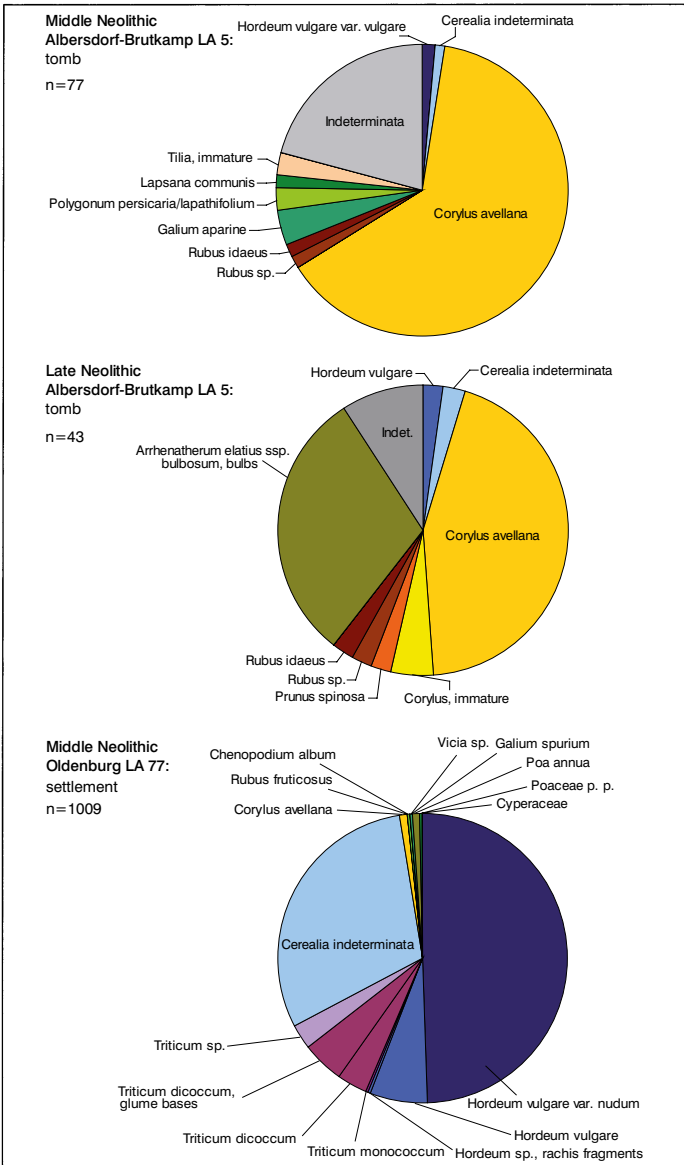
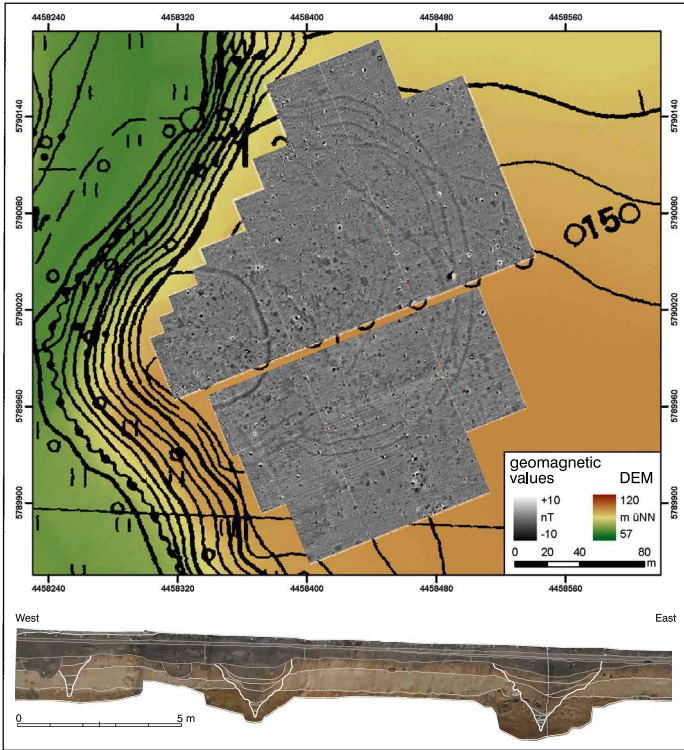


Fig. 14. The differences in plant deposition between megaliths (Brutkamp) and domestic sites (Rasdorf) (after KIRLEIS/KLOOß submitted, fig. 2; graphic: Wiebke Kirleis).

within the enclosures is conceivably integrated into distribution mechanisms of flint planks which were traded as valuable goods across the entire territory and were distributed from the west to the east coast. It can surely have occurred at different ditch systems that ritual activities were interconnected with productive “economical” processes.

At least in the area of the TRB Northern Group causewayed enclosures are always accompanied by other monuments: the megalithic tombs. It is therefore intensively documented for Sarup that in the area of the fjord-like bay ca. 110 megalithic tombs can be found near to the enclosure (ANDERSEN 2008). In Albersdorf-Dieksknöll groups of megalithic tombs can also be found near the enclosure and in Büdelsdorf a group of megalithic tombs is closely connected to the enclosure. In fact, the analyses in Albersdorf and in Büdelsdorf have shown that the construction of the first megalithic tombs took place simultaneously to the construction of the ditch system. The extended dolmen in Albersdorf-Brutkamp was constructed around 3650 BC as well, which exhibits in turn an occupancy history that suggests the use of the landmark over many centuries. Also in the case of Borgstedt near Büdelsdorf it is clear that the facility of the megalithic tombs which proceed in a radial form toward the ditch system was used at the same time as the ditch system. Rastorf belongs to one of the few cases for which causewayed enclosure as well as a settlement and megalithic tombs are substantiated. The megalithic tombs are situated near the settlement, not near the causewayed enclosure. The role of causewayed enclosures in the northern area of TRB appears quite clear: they constitute ritual foci in spatial planning which embraces local entities of the area at temporary gatherings after an opening of the landscape.

Causewayed enclosures must not always have the same function. A glance at the Brunswick Land suggests that the frequency of ditch systems plays a very different role in this area located in



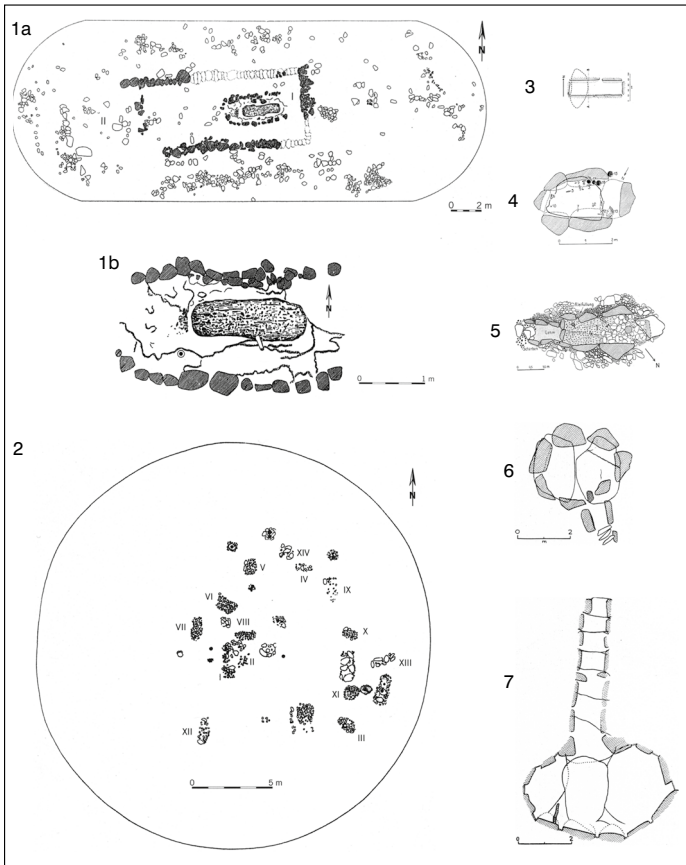
*Fig. 15. The causewayed enclosure Hundisburg-Olbetal with a section of the outer ditch-system (after Matthias Lindemann/Christoph Rinne; FRITSCH et al. 2010b).*

the northwestern edge of the densely populated Central German region (GESCHWINDE/RAETZEL-FABIAN 2009). But also new excavations on the southern edge of the TRB domain show how ditch systems can also function differently (FRITSCH/LINDEMANN/MÜLLER/RINNE 2010 (in print)). At the enclosure of Hundisburg-Olbetal the depth of the V-shaped ditches increases as one proceeds from inside to outside. This is ideally playing a fortificational role in order to delimit the internal area (Fig. 15).

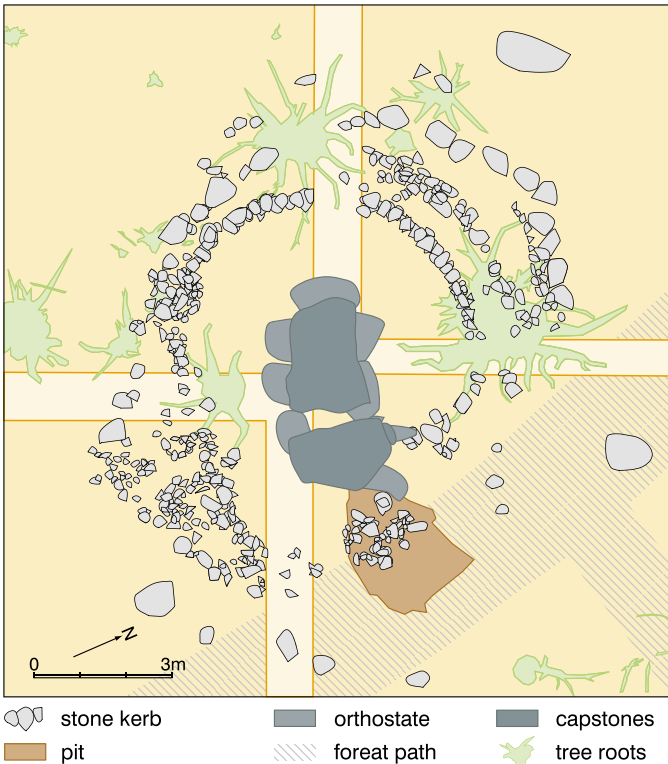
In contrast to Dieksknöll this causewayed enclosure is filled inside with numerous concurrent pits so that they do not feature any re-cuttings or in-fillings and are quite clearly settlement remnants. Respectively, we are dealing here with a fortified settlement of the southern TRB group. This causewayed enclosure also is connected to megalithic tombs – the megalithic tomb graveyard of Haldensleben with probably 90 megalithic tombs. The division of the loess zone of the south and the northern moraine landscape occurs here, as well as the division of Tiefstich and Bernburg styles and most likely also different modes of spatial planning. A contrast is surely evident in a southern direction in that, for example, in Halle-Dölauer Heide massed V-shaped ditches appear there in the enclosure where the terrain is rather flat (BEHRENS/SCHRÖTER 1980).

## MONUMENTS 2: MEGALITHS

The construction of causewayed enclosures within the TRB North group is attended by the construction of megaliths. As has already been stated at the very beginning a mass of megalithic tombs must have been built in Northern Europe and Southern Scandinavia. It is a rather simple concept to collect matching boulders to form a corridor covered with a capstone and - in contrast to the earlier stone cists - to leave an access open and thus form a chamber which may be reentered recurrently. In the Northern European and Southern Scandinavian area we find *dolmen* and passage graves: simple (“Ur-”) *dolmen* with closely arranged upright slabstones and a flat capstone (Fig. 16), extended *dolmen* with two or three case bays of opposing orthostats and an axial, sometimes slanting marked access (Fig. 17), and finally passage graves featuring passages of different lengths and an entrance which is placed either along one side of a polygonal chamber or – when dealing with an oval or rectangular chamber – aligned laterally (Fig. 18). Since the *Kraggewölbe* remains unknown in

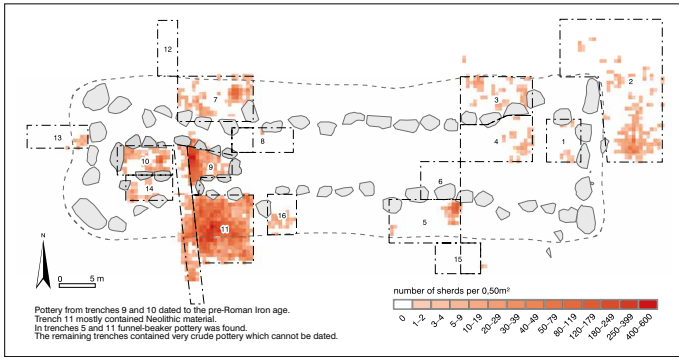


*Fig. 16. Neolithic grave forms on the North Frisian Islands: Non-megalithic and megalithic sites (compare HINRICHSEN 2006, Plates 9 – 10 and KOSSIAN 2005, Plate 157, 40 and Plate 160, 245). 1 Tinnum-LA 37; 2 Morsum-LA 2; 3 Utersum LA-19; 4 Sylt-Ost-Keitum LA-70; 5 Kampen LA-180; 6 Kampen LA-2; 7 Wenningstedt-Denhoog LA 85. For Morsum 3 flat graves with furnishings are marked. The part of the flat grave cemetery was preserved under a burial mound (MÜLLER 2010b, fig. 4).*



*Fig. 17. The elongated dolmen of Lüdelsen 3 (DEMICK et al. 2008; graphic: Denis Demnick).*

the continental North, the span of the chambers is limited due to the technical obstacles to deal with and the static qualities of the stone material. In order to gain space, it is necessary to either create a more oblong shape from the start or to later add lateral cubicles to the chamber. Thus the typological sequence of the Northern Central European-Southern Scandinavian megaliths might be explained in the following way: small dolmen give way to extended dolmen and to those with a marked access, and



*Fig. 18. The long barrow and passage grave of Lüdelsen 6 with the density of pottery distribution (Denis Demnick; graphic: Denis Demnick).*

finally we find passage graves with passages of varying lengths and large chambers. Within the West group of the TRB phenomenon the elongation of the chamber is most impressively documented by the chamber type Wechte, whereas the Limfjord region and northwestern Zealand feature other characteristics of enlarging the chambers such as two graves in one mound or lateral cubicles, features we only encounter there, at least when considering the TRB area.

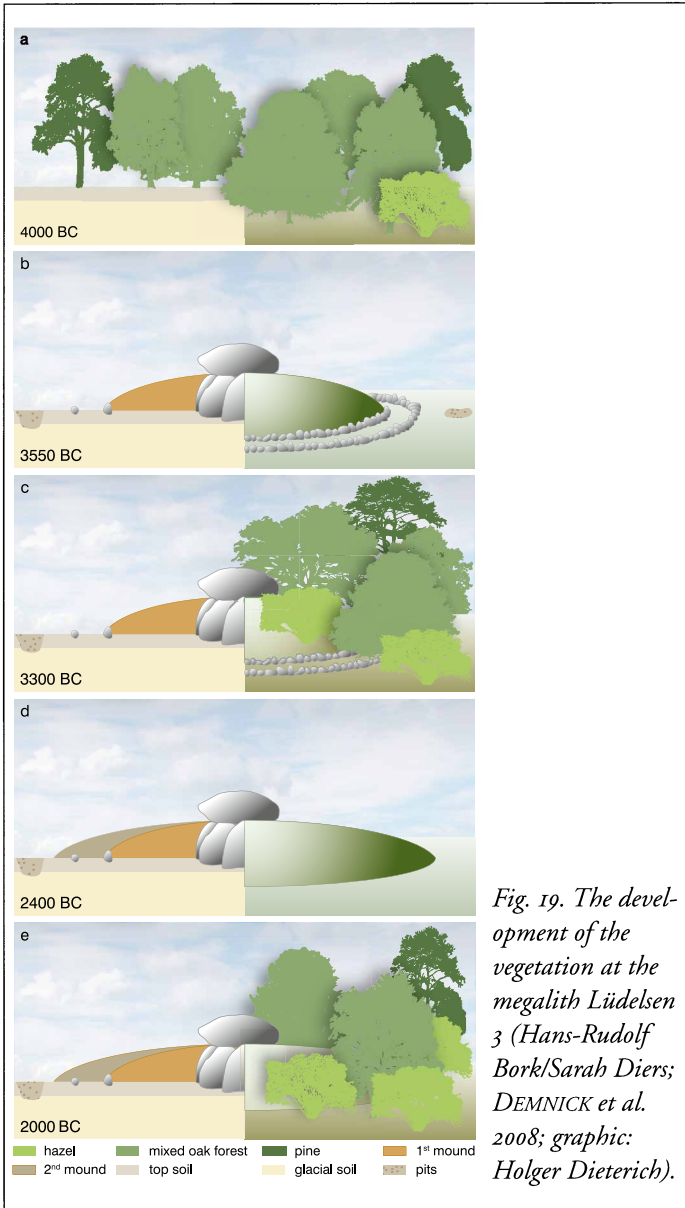
The construction of a megalith, which solely relies on slabstones and dry masonry walls, needs a supportive mound which may also serve as a ramp during the building process. Megaliths might be found in rectangular, oblong or trapezoidal barrows, in round barrows, sometimes even in square barrows. They often comprise different construction phases or further mounds.

Apart from the burial rite which is surely connected to related transitory/transitional rites, we find a multitude of constructional changes or manipulations at a megalithic grave. The recently excavated and rather simple large dolmen of Lüdelsen 3, situated in the Altmark, might serve as a good example (DEMICK et al.



2008). The excavation revealed that around 3650 BC a clearing was created in which the megalithic tomb was built (Fig. 17; 19-20). The surrounding area revealed a few extraction pits and the slabstones were arranged to form a chamber with three bays and an axial side entrance. The spaces between the orthostats were filled with dry masonry walls. Even at that time, a flat entrance pit, which contained several sherds of smashed Funnel Beakers, was placed directly in front of the entrance and the grave itself already held the first burials together with three Funnel Beakers ornamented with cannellures. Meanwhile, the pits from which the mound soil was taken, were filled with fluvial sediments carried from at least as far away as 250m from the nearby valley of the *Hartau*. The entrance pit was partially covered by the external stone kerb (with a diameter of 9.6m) that also delineates the outer boundary of the mound. The existence of pottery from the phase Haldensleben 2 found in the chamber itself, around the entrance, as well as in the excavation trenches of the outer stone kerb, reveals that further actions and burials had to have taken place. We see these finds as ritual depositions and manipulations at the mound, while of the stone construction only the capstone and entrance were visible.

The pottery of the Globular Amphora must have been deposited around 3000 BC in the upper part of the chamber and around the menhir, which had been erected near the entrance to the chamber. These finds point to a particularly high intensity of activities near the grave. All this took place when the grave had already been largely covered by trees, a process which must have already started shortly after the construction of the megalith. Thus the grave has been intentionally kept from any economic activity whatsoever, a characteristic which can also be ascribed to the four other graves near Lüdelsen. We find the nearest settlements at the above mentioned *Hartau* and near the forest mire of Betzendorf, where the settlement of Tangeln has left but little trace of any settlement activity. A palynological analysis reveals an opening of



*Fig. 19. The development of the vegetation at the megalith Lüdelsen 3 (Hans-Rudolf Bork/Sarah Diers; DEMNICK et al. 2008; graphic: Holger Dieterich).*

the landscape in the surroundings of the TRB settlements and an increase in the founding of settlements during the phase of the Single Grave culture. At Lüdelsen 3, which has remained largely untouched after 3000 BC, the Single Grave culture has also left its mark around 2400 BC, when an individual lying in the right crouched position was buried there. This process might be connected to a second aggradation of the mound: Above layers that still contained TRB sherds, which could be refitted to those of the chamber and which must have been cleared out of the grave, a mound with a diameter of 30 m was built, thus camouflaging the megalithic tomb as a plain Single Grave mound. Apart from the use of the mound as a landmark in Late Bronze Age we cannot account for any further manipulations around the megalithic tomb of Lüdelsen 3.

However, other monuments were manipulated in a similar way: At the above mentioned Rastorf area one megalith, for example, features a secondary grave chamber and a mound with a diameter of around 10 m, which had been built above a few flat graves, and by adding a partial extension created an oval mound already at the end of the Early Neolithic (STEFFENS 2009). This process took place as several other flat graves appeared around the megalithic tomb, until finally the whole mound had been turned into a long barrow with a façade made up of a dry stone wall. As before, we can make out two construction phases. In Rastorf a fairly average sized megalithic tomb had thus been turned into a far larger monument. A certain significance may be ascribed to the integration of single graves into the mound.

The megalithic site of Flintbek shows a similar development (MISCHKA 2010). Especially the long barrow LA3 consists of a line of several non-megalithic grave mounds turned into a long barrow with dolmens inside (Fig. 21). Similar to the development in Barkaer, Northeast Jutland (LIVERSAGE 1992) we seem to observe a change from simple wooden constructions to simple dolmen. According to the very accurate radiometric dating method this transition took place at around 3500 BC.

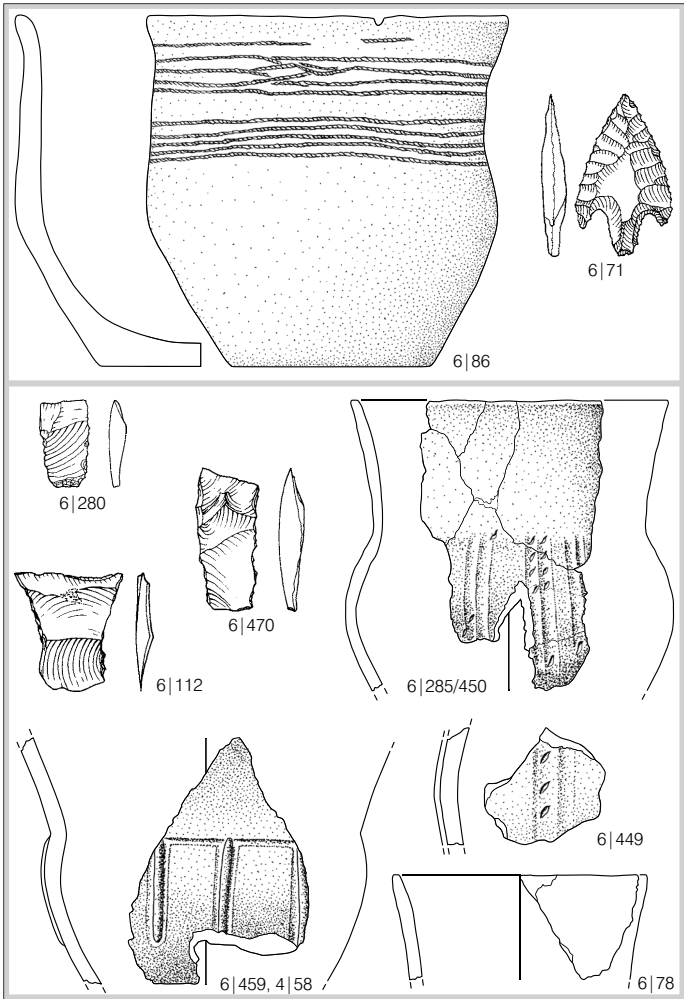


Fig. 20. Burial items in Lüdelsen 3: Single Grave burial top; TRB burials bottom (after DEMNICK et al. 2008; graphic: Denis Demnick).

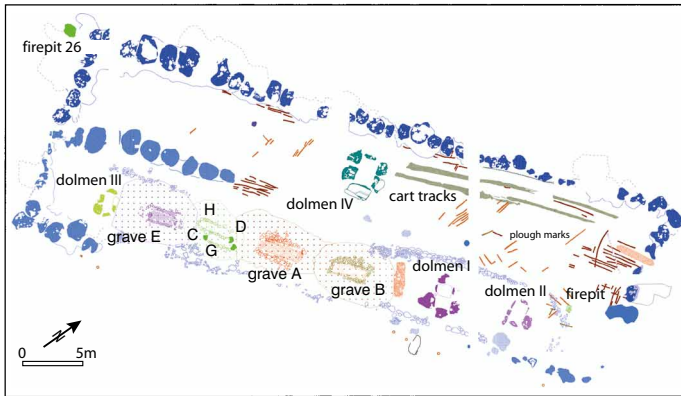


Fig. 21. Flintbek LA 3 Excavation plan with different features separated by colors.

In the northeastern part the famous cart tracks, now AMS-dated to 3460-3385 cal BC are leading towards Dolmen IV (after MISCHKA 2010, fig. 3; graphic Holger Dieterich).

The history of the megalithic tombs takes on various forms and so we may find that at Lüdelsen 6, situated very near Lüdelsen 3 -as in Flintbek- at least one non-megalithic grave has been transformed into a megalithic construction featuring a rectangular long barrow front and a passage grave. The excavation of the long barrow could not yet confirm that the interpretation as a grave is correct, but the construction itself dates back to around 3700 BC according to radiometric dating, whereas the passage grave has been built around 3300 BC. We know for certain that at least two non-megalithic mound phases had existed before the first manipulations took place and before – finally - the megalithic part was integrated. In contrast to the fairly small amount of ceramic finds uncovered at the entrance of the dolmen of Lüdelsen 3, a lot of sherds and other finds were found at Lüdelsen 6, pointing to an intentional “smashing” of the items at the side of the entrance. These actions can be interpreted as ritual offerings accompanying the worship of ancestors. There seems to be a striking difference

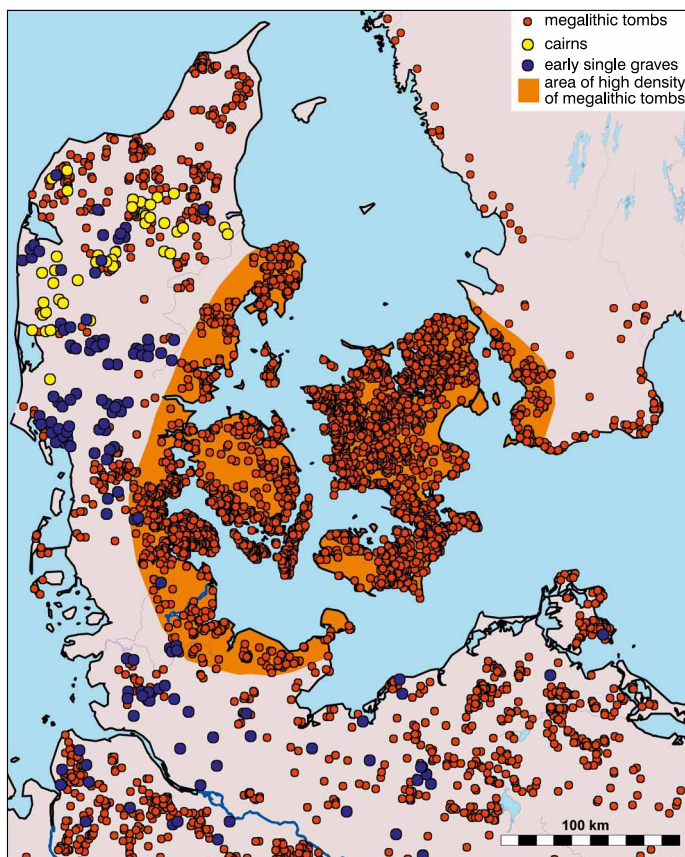
between megaliths that were frequently revisited and formed central places with a high amount of vessel finds in front of or near the entrance and those with only few such finds. At Lüdelsen 6 we see the end of these activities, when the dry stone wall filling between the slab stones was literally ripped out, maybe in connection with the appearance of pottery from the Globular Amphora culture found here.

Related activities at the end of the TRB culture and in the following Neolithic stages might be found at other grave sites as well. The extended dolmen of Albersdorf-Brutkamp, around 3km away from the above described ditch system is a good example (DIBBERN/HAGE 2010): Excavations near the entrance revealed that the monument was built around the same time as the causewayed enclosure was constructed. The grave was used until approx. 3100 BC and destroyed around 2300 BC during the phase of the Late Neolithic 1: a cup marked stone which originally formed the lid of the entrance was taken down and the whole chamber was cleared out.

It is quite difficult to decipher the role the Single Grave culture or the Late Neolithic may have played in relation to the secondary utilisation or destruction of enclosure and tomb. We have already stated that the ditches of the causewayed enclosures of Albersdorf-Dieksknöll, as well as of the enclosure of the Wartberg group of Kassel-Calden (RAETZEL-FABIAN 2000) and of other such facilities have been put to secondary use thus pointing to a conservation of knowledge over a long period of time. On the other hand, there are other causewayed enclosures with no trace of a comparable secondary use during the Younger Neolithic, such as Rastorf and Sarup. However, at Sarup the enclosure was used again during the Late Neolithic (ANDERSEN 2008), a fact that could not be confirmed for any other such site.

This mosaic of various examples for the handling of TRB monuments mirrors the whole picture: Between the Altmark that represents the southern distribution of the Tiefsch pottery and the Limfjord to the North, a lot of megalithic tombs contain

secondary burials of the Single Grave culture, mostly dating later than 2400 BC. In Northern Jutland we observe the appearance of stone cists during the phase of the Single Grave culture that obviously derives from a megalithic tradition and even leads to the construction of probably single, new chambers and thus to the construction of new megaliths (HÜBNER 2005). Here, as is the case for almost all of the areas of the Single Grave culture, the



*Fig. 22. The area of highest densities of megalithic tombs (after FURHOLT 2011).*

mass of single graves was placed - besides the secondary burials in megalithic tombs - under a simple earthen mound. In Zealand however, the burials of this time were exclusively placed as secondary burials within megalithic graves (Fig. 22). Martin Furholt pointed out that the early forms of the Single Grave culture cluster around a “megalithic heartland” to the North and do not give way to the new *Zeitgeist* until later (FURHOLT 2011). There seems yet to be a lot to uncover before one is fully able to understand the societal metamorphosis at the end of the TRB culture and during the 3<sup>rd</sup> millennium BC.

I would like to emphasize that only by looking at the architecture we are able to trace different regions in the Western Baltic that might be considered core regions of the TRB development. Besides the obvious demographic hotspots, such as the Oldenburg Graben, eastern Holstein or southwestern Fune, there are densely populated areas in which “wealth and power” are expressed by a special type of architecture. The above mentioned double chambers of passage graves or passage graves with lateral cubicles seem to be limited to the region of the Limfjord and north western Zealand (MIDGLEY 1992). The exploitation of flint might be seen as material base for this area. It seems conspicuous that the following periods during the Younger and Late Neolithic are also set apart by an – at least – architectural specialty which might be interpreted as a similar indicator of might or power.

However, in southern Scandinavia we observe considerably different developments during the Late Neolithic. In southern Sweden the Late Neolithic groups adopt the tradition of building megalithic graves and by creating a new kind of grave – the gallery grave – mark the *Landnahme* (“land-taking”) of the inland. The handling of the megalithic remnants here therefore seems similar to that of the Limfjord area, whereas in other regions – as for example in western Holstein – the people of the Late Neolithic were mainly destroying megalithic tombs. These opposing attitudes within the same period of time subsumed under just one term have to be examined more closely in the future.



Until now, we have mainly focused on the architecture of megaliths. As for the finds, there is no case where it is possible to ascribe a grave good to an individual, partially because of the bad preservation conditions due to - among other things - acid soils. We see different forms of depositions in or in front of the grave chamber as part of the burial rite. Some megaliths display a rather sparse spectrum of finds, whereas other megaliths hold an immense number of, for example, vessels deposited near the entrance. Lüdelsen 3, with few finds, held no more than 6 vessels and three flint blades, whereas in Lüdelsen 6 a count of around 50 partially deposited vessels has been reached to date, and that only at the entrance. There are other southern Scandinavian examples for this tradition such as Trollasten dolmen in Scania (MALMER 2002) and graves in northwestern central Europe, but there the sherds were not found primarily at the entrance but in the grave chamber. Apart from this phenomenon, we may also encounter the whole inventory of the TRB development that has survived in the ground, namely flint artifacts, adzes and amber finds. There is evidence of artifacts which were produced with the sole intention of giving them to the dead. The thick butted flint axes in northern Frisian graves are always longer than 18 cm in contrast to the actual tools showing traces of edging or use wear (HINRICHSSEN 2006).

Therefore we are able to discern between graves which have obviously had a long tradition of being a focal point for deposition rites, maybe even for the duration of several generations, and those which had a rather low significance after the actual burial had taken place. Ritual foci emerge that are often placed in the center of a regional cluster of megalithic graves. They emphasize the high effort which has been invested within a small region or even at a single place, setting them apart from places where only few megaliths were found, even though the preservation conditions were the same.

The acid soils and the poorly preserved bone remains do not allow for the exact reconstruction of the burial rites at megalithic

sites. In many cases the better preserved bones often belong not to the TRB culture, but to the Late Neolithic (compare e.g. ANDERSEN 2008). Therefore, considerations of probable ritual scenarios often preyed on analogies taken from southern realms. Boulders are mainly limited to the southernmost spread of the last ice age glaciers and for lack of other construction materials the people living to the south of this boundary followed the idea of a collective burial rite by building chambered graves made of stone or wood. Furthermore, we know gallery graves from the northern part of the Central Lower Mountain Range which might also be considered a parallel to the megaliths of Northern Europe, even though their conception is based on a totally different approach (GÜNTHER 1997; D. RAETZEL-FABIAN 2000; HINZ 2007). These graves hold up to 300 individuals, some of them disarticulated at random whereas later ones are often more “in order”. The anthropological analysis of the skeletal remains of Odagsen suggests that the way the bones are found is consistent with “normal” decomposition processes (GRUPE 1989), so we may also assume a deposition and clearing away of skeletal remains. The collective burials were therefore not depositions of disarticulated bones or only partial burials, the skeletons were usually deposited as a whole. As long as we do not have similar analyses in a megalithic grave, we must be careful with the assumption that only partial burials found their way into the chamber. This is also the case for the northeastern German megalithic tombs. Some are characterized by a compartmentalization of the chamber (SCHULDT 1972). The accumulation of bones in these separations has often led to the conclusion that the individuals were only partially buried there. The trait of dividing the chambers links the northeast of Germany to Scania.

In contrast to the Northern Central European and Danish areas the preservation of bones of TRB origin in some sites of southern and Central Sweden is considerably better and therefore enables us to reconstruct the burial rite of the passage graves. An exam-

ple is foremost the passage grave at Frälsegården in Falbygden (SJÖGREN 2010). Like others, the grave evidences the burying of individuals as a whole (Fig. 23). Isotope analyses in Falbygden lead to the discovery that the buried individuals came from the surrounding region. The animal bones, however, show that the different animals came from areas farther away. On the whole, we might state that the graves of the TRB North group hold full-body burials which were kept untouched if they lay in a less frequented tomb or gave way to later burials and were put to the side if they lay in one of the greater, central tombs.

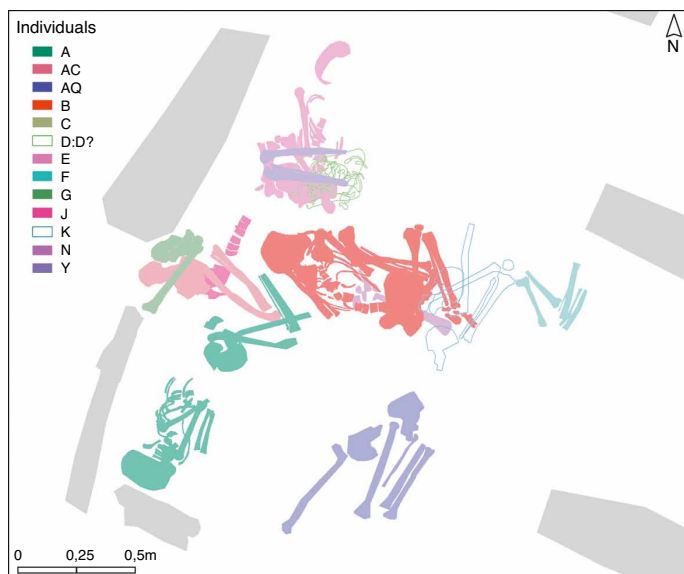
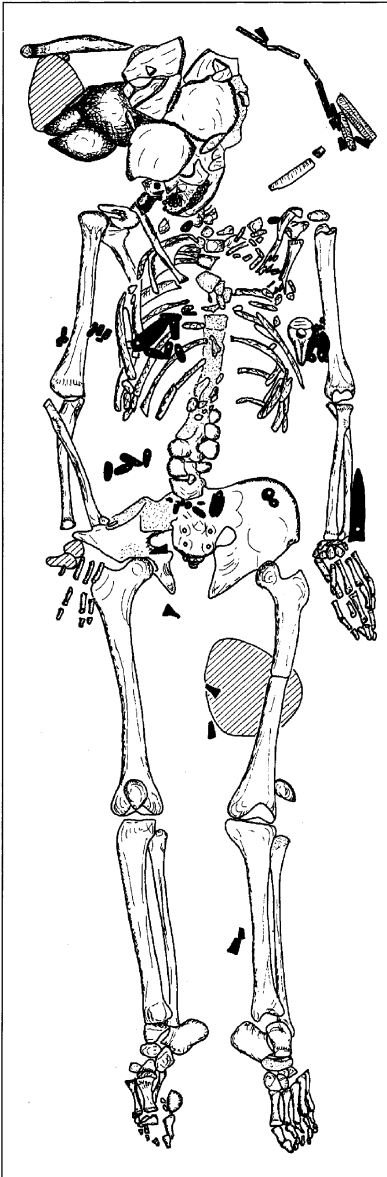


Fig. 23. Some of the articulated burials at the Frälsegården passage grave (after SJÖGREN 2010, fig. 14).

## NON-MEGALITHS

However, describing the TRB burial rite as full-body collective burial does not account for the multifarious burial ceremonies known from the TRB area. During the whole TRB age the people were buried in flat graves which were either situated alone or clustered in small groups or even small grave fields (KOSSIAN 2005) (comp. Fig. 16). The custom of burying in flat graves might have derived from the Ertebølle age, but at the end of the Mesolithic we observe a nearly total lack of flat graves, so we do not have a direct link to the neolithic flat graves at least in the northern part of the TRB area. The flat grave of the southern TRB society may of course stem from the Late Lengyel tradition where flat graves remain common throughout the whole time. The Michelsberg societies to the west, however, do not know extra-mural flat graves.

TRB flat graves outside the settlements are rare during the start of the Early Neolithic (4100-3800 calBC, partially until 3500 calBC). The whole TRB North group features less than 10 burials which date to the Early Neolithic, for example the burial of Dragsholm of an around 20 year old male interred with a very early ceramic, lying in a straight position on his back (Fig. 24). The number of single burials then increases during Early Neolithic II. They are often placed in grave groups with the usual furnishing of grave goods, such as for example one vessel and a flint axe or the like. Rastorf and also Vroue Heide are excellent examples for flat graves connected to megalithic tombs: They prove that single burials may have been placed outside the chambers (STEFFENS 2009; JÖRGENSEN 1977). The inventory of a flat grave could be as rich as the effort of construction could be high. The grave type Konsens Høj features two thick oak beams and an oblong stone packing between them, meaning that a certain trouble had been taken to create this burial, not to mention the construction of open temple-like deposition areas. They were built out of wood and were aligned to two pairs of such burials. The finds of a



*Fig. 24. Dragsholm, grave II. – Scale 1:10. (after BRINCH PETERSEN/ EGEBERG 2009, fig. 3). One of the earliest TRB single burials recorded from Zealand.*

golden ring in Schwesing, Holstein and Himmelpforten also prove the relevance of single flat graves within the TRB development.

Ostorf is another fine example for a typical TRB cemetery, this time on an island in the lake of Schwerin. The cemetery was used during the phases MN II/III-IV which has been evidenced by  $^{14}\text{C}$ -dates from animal bones (mostly dating to 3100 until 2900 BC). Men on this grave field are distinctly marked as „hunter“ or „warrior“, as is also known in a more gradual form from other cemeteries between Elbe and Oder (LÜBKE et al. 2009; MEYER 2009).

The description has thus far dealt with the TRB North and West groups but applies in a similar way to the South group of Central Germany and the eastern group in Poland (KOŚKO/SZMYT 2009). We frequently see flat graves, in Central Germany often single graves, beneath round barrows, which are also characteristic for the remaining TRB regions. Besides the common flat graves and the megalithic tombs, another category of graves can therefore be named: non-megalithic round or long barrows.

Non-megalithic long barrows are a phenomenon closely connected to the heartland of the TRB as well as to the wider sphere (MADSEN 1979; MIDGLEY 1985; MIDGLEY 2005). They are often earlier than the megalithic phenomenon throughout Northern Central Europe and Southern Scandinavia and may have been used for a very long period of time. The long barrows often are single burials furnished with flint axes and TRB vessels. We know different categories and the most famous examples are the Kujavian graves of the Sarnowo type: they are trapezoidal to triangular barrows whose longitudinal axis radially points to some important landmark. They usually hold the burial of an older male. Aerial photography and recent excavations allowed for the extension of the distribution of long barrows: They do not only exist in Southern Scandinavia, but may also be found in Northern Central Europe and Central Germany, some are even known from Southwest Germany (which has already been

discussed among researchers for a long time) and on the British Isles. The long barrows of the Passy type in the Paris basin date much earlier and thus the distribution of long barrows of the TRB time ranges from southern England to southern Scandinavia, from north-eastern Germany to eastern Germany, and Great and Little Poland.

It is important to state that the construction of long barrows dates back to as early as 3800 BC and that neither the megalithic tombs nor the causewayed enclosures are the oldest relics of the TRB development.

There is no evidence to link the long barrows of the Passy type to the later TRB long barrows. Therefore we have to deal with non-megalithic long barrows that appear to have been - if the excavation data is sufficient - multi-phase places where a variety of ritual sequences took place. In Bygholm, for example, a palisade had been erected on the short side with various pits containing bone depositions. We also observe wooden mound kerbs, the burial itself and finally the whole structure was covered by earth. In later times the long barrows seem to serve as burial sites with a richer inventory, as we see in Sylt-Tinum (HINRICHSSEN 2006). Also there are several cases where single mounds were integrated into one long barrow as in Flintbek (MISCHKA 2010). Non-megalithic round barrows may be explained in a similar way, they mark individual burials in the landscape.

The similarity between the long barrows of Britain and those of southern Scandinavia - both appearing at around 3800 BC - was always very obvious and has been discussed fairly early (MADSEN 1979). The extreme resemblance of these structures will not be part of our discussion but it is all the same very surprising that there should be only sparse evidence of any exchange of material culture whatsoever. The flint adzes from the TRB age identified within the realm of the definite British long barrows might be an exception to this (WALKER 2010). The confirmation of this conformity could evidence relations surpassing the ritual similarities. The actual exchange could only have taken place along the coastal

lines, namely the coast of the North sea crossing the Thames corridor, but surprisingly just there – between Calais and Hamburg – not one non-megalithic long barrow has been discovered so far. Many researchers favored and still favor the explanation that long barrows are stemming from the long houses of the Linear Pottery and their successors. This might be an option when considering the long barrows of Passy, but as for the long barrows of the type Sarnowo or the very early barrow of Bygholm, not to mention the late Tinnum, the chronological gap is far too wide.

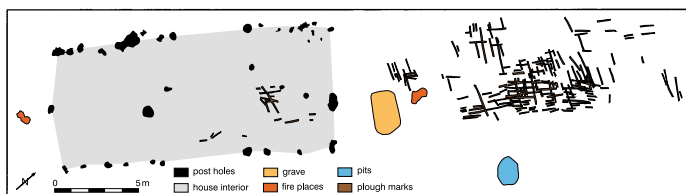
But there is another possible explanation: the use of Endmesolithic shell middens remains common during the Early Neolithic but then ceases at the time the long barrows appear and mark the societal turn to TRB monuments. Since shell middens had served as burial sites all along, the step to constructing a long barrow does not seem so far.

In conclusion we could demonstrate that the TRB societies not only featured rich ceramic inventories, they also displayed a great variety of monumental ensembles and burial sites, all of which lay outside the settlements. But in the following we will see that burials may also be found within a settlement.

## DOMESTIC SITES, DEPOSITIONS AND THE ORGANIZATION OF SPACE

For a long time, not knowing what the TRB settlements of northern central Europe and southern Scandinavia may have looked like, remained one of the most prominent problems in research history. Very few ground plans of houses and settlement pits were known and could give us an idea of the general outline of housing habits. The validity of such finds for the whole of the TRB sphere stayed questionable. But during the last two decades, great linear construction projects, as well as large excavations provided us with knowledge about further TRB settlements. Nowadays we are





*Fig. 25. The EN II house of Rastorf (after BROZIO 2011). Both the arable land, as well as the house with a burial are visible.*

aware of at least around 200 ground plans of houses allowing us to paint a fairly accurate picture of what living looked like. Some local studies concentrating on the distribution of sites give us an idea on which principals the TRB societies acted when organizing their environment and social space.

With regard to houses and huts (Fig. 25) distinct patterns through time and space of the TRB phenomenon can be identified (ARTURSSON/LINDEROTH/NILSSON/SVENSSON 2003): Not taking into account local or functional variations, the master plan of the TRB house shows a two-naved rectangular (type Limesgard/Dagstorp 2) or slightly rounded ground plan (type Mossby), the latter of which seems to belong to the Early and beginning Middle Neolithic. The type Dagstorp predominates during the Younger Early Neolithic and the Middle Neolithic. The houses are usually between 4 and 7 m wide and range from 8 to 20 m in length. The outer walls are made up of closely spaced planks or wattle-and-daub walls. The interior did not have separate rooms. All TRB stages also feature round huts.

A particularly well-excavated site is Dagstorp in Scania (Fig. 26) where various forms of houses and huts could be documented (ANDERSSON 2004). We observe large houses in the Early Neolithic 1 and smaller houses and huts from the Early Neolithic 2 until the Middle Neolithic II which are partially aligned. Cultural soil layers were – not unlike on sites of the Linear pottery – uncovered in front of the houses outlining the former courtyard of the farm. The ceramic remains make it possible to determine

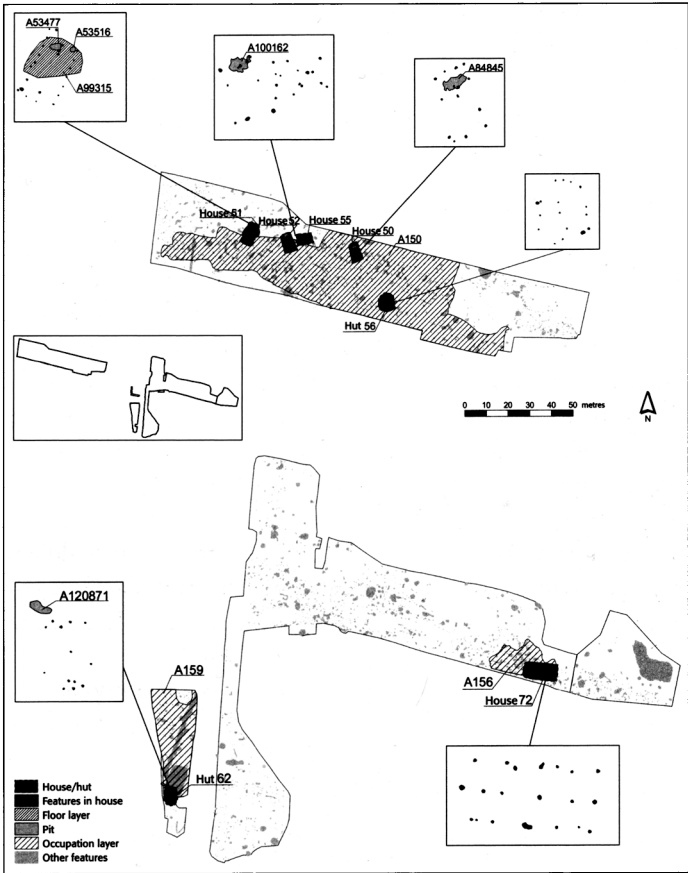
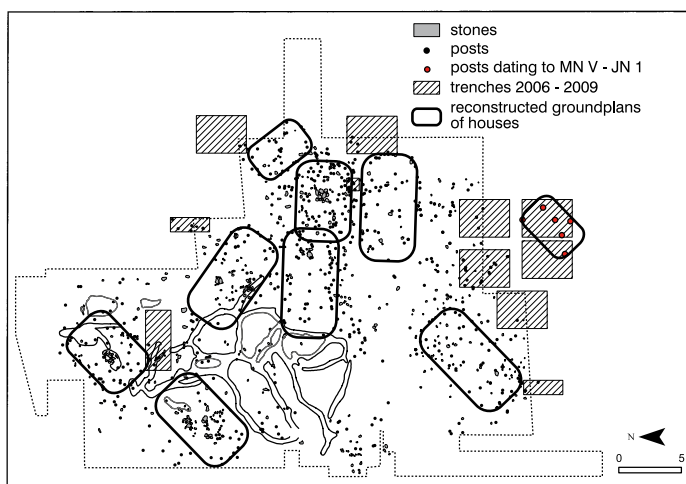


Fig. 26. The settlement of Dagstorp 19, Scania (after ANDERSSON 2004). Beside houses a cultural layer exists.

that in Dagstorp 19 two houses co-existed at any given time, so it must have been a single farmyard. The entrances to the house were most probably placed on one or both long sides and usually there were no separate rooms, whereas the house of Flögeln gives evidence that separations did exist: it features a division

into two rooms. At the site of Saxtorp 23 burials were discovered approximately 100 m away from the houses and huts. Very often the floor of a TRB house was pitted, a property described by the term „sunken floors“ that was introduced by Scandinavian research. These pits could have been used as fire and work place thus providing the inhabitants with a certain functional division inside the house.

Crucial discoveries about TRB housing mainly came from Sweden during the last decade, but most recently this information could be supplemented by research in the more southern areas. In Wolkenwehe, situated in the Trave valley in East Holstein, several small rectangular houses with rounded corners could be reconstructed (BROZIO 2010; 2011) (Fig. 27). The overlapping of some of the post-holes suggests that no more than three houses existed simultaneously. The re-examination of the Hunte village of Hunte 1 by Kossian (KOSSIAN 2007) shows further examples of equally sized houses which date from the transition Middle to Younger Neolithic. Furthermore the site Rastorf in East Holstein



*Fig. 27. The reconstruction of houses in Bad Oldesloe-Wolkenwehe (after BROZIO 2011). Probably 2-3 houses existed contemporarily.*

features a house of the type Dagstorp in front of which lay pits, a burial and plough marks: (Fig. 25) a classical example of a single farmstead with associated fields (STEFFENS 2009).

The general setting of TRB settlements during the 4<sup>th</sup> millennium therefore seems to comprise single farmsteads or small hamlets. The occasional two or three neighboring farms seem to always have kept a certain distance from one another.

If we look more closely at two of the settlements, the interpretation of the uncovered features become more complex and we have to concede that the only explanation lies in the reconstruction of spatial concepts on a local scale.

Looking at Bad Oldesloe-Wolkenwehe we observe an insular situation within a wetland area (MISCHKA/DÖRFLER/GROOTES/HEINRICH/MÜLLER/NELLE 2003/2004 (2007)). The settlement is placed more or less directly in the former middle-Trave lowland. The palynological and sedimentological analyses show that the settlement must have been deserted during the winter and spring floods. The activities of the settlement seem to have evolved around the production of flint tools including adzes. There is no trace of any agricultural activity, whereas the slaughter of domestic and wild mammals is accounted for in various areas of the settlement. A patchy ditch system and high charcoal quantities cannot be explained but may reflect some special local production. Maybe these finds are associated with the exploitation of the nearby saline springs and thereby with a form of salt production, even though there is no archaeological evidence to prove it. Overall, Wolkenwehe seemed to be a very special kind of settlement in the wetland, closely linked to permanent settlements in the vicinity. The distribution of find places in the Middle Trave Valley reveals a specific pattern: we see the megalithic tombs in the hinterland, permanent settlements on the middle river bench and temporary specialized insular settlements in the lowland. Almhov in southwest Scania near Malmö is another example of a temporary settlement (RUDEBECK 2009). The excavation uncov-

ered EN I circular structures arranged in a circle measuring 200 m across made up of pairs of thick posts with double pits in front of each pair. It must have been a circular cluster of tents maybe used for a feast of some kind. Near each double post pairs of pits filled with food waste were uncovered. Later the place featured a long barrow and two regular long houses. Other temporary situations are known, such as Alvastra, where a wooden platform with planked pathways in a wetland might be interpreted as a temporary pasture of some kind (MALMER 2002).

The treatment of death within the settlement is most clearly revealed at the site of Oldenburg (Fig. 28-29), a permanent TRB settlement placed on a former island of the Oldenburg Fjord and mainly dating to the Middle Neolithic II (BROZIO 2011). The mineral soil of the site preserved the remains of several houses, some of which featured sunken floors. The evidence of tool production, grinding stones, the ceramic inventories and bone tools account for the various every day activities dominating the life of the few families that must have lived there.

A part of the settlement lay at the edge of the fjord bank which today marks the beginning of bog land and must have once



*Fig. 28. A burial from the domestic site Oldenburg (after BROZIO 2011). The 40 year old woman was placed in a pit, later - during a secondary manipulation - the femur taken away.*

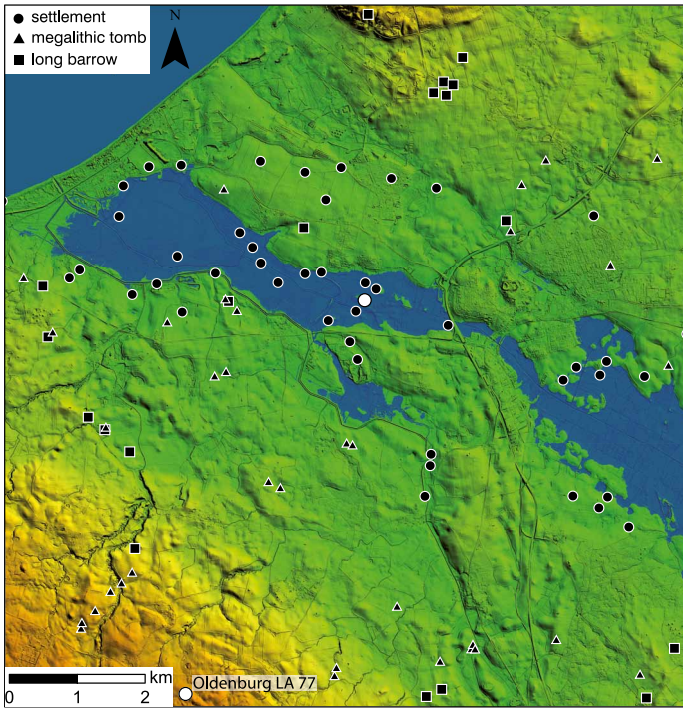


*Fig. 29. The well from the domestic site Oldenburg (after BROZIO 2011). Beside many archaeological objects also the femur of the nearby burial (Fig. 28) was found.*

demarcated the zone of brackish water. Various wooden posts could have belonged to the fortification of the embankment, behind which a lot of waste and depositions were found under water-logged conditions. The settlement was used between 3400 and 2900/2800 BC according to radiometric dating. The area of the fjord bank held human remains - several bones and a cranium - which were deposited together with some broken objects on the border between dry and wetland. At first glance there seems to be no difference between the treatment of these bones and the treatment of animal bones.

In the center of the settlement the a pit also revealed how death could be dealt with: The pit held skeletal remains of an approx. 40 year-old female who had been arranged in a straight position on her back, with the neck and upper body part slightly following the curve of the pit's upper profile. The skeleton lacked the left femur with traces of another pit and thus of a secondary, intentional manipulation of the burial. Taking the bone (or maybe

trying to get to the object placed on the upper limb) out of the joint capsule resulted in a slight elevation of the skeleton. Later the remaining disturbance was filled with soil again. 2 m away, a well, 2.3 m deep and 1.3 m wide, confirms that the brackish water was not drinkable. The very interesting filling of the well revealed several Funnel Beakers, depositions of grinding and whetstones, as well as a lot of settlement waste and last but not least the miss-



*Fig. 30. The organization of space in the Oldenburg Graben (after BROZIO 2011). The spatial division between domestic sites in the lower land and on the islands and the megaliths in the hinterland is observable. The original watershed is reconstructed on the base of palaeo-ecological data.*

ing femur of the nearby burial. The latter may either be seen as an intentional, somewhat ritual deposition or as a profane disposal. Apart from these more obscure details the general pattern of the distribution of TRB settlements in the Oldenburg Graben is relatively clear (Fig. 30). Botanic and geological analyses allow for the reconstruction of the ancient bank or coastal line, so the fjord also provided maritime resources for subsistence. Around 3200 BC an alignment of several settlements along the fjord bank, on islands and in the lowland can be made out (HOIKA 1986). Similar to the situation in the Trave valley, the megalithic sites are limited to the hinterland thus narrowing the land used as pasture or cropland by the TRB societies around.

Especially the settlement on the island in the Oldenburg Fjord must have had farm land in the dry areas cultivated by the families belonging to the site. Such insular sites already existed during the earliest TRB phase: the site of Wangels represents such an early settlement (GROHMANN 2010), with Oldenburg coming later.

East Holstein features favorable climatic circumstances with low rainfall/precipitation values (500/600mm/a) and is therefore one of the best settlement regions on the Cimbric peninsular near the west Baltic Sea. The agglomeration of megalithic tombs and settlements bears evidence that this region must have been one of the most densely populated areas of the TRB development. The settlement pattern described here does not encompass megalithic tombs clustering around a causewayed enclosure in contrast to patterns seen in for example north east central Jutland. A causewayed enclosure may not have been needed to catalyze cooperative activities.

The ritual deposition of objects is another very important find category which characterizes the TRB world, apart from burials, enclosures and settlements.

Besides depositions within settlements (Oldenburg) and around or in front of megalithic tombs, a lot of sacrifices were made in dry and wetland areas (e.g. RECH 1975; LARSSON 2004). The TRB North group leaves most of these obviously ritual depositions



during the Early Neolithic II and Middle neolithic Ia, between 3600 and 3300 BC. The abundant depositions of amber chains and pendants or the like, the laying-down of vessels, hammer axes and various adzes take place at the same time as enclosures and megaliths are built and the pottery is richly ornamented. In the Swedish region of Falbygden a visibility analysis between megaliths, settlements and lowlands with a history of depositions has led to the discovery that the deposition sites usually lie in areas which are clearly set apart by environmental conditions and constitute their own entity within the landscape (SJÖGREN 2003). The idea of *landscape* in TRB times can nearly be felt here, but we have to deal with a multitude of different approaches to get to the bottom of it. However, we now know for a fact that the TRB people did pay attention to demarcations in the Neolithic landscape. We see this in the above described settlement patterns of the Oldenburg Fjord or the Trave valley, as well as through the visibility analyses of the Altmark that show that settlements and burial sites were clearly set apart. The economic and demographic developments behind these concepts have yet to be brought to light.

## ECOLOGY AND SUBSISTENCE ECONOMY

Within the North Central European and South Scandinavian area the TRB development is closely related to the introduction of new products: the cultivation of cereals and livestock farming. New economies result in marked changes of ideological attitudes that also have an impact on the life style and outward expressions of human habits. A crude survey of the overall pattern accompanying the spread of these new economies accentuates strong similarities between the neolithization of the British Isles and Ireland on one side and Southern Scandinavia and the Northern European Plains on the other side, but also of the circumalpine regions. Around the same time (after 4100 BC), large parts of

the non-loess areas will be subjected to the spread of farming and breeding. But if we compare TRB regions with the British Isles, we may register clear differences: The latter is characterized by taking over cereal cultivation, pottery and the custom of building megalithic tombs **before** non-megalithic long barrows and finally enclosures „infiltrate“ the landscape of the British isles as of 3750 BC (WHITTLE/HEALY/BAYLISS 2011). In northern central Europe and southern Scandinavia, on the other hand, the development followed another schedule: Causewayed enclosures and megalithic tombs appeared long after non-megalithic long barrows were known at around 3600 BC. A structural comparison allows for a careful explanation: At the outset, Western Baltic areas were inhabited by Endmesolithic Ertebölle groups. They largely relied on hunting and gathering and the exploitation of aquatic resources thus enabling them to (to a certain extent) live a sedentary life and use pottery as early as 4800 BC. On the British Isles Mesolithic groups never produced ceramics or reached such a degree of sedenterism.

The „hard“ evidence of a Neolithic lifestyle is only represented by low proportions of domestic animals at the beginning of the Early Neolithic (STEFFENS 2005). Between 4100 and 3800 BC the shares of domestic bones within zoological inventories range from 14.5 % in Danish Svaleklint, to 22.6 % in Basedow/Mecklenburg, only 6 % in Scania Lödelsborg and 25.8 % in Bebensee, whereas Wangels displays a percentage of 64 % of domestic animals. The following Early Neolithic Ib is characterized by values of more than 60%, for example Siggeneben-Süd features 67%. With the EN II and MN the values level off at over 90 % with the exception of specialized settlements such as Bad Oldesloe-Wolkenwehe. So we have to concede that the adoption of a Neolithic lifestyle took place gradually, beginning in the Early Neolithic and ending a few centuries later. This transformation is reflected in the percentage of domestic animals. New house mammal species were mainly cattle, but also pigs and small ruminants. aDNA-analyses of, for example, cattle bones reveal that the

animals bred did not stem from local species like the aurochs but from Anatolian races (BOLLONGINO 2006).

The evidence of cereals or cereal-related weeds paints a similar picture (KIRLEIS/KLOOß/KROLL/MÜLLER in print; KIRLEIS/FEESER/KLOOß 2011; SJÖGREN 2006). Between 4100 and 3800 BC we do not have a single cereal from a settlement except cereal impressions on pottery. Not until Early Neolithic Ib, after 3800 BC, we get cereal samples from different sites. The Early Neolithic I must clearly be seen as transitional phase during which a nutrition based on foraging was gradually substituted by a nutrition relying on livestock and farming. Other indicators of the new economic foundation such as grinding stones and sickle glance were not common before 3600 BC when the intensive agricultural production process had finally set in.

Palynology supports these results in principal (e. g. NELLE/DÖRFLER 2008). The decrease of tree pollen in pollen profiles confirms the main opening of the landscape in the southern part of the Cimbric peninsular around 3600/3500 BC in the Early Neolithic II. Before (4100-3800 BC) there are no considerable changes recorded. After 3800 BC a continuous percentage of *Plantago Lanceolata* marks the beginning of an intensive livestock feeding in the forests – the *Hude*-forest appears. The opening of the landscape commences later on the Jutland Peninsular, the Danish isles and southern Sweden. This chronological offset is also reflected in average percentages of bones from domestic animals which decrease from South to North and therefore document the loss of significance of stock-herding in the North.

The development of agricultural techniques has to be considered as well. The opening of the landscape should be connected to the introduction of the crooked plough, marks of which can be found under and near megalithic graves and houses since Early Neolithic II in North Central Europe and southern Scandinavia. The plough marks of Aptrup (Amt Viborg) date to 3600-3300 BC and those of the Fuchsberg-house of Rastorf may also be mentioned (HÜBNER 2005; STEFFENS 2009).

The technological improvement of the plough strengthens the role of the cereal as nutritional foundation, a fact that is underlined by the frequent occurrence of cereal samples on sites dating to Early Neolithic II and the Middle Neolithic phase.

Wheat and barley are seconded by related weeds, furthermore poppy and other garden plants such as fennel appear. The cultivation of gardens augments the opening of the landscape and the increase of shrubs in pollen profiles accounts for the existence of hedges. Grinding stones and sickles become common finds within most settlement types. The appearance of sickle glance serves as another indicator for a chronological offset from south to north: the percentages of sickle glance are higher in southern settlements. In Sarup the deforestation is evidenced as late as 3300 BC accompanied by a simultaneous rise of sickle evidence within the settlement (JENSEN 1994).

Stable agriculture surely existed since 3600/3500 BC but what about the time before? Certain palynological evidence, for example from the Belau lake, reports an increase of ashes and coal between 4100 and 3700 BC (Fig. 31). The first half of the 4<sup>th</sup> millennium is characterized by a distinct increase of colluvial depositions in Schleswig-Holstein, followed by a decrease (DREIBRODT/LUBOS/TERHORST/DAMM/BORK 2010). Both discoveries may be seen as indicators for the often discussed slash-and-burn farming method. Small forest areas are burnt down, the ground is then fertilized by wood („Brandfeldbau“; SCHIER 2009). This method leads to very good harvesting results and may have opened up the non-loess areas and by this the Northern Central European and South Scandinavian region to cereal cultivation long before the invention of the crooked plough could consolidate the new economy.

The significance of hunting and gathering remained stable. Throughout the different societal spheres herbal products were used and deposited in various, sometimes markedly different ways which are reflected in the variety of find scenarios:

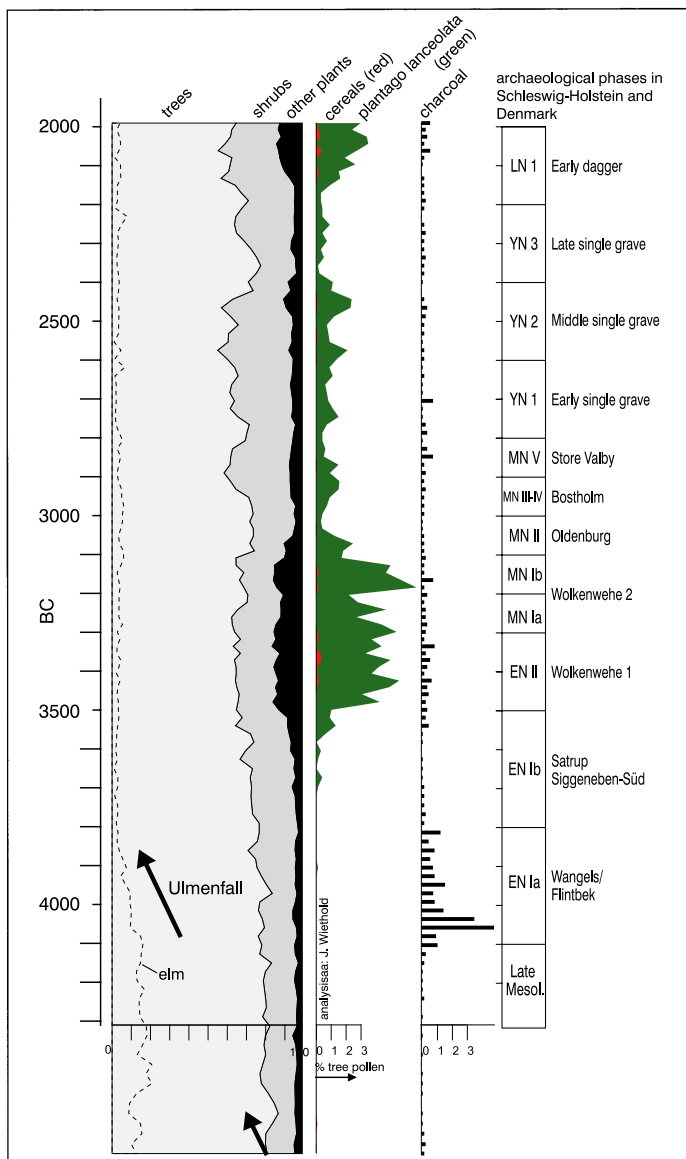


Fig. 31. The opening of the landscape reflected in the record of the Belauer See (KIRLEIS/FEESER/KLOOß 2011). After a period in which charcoal played an important role, around 3500 BC, the imprints of a new agricultural system on the vegetation are visible.

Cereals, namely einkorn and barley predominate in the settlement of Oldenburg, whereas the site of the megalithic tomb of Albersdorf-Brutkamp is mainly characterized by non-cultivated gathering fruits such as, among others, hazel (KIRLEIS/KLOOß submitted). The same applies to the causewayed enclosure of Albersdorf-Dieksknöll where the percentage of cereals per litre remains even lower. It cannot be said for sure if shrubs such as hazel or species of fruit trees were promoted by a special kind of forest management.

Some social structures feature a strong hunting component like the grave field of Ostorf (LÜBKE et al. 2009) even though the subsistence economy was mainly based on agricultural products during the late Early Neolithic and Middle Neolithic time.

Temporary TRB settlements or camps were built for different purposes but some of them were clearly engaged in hunting activities as we have already stated for Bad Oldesloe-Wolkenwehe with a high percentage of game in the Early as well as the Middle Neolithic. A straightforward example of a hunting camp is the temporary station in Parchim-Löddigsee from which no domestic animal remains are known (BECKER/BENECKE 2002). There is evidence that the settlement was used to carry out a specialized hunting of wild horses at the end of the Middle Neolithic.

As for animals in this context, the cart tracks of Flintbek spring to mind. They could recently be dated to precisely 3400 BC and confirm the use of cattle as working animal (MISCHKA 2010). The appearance of double burials of animals, especially of cattle, in wide areas of Europe is a very powerful indicator for the increasing significance of animals. We find anti-podic double burials of cattle who were - as is the case for Central Germany - placed by analogy with human burials in a crouched position alongside common grave goods.

A recent study revealed that the sole remains found in double burials, which were aligned in front of the megalithic tomb of

Vroue Heide, were cattle teeth (JOHANNSEN/LAURSEN 2010). The position of the finds suggests that the burials could have well been double burials of cattle which had maybe been buried together with a cart or carts. This is another strong indication for the importance of animals.

We have as yet not mentioned fishing and the exploit of maritime resources which remained common during the whole time as many finds of seal and fish bones, fishing hooks and weights from fishing nets confirm. In Bad Oldesloe-Wolkenwehe seal bones were found and indicate that these animals were an important resource even inland.

At the end of the TRB development we may identify various regionally differing structural organizations of societies. Some areas are reforested after 3100 BC, in other areas we observe an increase of pasture land. The transition to an Early Neolithic economy with a strong bias towards animal husbandry also characterizes the end of the TRB development which seems as divers as the beginning. The continuous curve of *Plantago lanceolata* as indicator for an anthropogenic opening of the landscape and pasture farming reaches some areas only after monuments had already been erected.

## BEYOND SUBSISTENCE

There seems to be no monocausal approach and it is necessary to concede that other factors apart from the preferred model of a subsistence economy with possible similarities or diversities formed the TRB society and have to be analyzed. The use and production of amber which has been traded far to the South is one such factor, but flint and flint production is by far more important. The resource flint has been produced by coastal and surface mining, it has been processed and finally exchanged

(MIDGLEY 1992). Large flint mines existed in the Limfjord region with a highly specialized production and especially on the south Cimbric coast of the North sea we have flint-related work places that demonstrate the sheer mass of available material and the resulting distribution maps allow us to identify the network of exchange relations.

Another characteristic trait is the use of copper. Since around 3500 BC the TRB North group conducts its own copper technology, using copper which had originally come to the North as import (KLASSEN 2004). The copper daggers in the deposition of Bygholm and from the single grave of Aspenstedt indicate a certain new social evaluation process.

The highly specialized mining industry (“Montanindustrie”) and new construction methods support the building of over ground monuments. The manipulation of large capstones requires a high amount of planning and skill. Not only manual skills are needed, also the ability to mobilize a certain number of fellow people at a certain time is essential. It is a process highly reliant on the demographic and social relations – relations we would like to reconstruct for the TRB age.

## DEMOGRAPHY AND SOCIAL FORMATIONS

At first, social reconstructions require knowledge about the size of social groups. Demography is a limiting factor to the size of a social group, as is the economic ability. A simple model analysis therefore helps to emphasize that demography and economy are imperative for the reconstruction of social formations and social re-organization.

The demographic problem might be solved by drawing on basic tendencies perceptible in general data collections. We could use palynological evidence of *human impact* as proxy for a gen-



eral evaluation of the demographic development. The amount of  $^{14}\text{C}$ -dates reflects the amount of archaeological features left behind and by carefully discussing and evaluating the circumstances under which a deposition took place we might even be able to add to our knowledge of the demographic development (MÜLLER 2009b).

Both methods result in the discovery that there was a marked increase of population in the southern TRB area mainly in the Early Neolithic II and at the beginning of the Middle Neolithic. The late TRB development would be most likely characterized by a decrease of population.

To get a more accurate picture of these tendencies, a test region was defined, in which we tried to sum up all relevant archaeological data in order to gain a more solid knowledge about what the demographic and social development might have looked like (MÜLLER 2010b).

The nearly complete survey of megalithic tombs and other archaeological finds and features on the north Frisian islands provided us with the ideal sample region and could be used as basis for further observations. There are 94 indications of megalithic tombs densely packed around a small area, at least in comparison to other areas.

The reconstruction of the minimum population size draws upon simple calculations: The average area of a TRB single grave (of around 1 m<sup>2</sup>) represents one individual. Summing up all areas of the recorded grave sites (megalithic tombs, flat graves and other grave types) that are known to have been in use at the same time on the islands would result in a minimum individual count, given that all the chambers were full of burials. The calculation is more difficult than it seems at first because some corrections have to be made, as for example the loss rate of megalithic tombs. It has to be taken from similar calculations for other regions where old maps and/or thorough excavation and survey techniques in small areas (Southwest Funen and Altmark) gave us a fairly good idea of how many megaliths must have disappeared over the centuries.

On flat grave cemeteries the proportion between burials with and without burial items should give us another correction value, as flat graves without any such items may never be detected. We also have to consider how long the grave structures were used, but in the case of the north Frisian islands we may only draw upon typo-chronological considerations to reconstruct probable periods of utilisation.

If we take all of the above factors into account, the north Frisian islands, in modern times encompassing ca. 202 km<sup>2</sup>, were inhabited by 200-400 people at the beginning of the Early Neolithic II, 500 -1500 during the Middle Neolithic I and 350-550 people in the Middle Neolithic IV.

If a TRB farmstead was inhabited by the average of 10 people, between 20 and 150 farms would have existed simultaneously during any of the above mentioned stages. More or less 100 megalithic tombs are known to us today and the assumption that there is a 1:1 proportion between farmstead and megalithic tomb might well be correct.

We could then conclude that the density of population must have amounted to 1 to 7 person(s)/km<sup>2</sup> which reflects a considerable increase of the island population during the Early Neolithic II. Calculations based on other, quite different data sets in south-west Funen rendered similar numbers.

Our model calculation also indicated a decrease of population during the Late Neolithic but this could also be due to a miscalculation based on unreliable data. Still, the pollen analyses of southern Jutland and the compilation of the relevant <sup>14</sup>C-dates indeed show a similar drop-off.

But apart from all possible immanent mistakes, such models give us at any rate an idea of the population density and of the number of people having been buried in the archaeologically confirmed graves of at least the TRB North group.

The Single Grave culture is known for its mass of possibly 50.000 southern Scandinavian grave mounds, still only approximately 100 burials/year could have been placed inside them (summary

in HÜBNER 2005). In contrast 50.000 megalithic tombs would have had a capacity to house 10.000 burials/year within the same area. If we consider the average life expectancy and death rate of Neolithic times, the area of study could have been the home of around 500.000 TRB people.

All in all the Early and Middle Neolithic was characterized by single farmsteads and hamlets, forcing the people to exogamic procreation strategies and therefore making them reliant on a cooperative way of life.

## SOCIAL ORGANIZATION AND IDEOLOGIES

The above described outline of the demographic development, notwithstanding distinct regional differences, is not only reflected in relation to technological improvements regarding, for example, the subsistence economy, but also in a change of character of the archaeological relics.

There are four principal phases featuring different relics which might be linked to social differences.

A (4100-3800 BC): farms and single graves, continuous use of shell middens in the North.

B (3800-3500 BC): farms and single graves, non-megalithic long barrows.

C (3600-3100 BC): farms and causewayed enclosures; single graves, dolmen, non-megalithic long barrows and as of 3400 BC passage graves; depositions.

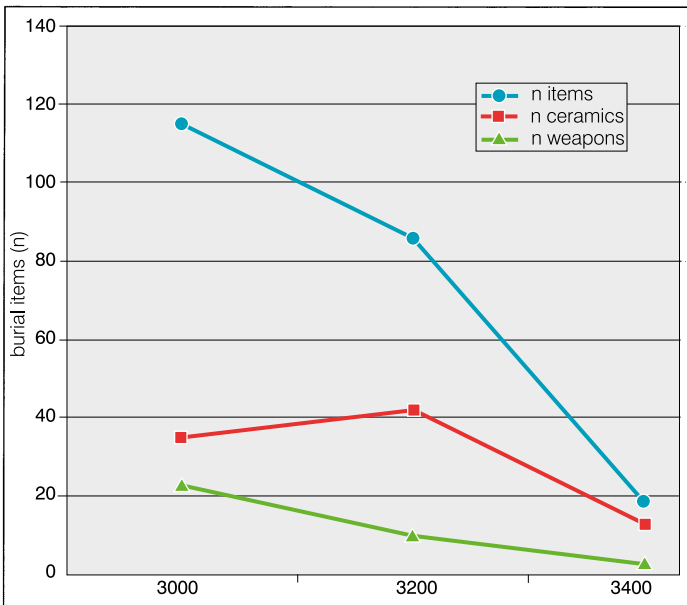
D (3100-2800 BC): farms, single graves, continuous use of causewayed enclosures and passage graves, and as of 2900 BC palisade structures in South Scandinavia.

An attempt to interpret this leads to the conclusion that step by step the early centuries of the northern TRB development must have undergone ideological changes without giving any indica-

tion of a marked social differentiation.

The multi-faceted ornamentation of the early stages of some of the TRB groups outlined on p. 13 can be seen as indicating distinct social demarcations of neighboring groups which catalyze the formation of dense communication areas that covered the size of approximately 1 day's march.

At around 3800 BC non-megalithic long barrows mark these areas above ground and are also connected to ritual activities and the burials of socially outstanding individuals. After 3600 BC the societal motion becomes more noticeable: the landscape is opened and new production technologies are introduced. Fur-



*Fig. 32. The distribution of goods in graves on the North Frisian Islands according to time slices. Represented are the total number of grave items in 3 time phases and the proportion of artifacts, which could be used as weapons, and ceramics, which are interpreted as consumptive commodities (MÜLLER 2010b, fig. 6).*

thermore, there are burials of obviously very special individuals in non-megalithic structures and in dolmen, and last but not least we witness the constructions of large cooperative monuments-the causewayed enclosures.

These only temporarily used and visited “areas of festivities, distribution and partially also of production” represent the heart of a cooperation. The construction of enclosures and the act of depositing and thereby destroying goods in isolated parts of the landscape dominates the cooperative ideology of the late Early and beginning Middle Neolithic. The conformity of the Fuchsberg-style pottery, which is spread across a wide area, could also symbolize the concept of a cooperative life style.

These general changes are related to a marked growth of population which - after several generations - leads to an increase of internal conflicts. After 3200 BC existing enclosures remain in use but there is no evidence that the construction of new ones has been carried out.

Burials in passage graves now predominate and bind a high amount of energy. The idea of collective burials prevails in most areas of North Central Europe and southern Scandinavia. The term “collectivity” contradicts all other visible social tendencies: The proportion of items that might have been used as “weapon” rises, a tendency also observable in other areas, for example in Central Germany (Fig.32). Pottery ornamentation lessens and there is a renewed regionalization of ornamentation and vessel forms.

It is impossible to grasp the reasons for this social diversification within the TRB groups but we are able to identify special, socially relevant components:

Animals, especially cattle, are associated with wealth, and the significance of the male individual is emphasized in single grave burials.

A social separation evolves and new symbols predominate material culture, pointing to the position within the social network.



*Fig. 33. The organization of man-power for the re-construction of Lüdelsen 3 after the excavation.*

After 2800 BC a new society develops in all TRB areas which has not yet been explained in detail: the Single Grave culture with a selective burial tradition of individuals and an apparently strong focus on livestock husbandry.

## OUTLOOK

Generally speaking all TRB groups remain quite heterogeneous despite their strong similarities regarding material culture. These differences might be seen as a reaction of the indigenous forager groups to influences coming to them from various directions which were then translated into inner-societal changes. The partial substitution of the hunter-gatherer concept by a production based on agriculture is associated with the construction of the first graves above ground. The prevalence of the new economy does not further the „clearing“ of the landscape and of social relations before 3600 BC: Only from then on are the areas covered with numerous boulders cleared and the largest stones used to

build grave structures above ground (Fig. 33). The idea is simple and might stem from northwestern France, an area to which the groups had a certain inclination at that time. Ritual changes and economic changes go hand in hand: landscapes are formed, which represent both the agricultural impact as well as the new social order.

The Neolithic mobility of ideas led to the formation of re-organized space during the TRB age, a re-organized space which – as a social space – utilizes the position of the ancestors for the positioning of the living. Therefore the long lasting offerings of TRB in or in front of passage graves have to be seen as starting point for the creation of societal traditions still valid long after the end of the TRB development. But that is a different story.

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## REFERENCES

ANDERSEN 1997

N. H. ANDERSEN, The Sarup Enclosures. The Funnel Beaker Culture of the Sarup site including two causewayed camps compared to the contemporary settlements in the area and other European enclosures. *Jutland Archaeological Society Publications* XXXIII, 1 (Aarhus 1997).

ANDERSEN 2008

N. H. ANDERSEN, Die Region um Sarup im Südwesten der Insel Fünen (Dänemark) im 3. Jahrtausend v. Chr. In: W. DÖRFLER/J. MÜLLER (eds.), *Umwelt - Wirtschaft - Siedlungen im dritten vorchristlichen Jahrtausend Mitteleuropas und Südkandinaviens*. *Offa-Beihefte* 84 (Kiel 2008) 35-48.

ANDERSSON 2004

M. ANDERSSON, Making place in the landscape : Early and Middle Neolithic societies in two west Scanian valleys. *Skånska spår* (Lund 2004).

ARTURSSON et al. 2003

M. ARTURSSON/T. LINDEROTH/M.-L. NILSSON/M. SVENSSON, Byggnadskultur i södra & mellersta Skandinavien. In: M. SVENSSON (ed.), *I det Neolitiska rummet*. *Skånska spår* (Lund 2003) 40-171.

BAKKER 1979

J. A. BAKKER, The TRB West Group : studies in the chronology and geography of the makers of Hunebeds and Tiefstich pottery. *Cingula* 5 (Amsterdam 1979).

BAKKER 2010

J. A. BAKKER, *Megalithic Research in the Netherlands (1547 - 1911)*. From Giant's Beds and Pillars of Hercules to accurate investigations (Leiden 2010).

BAKKER et al. 1969

J. A. BAKKER/J. C. VOGEL/T. WISLANSKI, TRB and other C14 Dates from Poland (Part B). *Helinium* 9, 3, 1969, 209-38.



BECKER/BENECKE 2002

D. BECKER/N. BENECKE, Die neolithische Inselsiedlung am Lössdigesee bei Parchim. Archäologische und archäozoologische Untersuchungen. Beiträge zur Ur- und Frühgeschichte Mecklenburg-Vorpommerns 40 (Lübsdorf 2002).

BEHRENS/SCHRÖTER 1980

H. BEHRENS/E. SCHRÖTER, Siedlungen und Gräber der Trichterbecherkultur und Schnurkeramik bei Halle (Saale) (Berlin 1980).  
BOLLONGINO 2006

R. BOLLONGINO, Die Herkunft der Hausrinder in Europa. Eine aDNA-Studie an neolithischen Knochenfunden. Universitätsforschungen zur Prähistorischen Archäologie 130 (Bonn 2006).

BOUJOT /CASSEN 1993

C. BOUJOT /S. CASSEN, A pattern of evolution for the Neolithic funerary structures of the west of France. *Antiquity* 67, 1993, 477-91.

BRINCH PETERSEN/EGERBERG 2009

E. BRINCH PETERSEN/T. EGERBERG, Between Dragsholm I and II. Bericht der Römisch-Germanischen Kommission 88 (2007), 2009, 447-67.

BRINDLEY 1986

A. L. BRINDLEY, The typochronology of TRB West Group pottery. *Palaeohistoria* 28, 1986, 93-132.

BROZIO 2010

J. P. BROZIO, Neue Untersuchungen zu trichterbecherzeitlichen Organisationsformen in Ostholstein. *Archäologischen Nachrichten aus Schleswig-Holstein* 2010, 30-3.

BROZIO 2011

J. P. BROZIO, Von Siedlungen und Grabenwerken der Trichterbecher-Gemeinschaften. *Archäologie in Deutschland* 2, 2011, 24-5.

CASSEN 2009

S. CASSEN (ed.), *Autour de Table. Exploitations archéologiques et discours savants sur des architectures néolithiques á Lochmariaquer, Morbihan (Table des Marchands et Grand Menhirs)*. Actes

du colloque international, Vannes (Morbihan), 5-7 octobre 2007 (Nantes 2009).

CASSEN et al. 2009

S. CASSEN/P. LANOS/P. DUFRESNE/C. OBERLIN/E. DELQUÉ-KOLIC/M. LE GOFFIC, Datations sur site (Table des Marchands, alignement du Grand Menhir, Er Grah) et modélisation chronologique du Néolithique morbihannais. In: C. 2009 (Hrsg.), Autour de Table. Exploitations archéologiques et discours savants sur des architectures néolithiques à Lochmariaquer, Morbihan (Table des Marchands et Grand Menhirs). Actes du colloque international, Vannes (Morbihan), 5-7 octobre 2007. (Nantes 2009) 737-68.

CASSEN et al. 2010

S. CASSEN/P. PÉTREQUIN/C. BOUJOT/S. DOMÍNGUEZ-BELLA/M. GUIAVARC'H/G. QUERRÉ, Measuring distinction in the megalithic architecture of the Carnac region: from sign to material. [www.jungsteinsite.de](http://www.jungsteinsite.de) 2010, version 11.01.2011.

CHAMBON/THOMAS 2010

P. CHAMBON/A. THOMAS, The first monumental cemeteries of western Europe : the „Passy type“ necropolis in the Paris basin around 4500 BC. [www.jungsteinsite.de](http://www.jungsteinsite.de) 2010, version 19.10.2010.

CZEKAJ-ZASTAWNY et al. 2011

A. CZEKAJ-ZASTAWNY/J. KABACINSKI/T. TERBERGER, Long distance exchange in the Central European Neolithic: Hungary to the Baltic. *Antiquity* 85 2011, 43–58.

CZIESLA 2008

E. CZIESLA, Zur bandkeramischen Kultur zwischen Elbe und Oder. *Germania* 86, 2008, 405-64.

DEMNIK et al. 2008

D. DEMNIK/S. DIERS/H.-R. BORK/B. FRITSCH/J. MÜLLER, Der Großdolmen Lüdelsen 3 in der westlichen Altmark (Sachsen-Anhalt) – Baugeschichte, Rituale und Landschaftsrekonstruktion. Mit Beiträgen von Arno Beyer, Jan-Piet Brozio, Ercan Erkul,

Helmut Kroll und Edeltraud Tafel. [www.jungsteinzeit.de](http://www.jungsteinzeit.de) 92, 2008, version 15.12.2008.

DIBBERN/HAGE 2010

H. DIBBERN/F. HAGE, Erdwerk und Megalithgräber in der Region Albersdorf – Vorbericht zu den Grabungskampagnen am Dieksknöll und Brutkamp. *Archäologischen Nachrichten aus Schleswig-Holstein* 2010, 34-7.

DREIBRODT et al. 2010

S. DREIBRODT/C. LUBOS/B. TERHORST/B. DAMM/H.-R. BORK, Historical soil erosion by water in Germany: Scales and archives, chronology, research perspectives. *Quaternary International* 222, 2010, 80–95.

FISCHER 1979

U. FISCHER, Europäische Verbindungen der niedersächsischen Großsteingräber. In: H. SCHIRNITZ (ed.), *Großsteingräber in Niedersachsen* (Hildesheim 1979) 43-58.

FRITSCH et al. 2010a

B. FRITSCH/M. FURHOLT/M. HINZ/L. LORENZ/H. NELSON/G. SHAFERER/S. SCHIESBERG/K.-G. SJÖGREN, Dichtezentren und lokale Gruppierungen - Eine Karte zu den Großsteingräbern Mittel- und Nordeuropas. [www.jungsteinsite.de](http://www.jungsteinsite.de) 2010, version 20.10.2010.

FRITSCH/et al. 2010b B. FRITSCH/M. LINDEMANN/J. MÜLLER/C. RINNE, Entstehung, Funktion und Landschaftsbezug von Großsteingräbern, Erdwerken und Siedlungen der Trichterbecherkulturen in der Region Haldensleben-Hundisburg. Vorarbeiten und erste Ergebnisse. *Archäologie in Sachsen-Anhalt Sonderband* 13, 2010 (in prM. FURHOLT, Entstehung der frühen Einzelgräber – Was geschah vor 4800 Jahren im Norden? *Archäologie in Deutschland* 2, 2011, 28-9.

GESCHWINDE/RAETZEL-FABIAN 2009

M. GESCHWINDE/D. RAETZEL-FABIAN, EWBSL. Eine Fallstudie zu den jungneolithischen Erdwerken am Nordrand der Mittelgebirge (Rahden 2009).

GROHMANN 2010

I. M. GROHMANN, Die Ertebølle- und frühtrichterbecherzeitliche Keramik aus Wangels, Kr. Ostholstein. In: D. GRONENBORN/J. PETRASCH (eds.), Die Neolithisierung Mitteleuropas (Mainz 2010) 407-22.

GRUPE 1989

G. GRUPE, Die Skelettreste aus dem neolithischen Kollektivgrab von Odagsen, ldkr. Northeim. In: H. BACH/A. BACH (eds.), Paläanthropologie im Mittelbe-Saale-Werra-Gebiet. Beiträge zur Rekonstruktion der biologischen Situation ur- und frühgeschichtlicher Bevölkerungen. Weimarer Monographien zur Ur- und Frühgeschichte 23 (Weimar 1989) 80-93.

GÜNTHER 1997

K. GÜNTHER, Die Kollektivgräber-Nekropole Warburg I-V. Bodenaltertümer Westfalens 34 (Mainz 1997).

HALLGREN 2008

F. HALLGREN, Identitet i praktik. Lokala, regionala och överregionala sociala sammanhang inom nordig trättbägararkultur. Coast to Coast-books 17 (Uppsala 2008).

HARTZ/LÜBKE 2004

S. HARTZ/H. LÜBKE, Zur chronostratigraphischen Gliederung der Ertebølle-Kultur und frühesten Trichterbecherkultur in der südlichen Mecklenburger Bucht. Bodendenkmalpflege in Mecklenburg-Vorpommern. Jahrbuch 52, 2004, 119-43.

HASSMANN 2000

H. HASSMANN, Die Steinartefakte der befestigten neolithischen Siedlung von Büdelsdorf, Kreis Rendsburg-Eckernförde. Universitätsforschungen zur Prähistorischen Archäologie 62 (Bonn 2000).

HINRICHSSEN 2006

C. HINRICHSSEN, Das Neolithikum auf den Nordfriesischen Inseln. Universitätsforschungen zur Prähistorischen Archäologie 133 (Bonn 2006).

HINZ 2007

M. HINZ, Territoriale und soziale Strukturen. Modelle zur Kollektivgrabstätte der Wartberg-Gruppe. [www.jungsteinsite.de](http://www.jungsteinsite.de) 2007, version 15.12.2007.

HOIKA 1986

J. HOIKA, Die Bedeutung des Oldenburger Grabens für Besiedlung und Verkehr im Neolithikum. *Offa* 43, 1986, 185-208.

HOIKA 1987

J. HOIKA, Das Mittelneolithikum zur Zeit der Trichterbecherkultur in Nordostholstein. *Offa-Bücher* 61 (Neumünster 1987).

HÜBNER 2005

E. HÜBNER, Jungneolithische Gräber auf der Jütischen Halbinsel. Typologische und chronologische Studien zur Einzelgrabkultur. *Nordiske Fortidsminder B24* (København 2005).

JENSEN 1994

H. J. JENSEN, Flint tools and plant working: hidden traces of Stone Age technology; a use wear study of some Danish Mesolithic and TRB implements (Aarhus 1994).

JEUNESSE 2010

C. JEUNESSE, Die Michelsberger Kultur. In: C. LICHTER (ed.), *Jungsteinzeit im Umbruch. Die "Michelsberger Kultur" und Mitteleuropa im Umbruch vor 6000 Jahren* (Karlsruhe 2010) 46-55.

JEUNESSE et al. 2004

C. JEUNESSE/P. LEFRANC/A. DENAIRE, Groupe de Bischheim, origine du Michelsberg, genèse du groupe d'Entzheim. La transition entre le Néolithique moyen et le Néolithique récent dans les régions rhénans. *Cahiers de l'Association pour le Promotion de la Recherche Archéologiques en Alsace* 18/19 (2002/03), 2004, 1-280.

JOHANNSEN/LAURSEN 2010

N. JOHANNSEN/S. LAURSEN, Routes and Wheeled Transport in Late 4th–Early 3rd Millennium Funerary Customs of the Jutland Peninsula: Regional Evidence and European Context. *Prähistorische Zeitschrift* 85, 2010, 15-58.

JÖNS et al. 2009

H. JÖNS/H. LÜBKE/F. LÜTH/T. TERBERGER, Prehistoric settlements and development of the regional economic area. Archaeological investigations along the Northeast-German Baltic Sea coast. Bericht der Römisch-Germanischen Kommission 88 (2007), 2009, 149-88.

JÖRGENSEN 1977

E. JÖRGENSEN, Hagebrogard - Vroue - Koldkur. Neolithische Gräberfelder aus Nordwestjütland (Kopenhagen 1977).

KIRLEIS et al. 2011

W. KIRLEIS/I. FEESER/S. KLOOß, Umwelt und Ökonomie. Archäologie in Deutschland 2, 2011, 34-7.

KIRLEIS/KLOOß submitted

W. KIRLEIS/S. KLOOß, Food production and beyond: Social context of plant use in the northern German Neolithic. In: A. CHEVALIER/M. ELENA/P. LEONOR (eds.), Plants and people. Choices and diversity through time submitted)

KIRLEIS et al. in print

W. KIRLEIS/S. KLOOß /H. KROLL/J. MÜLLER, New results on crop growing and gathering in the northern German Neolithic. Proceedings, IWGP 2010, Wilhelmshaven. In: Vegetation History and Archaeobotany. Special issue Conference of the International Work Group for Palaeoethnobotany in Wilhelmshaven 2010 (in print)

KLASSEN 2004

L. KLASSEN, Jade und Kupfer. Untersuchungen zum Neolithisierungsprozess im westlichen Ostseeraum unter besonderer Berücksichtigung der Kulturentwicklung Europas 5500-3500 BC (Aarhus 2004).

KLASSEN et al. 2011

L. KLASSEN/P. PÉTREQUIN/S. CASSEN, The power of attraction.... Zur Akkumulation sozial wertbesetzter alpiner Artefakte im Neolithikum Nord- und Westeuropas. In: S. HANSEN/J. MÜLLER (eds.), Sozialarchäologische Perspektiven: Gesellschaftlicher Wandel 5000-1500 v. Chr. zwischen Atlantik und Kaukasus.

Internationale Tagung 15.-18. Oktober 2007 in Kiel (Berlin 2011) 1-28.

KLATT 2009

S. KLATT, Die neolithischen Einhegungen im westlichen Ostseeraum. Forschungsstand und Forschungsperspektiven. In: T. TERBERGER (ed.), Neue Forschungen zum Neolithikum im Ostseeraum (Rahden/Westf. 2009) 7-134.

KNÖLL 1959

KNÖLL, Die nordwestdeutsche Tiefstichkeramik und ihre Stellung im nord- und mitteleuropäischen Neolithikum (Münster 1959).

KNÖLL 1981

H. KNÖLL, Kragenflaschen. Ihre Verbreitung und ihre Zeitstellung im europäischen Neolithikum. Offa-Bücher 41 (Neumünster 1981).

KOCH 1998

E. KOCH, Neolithic bog pots from Zealand, Møn, Falster. Nordisk Fortidsminder Ser. B 16 (Kopenhagen 1998).

KOŚKO/SZMYT 2009

A. KOŚKO/M. SZMYT, Central European Lowland Societies and the Pontic Area in the 4th-4th/3rd millennium BC. In: A. KOŚKO/V. I. Klochko (eds.) Routes between the Seas: Baltic-Bug-Boh-Pont from the 3rd to the Middle of the 1st Millennium BC, Baltic-Pontic Studies 14 (Poznań 2009) 191-213.

KOSSIAN 2005

R. KOSSIAN, Nichtmegalithische Grabanlagen der Trichterbecherkultur in Deutschland und den Niederlanden. Veröffentlichungen des Landesamtes für Denkmalpflege und Archäologie Sachsen-Anhalt - Landesmuseum für Vorgeschichte 58 (Halle 2005).

KOSSIAN 2007

R. KOSSIAN, Hunte 1: Ein mittel- bis spätneolithischer und frühbronzezeitlicher Siedlungsplatz am Dümmer, Ldkr. Diepholz (Niedersachsen). Die Ergebnisse der Ausgrabungen des Reichsamtes für Vorgeschichte in den Jahren 1938 bis 1940.

Veröffentlichungen der archäologischen Sammlungen des Landesmuseums Hannover 52 (Hannover 2007).

LAPORTE 2005

L. LAPORTE, Néolithisation de la façade atlantique du Centre-Ouest de la France. Actes des journées SPF de Nantes. In: Unité et diversité des processus de néolithisation. Actes du colloque de Nantes, Mémoire XXXVI de la Société Préhistorique Française (Paris 2005) 99–125.

LARSSON 1984

M. LARSSON, Tidigneolitikum i Sydvästskane. Acta Arch. Ludensia (Bonn 1984).

LARSSON 2004

L. LARSSON, Axeheads and fire, the transformation of wealth. In: E. A. WALKER/F. WENBAN-SMITH (Hrsg.), Lithics in action. Papers from the Conference "Lithic Studies in the Year 2000" (Oxford 2004) 197-205.

LARSSON 2006

M. LARSSON, A Tale of Strange People. The Pitted Ware Culture in Southern Sweden (Lund/Kalmar 2006).

LEANDRI et al. 2007

F. LEANDRI/C. GILABERT/F. DEMOUCHE, Les chambres funéraires des Ve et IV millénaires av. J.-C. : le cas de la Corse. In: P. MOINAT/P. CHAMBON (eds.), Les cistes de Chamblandes et la place des coffres dans les pratiques funéraires du Néolithique moyen occidental. Actes du colloque de Lausanne, 12 et 13 mai 2006 (Paris 2007) 41-61.

LIVERSAGE 1992

D. LIVERSAGE, Barkær. Long Barrows and Settlements (Kopenhagen 1992).

LOUWE KOOIJMANS 1998

L. P. LOUWE KOOIJMANS, Understanding the Mesolithic / Neolithic Frontier in the Lower Rhine Basin, 5300-4300 BC cal. . In: M. R. EDMONDS, C. (ed.), Understanding the Neolithic of North Western Europe (Glasgow 1998 ) 408-26.



LÜBKE et al. 2009

H. LÜBKE/F. LÜTH/T. TERBERGER, Fishers or farmers? The archaeology of the Ostorf cemetery and related Neolithic finds in the light of new data. Bericht der Römisch-Germanischen Kommission 88 (2007), 2009, 307-38.

MADSEN 1975

T. MADSEN, Tidlig neolitiske anlæg ved Tolstrup. Kuml 1973/74, 1975, 121-54.

MADSEN 1979

T. MADSEN, Earthen Long Barrows and Timber Structures: Aspects of the Early Neolithic Mortuary Practice in Denmark. Proc. Prehist. Soc. 45, 1979, 301-20.

MADSEN 1982

T. MADSEN, Settlement Systems of Early Agricultural Societies in East Jutland, Denmark: A Regional Study of Change. Journal of Anthropological Archaeology 1, 1982, 197-236.

MADSEN 1994

T. MADSEN, Die Gruppenbildung im frühesten Neolithikum Dänemarks und ihre Bedeutung. In: J. HOJKA (ed.), Beiträge zur frühneolithischen Trichterbecherkultur im westlichen Ostseegebiet (Symposium Schleswig 1985) (Neumünster 1994) 227-38.

MALMER 2002

M. P. MALMER, The Neolithic of South Sweden. TRB, GRK and STR (Stockholm 2002).

MEYER 2009

M. MEYER, Neolithische Flachgräberfelder zwischen Elbe und Oder. Bericht der Römisch-Germanischen Kommission 88 (2007), 2009, 429-46.

MIDGLEY 1985

MIDGLEY, The Origin and Function of the Earthen Long Barrows of Northern Europe. British Archaeological Reports. International Series 259 (Oxford 1985).

MIDGLEY 1992

MIDGLEY, TRB culture : the first farmers of the North European plain (Edinburgh 1992).

MIDGLEY 2005

M. MIDGLEY, The Monumental Cemeteries of Prehistoric Europe (Gloucestershire 2005).

MIDGLEY 2009

M. MIDGLEY, Antiquarians at the Megaliths. B.A.R. (Oxford 2009).

MISCHKA 2010

D. MISCHKA, Flintbek LA 3, biography of a monument. www.jungsteinsite.de 2010, version 20.12.2010.

MISCHKA et al. 2003/2004 (2007)

D. MISCHKA/W. DÖRFLER/P. GROOTES/D. HEINRICH/J. MÜLLER/O. NELLE, Die neolithische Feuchtbodensiedlung Bad Oldesloe-Wolkenwehe: Vorbericht zu den Untersuchungen 2006. Offa 59/60, 2003/2004 (2007), 25-64.

MÜLLER 1997

J. MÜLLER, Zur absolutchronologischen Datierung der europäischen Megalithik. In: B. FRITSCH/M. MAUTE/I. MATUSCHIK/J. MÜLLER/C. WOLF (eds.), Tradition und Innovation. Prähistorische Archäologie als historische Wissenschaft. Festschrift für Christian Strahm (Rahden 1997) 63-105.

MÜLLER 2001

J. MÜLLER, Soziochronologische Studien zum Jung- Spätneolithikum im Mittelbe-Saale-Gebiet (4100-2700 v. Chr.). Eine sozialhistorische Interpretation prähistorischer Quellen. Vorgeschiedliche Forschungen 21 (Rahden/Westfalen 2001).

MÜLLER 2006

J. MÜLLER, Die altmärkischen Großsteingräber im europäischen Kontext. In: H. BOCK/B. FRITSCH/L. MITTAG (eds.), Großsteingräber der Altmark (Stuttgart 2006) 17-45.

MÜLLER 2009a

J. MÜLLER, Neolithische Monumente und neolithische Gesellschaften. In: H.-J. BEIER/E. CLASSEN/T. DOPPLER/B. RAMMINGER (eds.), Neolithische Monumente und neolithische Gesellschaften *Varia neolithica* 6 (Langenweissbach 2009) 7-16.

MÜLLER 2009b

J. MÜLLER, Monumente und Gesellschaft. *Archäologische Nachrichten aus Schleswig-Holstein* 2009, 30-3.

MÜLLER 2010a

J. MÜLLER, Dorfanlagen, Siedlungssysteme - Die europäische Perspektive: Südosteuropa und Mitteleuropa. In: C. LICHTER (ed.), *Aufbruch in eine neue Zeit: Europas Mitte um 4000 v. Chr.* (Ausstellungskatalog) (Karlsruhe 2010) 250-7.

MÜLLER 2010b

J. MÜLLER, Ritual Cooperation and Ritual Collectivity: The Social Structure of the Middle and Younger Funnel Beaker North Group (3500 - 2800 BC). [www.jungsteinsite.de](http://www.jungsteinsite.de) 2010, version 29.10.2010.

MÜLLER/et al. 2010

J. MÜLLER/et al. Periodisierung der Trichterbecher-Gesellschaften. Ein Arbeitsentwurf. [www.jungsteinsite.de](http://www.jungsteinsite.de) 2010, version 29.10.2010.

MÜLLER 1918

S. MÜLLER, *Oldtidens Kunst I* (Kopenhagen 1918).

NELLE/DÖRFLER 2008

O. NELLE/W. DÖRFLER, A summary of the Late- and Post-glacial vegetation history of Schleswig-Holstein. In: J. DENGLER/C. DOLNIK/M. TREPPEL (eds.), *Flora, Vegetation, and Nature Conservation from Schleswig-Holstein to South America – Festschrift for Klaus Dierßen on Occasion of his 60th Birthday*, *Mitt. Arbeitsgem. Geobot. Schleswig-Holstein Hamb.* 65 (Kiel 2008) 45-68.

NILIUS 1971

I. NILIUS, Das Neolithikum in Mecklenburg zur Zeit und unter besonderer Berücksichtigung der Trichterbecherkultur. Berichte zur Ur- und Frühgeschichte der Bezirke Rostock, Schwerin und Neubrandenburg (Schwerin 1971).

PREUSS 1966

J. PREUSS, Die Baalberger Gruppe in Mitteldeutschland. Veröffentlichungen des Landesmuseums für Vorgeschichte in Halle 21 (Berlin 1966).

PREUSS 1980

J. PREUSS, Die altmärkische Gruppe der Tiefstichkeramik. Veröffentlichungen des Landesmuseums für Vorgeschichte in Halle 33 (Berlin 1980).

RAEMAEEKERS 1999

D. C. M. RAEMAEEKERS, The Articulation of a 'New Neolithic'. The meaning of the Swifterbant Culture for the process of Neolithisation in the western part of the Northern European Plain (4900-3400 BC). University Archaeological Studies Leiden 3 (Leiden 1999).

RAEMAEEKERS et al. 2009

D. C. M. RAEMAEEKERS/H. M. MOLTHOF/L. SMITS, The textbook 'dealing with death' from the Neolithic Swifterbant culture (5000-3400 BC), the Netherlands. Bericht der Römisch-Germanischen Kommission 88, 2007 (2009), 529-50.

RAETZEL-FABIAN 2000

D. RAETZEL-FABIAN, Calden. Erdwerk und Bestattungsplätze des Jungneolithikums. Architektur - Ritual - Chronologie. Universitätsforschungen zur Prähistorischen Archäologie 70 (Bonn 2000).

RECH 1975

M. RECH, Stein- und bronzezeitliche Depotfunde im westlichen Norddeutschland (Schleswig 1975).

RUDEBECK 2009

E. RUDEBECK, I trästodernas skugga - monumentala möten i neolitiserings tid. In: B. NILSSON/E. RUDEBECK (eds.), Arkeologiska och förhistoriska världar (Malmö 2009) 83-252.

SCHIER 2009

W. SCHIER, Extensiver Brandfeldbau und die Ausbreitung der neolithischen Wirtschaftsweise in Mitteleuropa und Südsandinavien am Ende des 5. Jahrtausends v. Chr. Prähistorische Zeitschrift 84, 2009, 15-43.

SCHULDT 1972

E. SCHULDT, Die mecklenburgischen Megalithgräber. Beitr. Ur-Frühgesch. Bezirke Rostock, Schwerin u. Neubrandenburg 6 (Berlin 1972).

SJÖGREN 2003

K.-G. SJÖGREN, Mångfalliga uhrminnes grafvar : megalitgravar och samhælle i Västsverige. GOTARC. Series B, Gothenburg archaeological theses 27 (Göteborg 2003).

SJÖGREN 2006

K.-G. SJÖGREN, Ecology and Economy in Stone Age and Bronze Age Scania (Lund 2006).

SJÖGREN 2010

K.-G. SJÖGREN, Megaliths, Landscapes and Identities: the case of Falbygden, Sweden. [www.jungsteinsite.de](http://www.jungsteinsite.de) 2010, version 29.10.2010.

STAUDE forthcoming

K. STAUDE, Genese und Entwicklung der Trichterbecherkultur in Mecklenburg-Vorpommern. Unpublished dissertation Kiel 2011.

STEFFENS 2005

J. STEFFENS, Die Bedeutung der Jagd in der Trichterbecherkultur. [www.jungsteinsite.de](http://www.jungsteinsite.de) 2005, version 15.02.2005.

STEFFENS 2009

J. STEFFENS, Die neolithischen Fundplätze von Rastorf, Kreis Plön. Eine Fallstudie zur Trichterbecherkultur im nördlichen Mitteleuropa am Beispiel eines Siedlungsraumes. Universitätsforschungen zur prähistorischen Archäologie (Bonn 2009).

STRÖMBERG 1971

M. STRÖMBERG, Die Megalithgräber von Hagestad. *Acta Archaeologica Ludensia* 8 (Lund/Bonn 1971).

VON ESTORFF 1846

G. O. C. VON ESTORFF, Heidnische Alterthümer der Gegend von Uelzen im ehemaligen Bardengau (Königreich Hannover) (Hannover 1846).

WALKER 2010

K. WALKER, Landscapes, Seascapes and Sandbanks: Neolithic Exchange and a North Sea Network. In: Kiel Graduate School "Human Development in Landscapes" (eds.), *Landscapes and Human Development: The Contribution of European Archaeology* (Bonn 2010) 159-69.

WETZEL 1979

G. WETZEL, Die Schönfelder Kultur. Veröffentlichungen des Landesmuseums für Vorgeschichte in Halle 31 (Berlin 1979).

WHITTLE u. a. 2011

A. WHITTLE/F. HEALY/A. BAYLISS, *Gathering time: dating the early Neolithic enclosures of southern Britain and Ireland*. (Oxford 2011).

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