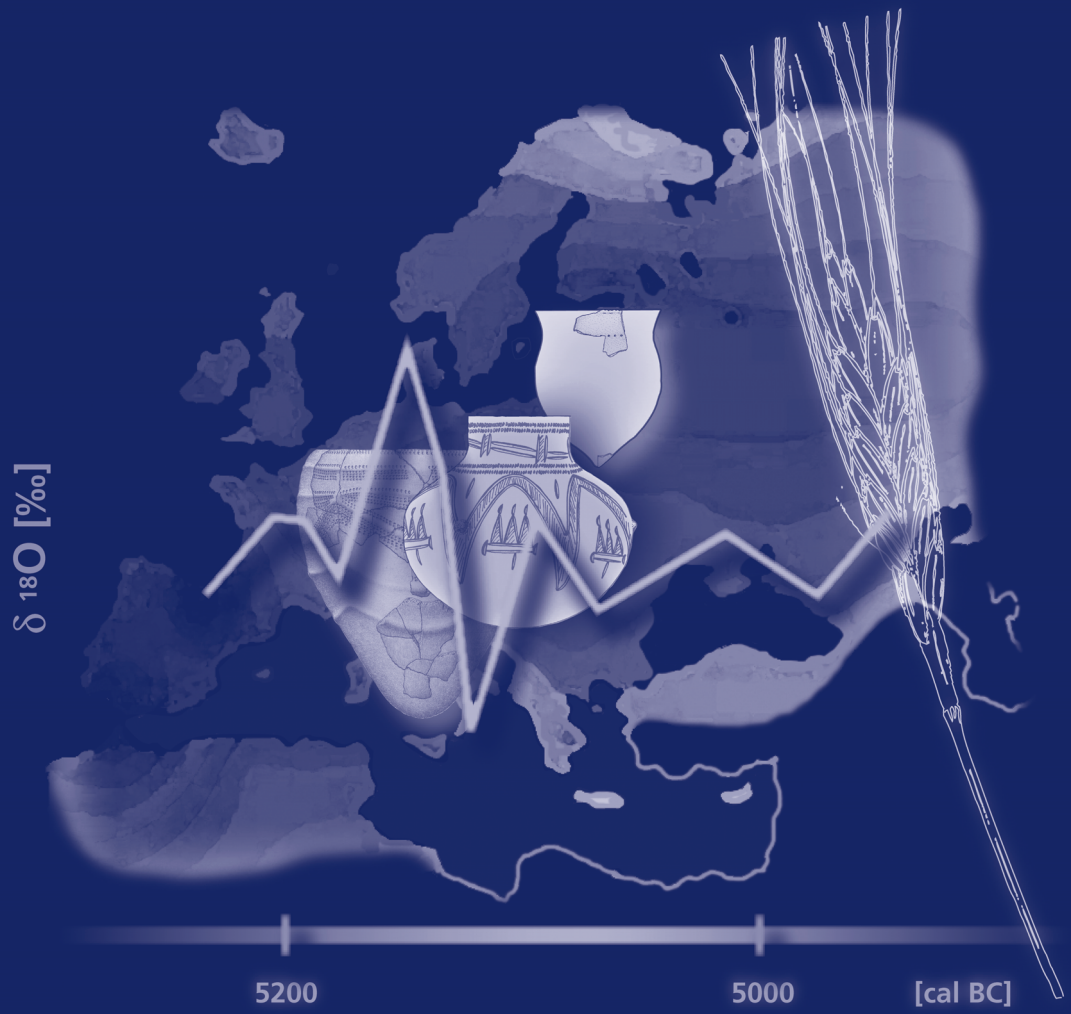

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The Spread of the Neolithic to Central Europe

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Detlef Gronenborn · Jörg Petrasch (Hrsg.)

DIE NEOLITHISIERUNG MITTELEUROPAS

Internationale Tagung, Mainz 24. bis 26. Juni 2005

THE SPREAD OF THE NEOLITHIC TO CENTRAL EUROPE

International Symposium, Mainz 24 June - 26 June 2005

Die Neolithisierung – der Übergang von der wildbeuterischen zur Nahrungsmittel produzierenden Lebensweise und damit auch der Übergang von Mobilität zu permanenter Sesshaftigkeit – ist in der Geschichte der Menschheit wohl eines der einschneidendsten Ereignisse überhaupt. Die 37 in diesem Band abgedruckten Artikel sind die aktualisierten Vorträge eines 2005 in Mainz abgehaltenen internationalen Symposiums mit dem Thema »Die Neolithisierung Mitteleuropas«, an dem mehr als 90 Wissenschaftler aus 16 Ländern teilnahmen. Die Beiträge geben einen Überblick über den derzeitigen Stand der Forschungen und decken Themen ab, die vom Nahen Osten, der Balkanhalbinsel über das Karpatenbecken bis zur Ostsee und weiter bis nach Frankreich und Italien reichen. Unter Berücksichtigung neuester Forschungsansätze, etwa der Paläoklimatologie und der Archäogenetik, werden die zentralen Fragen behandelt: Was ist die Neolithisierung? Wie lange dauerte sie? Was waren ihre Ursachen und Mechanismen, und wie lief sie ab?

Neolithisation – the transition from an acquiring to a producing mode of subsistence which includes the transition from mobility to full-time sedentism – marks a fundamental change in the history of humankind. Published in this volume are 37 articles which are the updated versions of contributions to a symposium held in Mainz in 2005 with the title »The Spread of the Neolithic to Central Europe«. It was attended by over 90 scholars from 16 countries. The articles allow an insight into the current state of debate with topics reaching from the Near East to the Balkan Peninsula, the Carpathian Basin, further to the Baltic Sea, to France, and to Italy. By applying new approaches of palaeoclimatology and archaeogenetics any of the central questions is covered: What is neolithisation? How long did it last? What were the causes, what were the mechanisms, and how did it happen?

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BIRGIT GEHLEN

NEOLITHIC TRANSITION PROCESSES IN SOUTHERN EUROPE: THE PRESENT STATE OF KNOWLEDGE AND ITS DEFICIENCIES IN NORTHERN ITALY AND SOUTHWESTERN FRANCE

The Late Mesolithic / Early Neolithic transition – primarily a problem of insufficient research

The question regarding continuity and discontinuity between Late Mesolithic and Early Neolithic periods can only be posed and answered on a regional level. At present, satisfactory answers are not forthcoming. For many decades the emphasis of research laid very much on the Neolithic period, with more detailed studies on the Mesolithic having only been conducted in a handfull of regions, particularly in Northern and Northwestern Europe. Although much early research with a focus on the Late Mesolithic period was conducted in Portugal, Spain, and Southern France, it was not until the 1970s that the first better documented excavations began to take place on the Iberian Peninsular, in Northern Italy, Southern Germany, Switzerland, the French Jura Mountains, and the French Alpine region; on the other hand, research in Greece and in the northwestern Balkans commenced only relatively recently. Nevertheless, and as shown in Gehlen (2010), archaeological data presently available for the period ca. 7000 (8000 in Greece) and 5300 cal BC from Southern Europe is considerably sparser than data with an emphasis on the Early Neolithic period in the same region. This being the case, any discussion of neolithisation processes in these geographical areas is very much hindered due to the still poor or, indeed, totally inadequate amounts of data.

Southern European sites belonging to the Late Mesolithic and Early Neolithic which, on the basis of their lithic assemblages and absolute radiocarbon dates, might feature in a discussion of neolithisation processes in this region are shown in figure 1. Here, the various regional foci of Mesolithic research are easily discernible. A relatively large number of Late Mesolithic sites are situated in the circumalpine region (Northern Italy, Switzerland, Southern Germany, Southern France) and in Portugal. On the other hand, in eastern Central Europe and in the Balkans, sites dating to the Late Mesolithic are rare, whereas Early Neolithic settlements are prevalent. In Southern France and in Spain, stratigraphic sequences from abris and cave sites, which not only feature Late Mesolithic but also Early Neolithic strata, are common. Poorly researched or badly published are the regions of southeast Central Europe, i.e. the Balkans, central and southern parts of the Iberian Peninsular, western France, Southern Italy, and Greece. Accordingly, this map only reflects the state of present research, and is by no means of historical significance.

The table in figure 2 shows the number of available radiocarbon dates from various regions in Southern Europe for the Late Mesolithic and Early Neolithic periods, respectively. This illustrates the contrasting state of research and the relatively poor situation in which Mesolithic research finds itself, compared with other prehistoric periods. With the exception of Portugal and Switzerland, all regions have produced a higher number of sites/levels dating to the Early Neolithic period. In spite of new research projects within the borders of modern-day Switzerland (Mauvilly et al. 2004), this particular region has produced so few reliable radiocarbon dates that it might even be considered *terra incognita*. Except in Greece, the Early Neolithic was of a shorter duration than the Late Mesolithic. For this reason, the intensity of research into the latter period is even more marked than would otherwise be implied simply by the higher number of absolute dates.

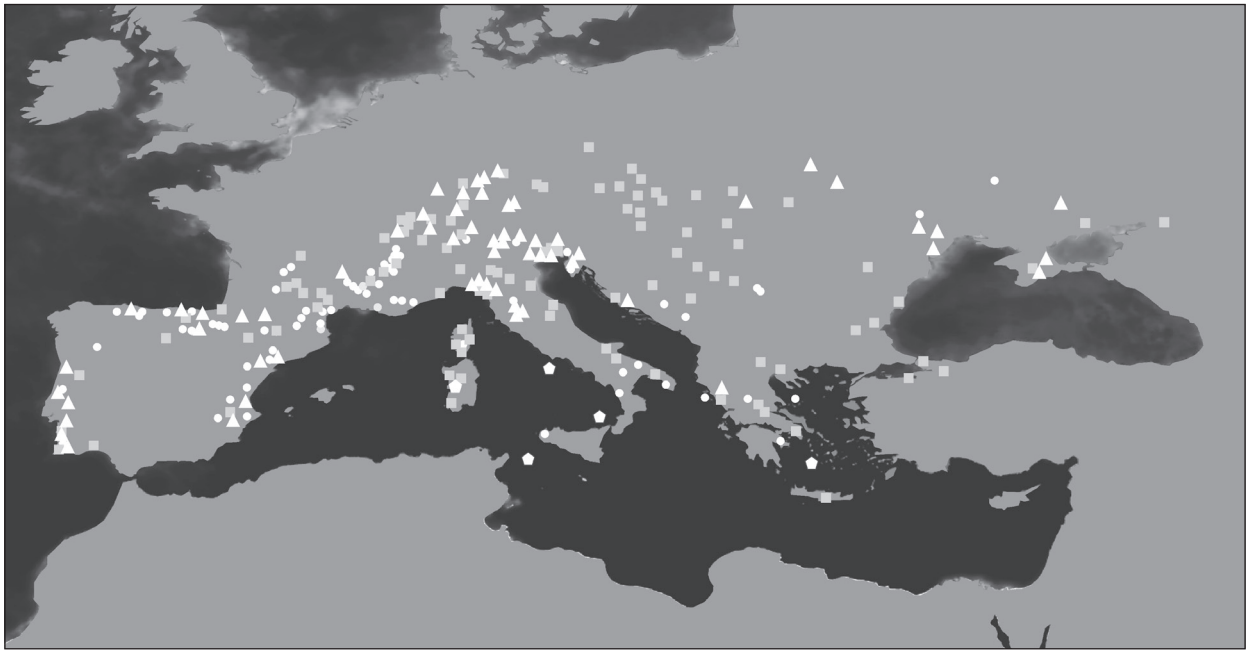

Fig. 1 Late Mesolithic and Early Neolithic sites with radiocarbon dates and published stone artefact assemblages from the southern half of Europe (state of research 2005). The distribution of sites reflects both the aims and the intensity of archaeological research and not historical reality. – White triangles: Late Mesolithic sites. – Grey squares: Early Neolithic sites. – White dots: Mesolithic-Neolithic sequences. – Pentagon: obsidian (drawing Birgit Gehlen / Ute Matthies).

In the following, and for simplicity, I will refer to the Late Mesolithic as the »Trapeze Horizon« (*Trapezhorizont*), as has been done on many previous occasions by, for example, Clark (1958; 1980, 53pp.), Rozoy (1978, 905p.), Kozłowski (1987, 13), and Gronenborn (1997), and despite the fact that on the one hand in some parts of Southern Europe (e.g. in the Aegean, Thessaly, Sicily, Corsica, Sardinia, Cantabria, Asturias, Andalusia) this trapeze-microlithic phenomenon is still unknown for the period 7000-5000 cal BC and that on the other hand »trapezoids« are reported for several European regions already from the Late Palaeolithic (Dalmeri / Ferrari / Peresani 2004). From the Black Sea region via the Peloponnese to the Iberian Peninsular there is a temporal decline in the earliest holocene examples of such artefacts, a pattern which, generally speaking, is suggestive of a rapid, possibly east-west oriented diffusion of this technological innovation, i.e. from the Black Sea to Southern France and Spain, and later into Portugal, and northern parts of Italy, from whence it spread over the Alps into southwest Central Europe. Although diffusion along the Danube into Central Europe is likely, this cannot be confirmed due to the poor state of research in the southeastern Balkans, Hungary, the Czech Republic, Slovakia, Austria, and eastern Bavaria. Furthermore, at present very little can be said about the potential connections between the northern Black Sea region and eastern Central Europe owing to the severe lack of publications with an emphasis on the Eastern European forest-steppe region.

The Late Mesolithic »Trapeze Horizon« is characterised by very regional specific quadrangular microlithic industries, made predominantly on parallel edged blades. Such blades were also used regularly as blanks in the production of various types of tools. In fact, the use of parallel edged blades and quadrangular microliths are common elements in many Late Mesolithic and Early Neolithic cultures (Gehlen 2010). A new, regionally differentiated, chronological scheme for the Late Mesolithic in the southern half of Europe, based on available radiocarbon dates has recently been proposed (Gehlen 2010). During the compilation of this data, major short-comings in Mesolithic research in many regions of Europe became evident. A further interesting

Fig.2 ^{14}C dates for the Late Mesolithic and the Early Neolithic of different regions in the southern half of Europe (approx. 8000 (Greece) / 7000-5000 cal BC) as markers for the intensity of archaeological research. – Light Grey: Late Mesolithic dominant. – Dark Grey: Early Neolithic dominant. – Black: chronological overlap Late Mesolithic/Early Neolithic (drawing Birgit Gehlen).

record until 2004 (Switzerland until 2006)	Late Mesolithic		Early Neolithic		N total	Index Meso /Neo
	N 14C-dates	timespan in years	N 14C-dates	timespan in years		
Southern Germany	25	1600	60	500	85	0,42
Switzerland	22	1300?	6	700?	28	3,66
Austria	1	?	45	500	46	0,02
Czech Republic	11	1000	16	300	27	0,69
Hungary	3	?	99	1200	102	0,03
East Adriatic	22	1400?	35	1000	57	0,63
Greece	30	1000	164	2000	194	0,18
Southern Italy	8	1000?	68	1000?	76	0,12
Northern Italy	27	1600	69	600	96	0,39
Liguria (NW Italy)	0	?	26	700	26	0
Southern France	19	1000	62	800	81	0,31
Spain	16	1100	16	700	32	1,00
Portugal	46	600	23	500	69	2,00

aspect was the recognition that in several regions some Mesolithic groups did not follow their neighbours' example and produce quadrangular microliths on parallel edged blades until many centuries later, and other groups even chose to ignore entirely this trend. In some areas there may be clear chronological gaps between the earliest Late Mesolithic and its later phases, the reasons for which still elude us. Therefore, the great temporal depth associated with the introduction of this innovation, along with the extremely heterogenous database, must call for caution not only in our dealings with any assemblage lacking absolute dates, but also in a too »simplified« historical reconstruction. In fact, a treatment of the Late Mesolithic as a single »cultural entity« must be dismissed categorically. Owing to a lack of data from many regions, it remains unclear which of the indirect percussion techniques (punch or pressure) were actually used to detach parallel edged blades, or whether both methods were in fact employed. Considering both the rich variation in the arrowhead repertoire, and the great stylistic diversity observed in some regions, the symbolic differences attributed to these artefacts in different geographical areas becomes increasingly evident (Gehlen 2006a; 2006b). Sometimes, instead of the quadrangular, it is the triangular arrowhead which is characteristic of the Late Mesolithic inventory in a given region. Furthermore, not only technical details, for example, whether the micro burin-technique was used, but also stylistic nuances, such as the placement and implementation of retouch, can be indicative of specific traditions which are totally independent of artefact function and raw material choice. In my opinion, these factors require a social interpretation. A comparison of such

features with the available radiocarbon dates leads ultimately to the realisation that both continuity and discontinuity can be observed between the Late Mesolithic and Early Neolithic periods.

Gehlen (2010) has provided some of the required groundwork essential for any future discussion of Late Mesolithic and Early Neolithic groups in Southern Europe, involved the careful consideration of the types of stone artefacts already touched on above. Indeed, it is usually these, and only these, which are corresponded in any detail in the majority of publications. On the basis of technological and stylistic grounds of blade tools and arrowheads, various propositions regarding potential contact zones and borders as well as neolithisation processes can – to a certain extent – be made. On the other hand, sometimes only more cursory observations are possible. In some regions, for example, there is a distinct lack of any basis for such attempts, this being due mainly to the fact that Late Mesolithic assemblages are either unknown or have not been dated via absolute dating methods. This is, without a doubt, a reflection of the current general state of Mesolithic research, though the quality of publications also plays an important role. The more the essential data and illustrations are made available, the more such cultural-historical reflections for this period can be made, and, of course, the more differentiated these then become.

In addition to the aforementioned difficulties a further acute problem hindering any attempt to establish exactly when these innovations were first introduced to a given region lies in the quality of the available radiocarbon dates, i.e. uncertainties with regard to sample composition, archaeological context, sample size, and accuracy of measurement. Not only this, but the situation is further confounded by the fact that the calibration curve features a pronounced plateau between circa 7040 and 6550 cal BC (ca. 8100 and 7500 BP; cf. Gronenborn 1997). Consequently, assemblages and archaeological sites, which at first glance appear contemporaneous, may actually date quite differently. In such cases, we are reliant on the results from stratigraphical, attribute comparative, feature-oriented methods, and pollen analysis to provide clarity and a better absolute chronological resolution. Certainly in the future, improved methods of analysis and more precise data will make possible more differentiated propositions than can be made at present, at a time when we are still very much reliant on »old« radiocarbon dates from the 1960s, 70s, and 80s.

A further problem relates to the reliability of stratigraphies from caves and abris locations; particularly as most of the assemblages, and particularly those which are currently available in print, stem from such sites. I myself have observed at excavations at the Abri »Unter den Seewänden«, near Füssen in eastern Allgäu (Gehlen 2001), and at the Burghöhle Dietfurt, near Sigmaringen, on the Upper Danube (Gehlen 1993; Gietz 2001), that finds which are found together are not necessarily contemporaneous, and that other finds which are discovered at a greater stratigraphical distance from one another, might actually belong to a contemporaneous assemblage. Indeed, gaps in the sedimentation process, phases featuring sediment removal from the site (for whatever reasons), or any other non-observable intrusions made during a period of occupation, can all disturb considerably an intact stratigraphy. Thus, and in addition to a large series of samples for absolute dating and the meticulous analyses of observable features and other material, it is advisable to consult further factors from »independent« sites, which might include, for example, burials, observations made at open air sites, as well as results from pollen analyses conducted in off-site situations, all of which can help to correct and/or avoid false interpretations. These stratigraphical problems are particularly acute to any attempt at reconstructing potential neolithisation processes. For example, if one were to find in a Late Mesolithic context a goat bone, a sherd of pottery, and bones from wild animals, one might discuss both the intermixture of archaeological material, and the likelihood of a shared origin, and this without ever reaching a clear conclusion. However, if upon consultation of absolute dated pollen profiles there appeared evidence that the landscape was at the time being used for the grazing of small livestock, this would have significant implications for argumentation. In such a situation we would have to question whether we are in fact dealing with a population of hunter-gatherers who occasionally watched over the animals belonging

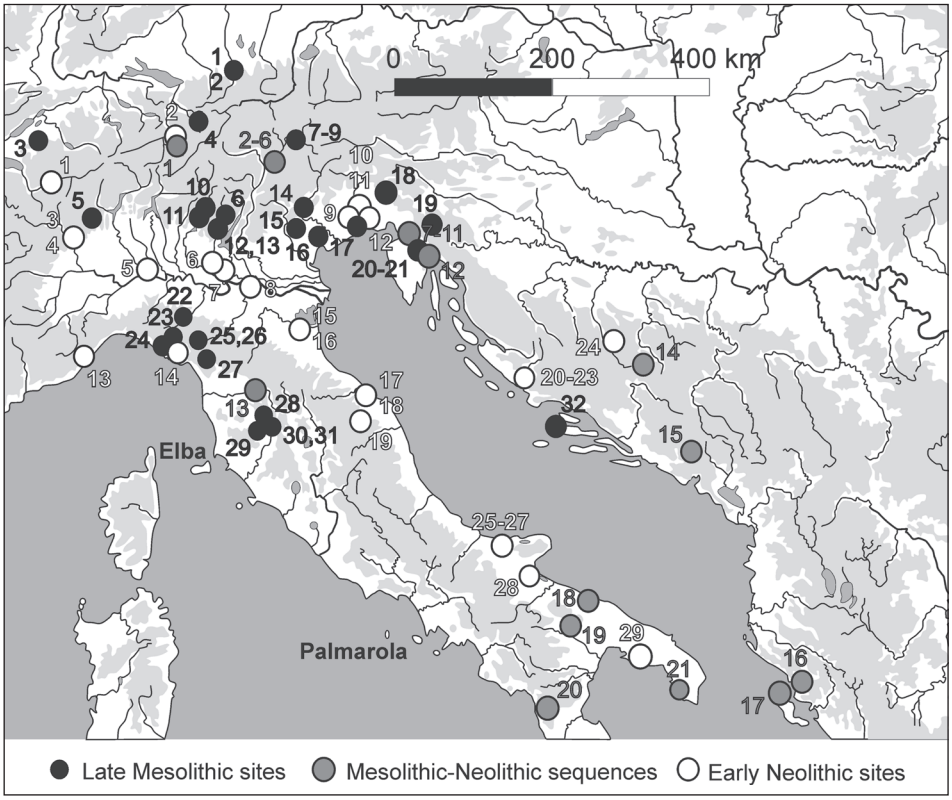

Fig. 3 Important Late Mesolithic and Early Neolithic sites in Italy and the eastern Adriatic (drawing Birgit Gehlen).

to sedentary farmers; whether the combination of finds arose from the exchange of goods between the two (Late Mesolithic and Neolithic) groups; or indeed, whether the Late Mesolithic group was breeding their own animals, i.e. were Neolithic, but still practised hunting and gathering. Further variants are, of course, conceivable. Admittedly, the prehistoric world does not become simpler the more or better quality information an archaeologist has at his or her disposal; in fact, on the contrary, it becomes more complicated. Nevertheless, I believe that the resulting picture comes nearer to historical reality than can any simple, easily learnable, and teachable schema, for which the effort is hardly ever made to collect all newly available and relevant archaeological information in its defence, should this actually lead to its undoing.

In the following, I shall show which neolithisation scenarios can presently be proposed for Northern Italy and Southwestern France, other than the conventional ones anchored on the introduction and appearance of pottery, and more or less visible structural features (both of which have been rarely observed in these two regions), on the basis of lithic artefacts and absolute radiocarbon dates. Further important factors stem from observations linked to landscape use and economy.

First example: Northern Italy

Owing to the long research history in Northern Italy there are currently a number of publications which have looked at the Mesolithic occupation of the alpine valleys and the alpine region around Trentino (Bagolini / Pedrotti 1992). Although some of the most important sites are still not published in their entirety, we are nevertheless in a position to reconstruct a Mesolithic cultural evolution for this region. On the other hand, research into the Mesolithic period in the northern Apennines is at a much less advanced stage, and

in the Po River plain and in the alpine foothills only very little is known. Particularly in the two latter regions and in the vicinity of the Adriatic littoral, research into the Early Neolithic has only become more intense in the last two decades (Malone 2003). However, the relative dichotomy of these study areas, together with the strict research emphasis on a given cultural time slot, means that even today it still proves difficult to bring together all available results in a logical fashion. This situation is reflected on the map in **figure 3**. Here, Late Mesolithic sites (black dots) are located predominantly in regions different to those in which Early Neolithic sites are known (white dots). The main concentration of Mesolithic sites lies in the Alps and in the northern Apennines, whereas in the Po River plain, an area connecting these two mountain regions, all sites with only very few exceptions are Early Neolithic. From a traditional point of view, one could interpret this spatial distribution as reflecting Mesolithic and Early Neolithic settlement and land use patterns, with the Neolithic groups probably entering the area from the Adriatic. However, the study of the lithic artefacts from these sites leads to quite different interpretations.

Prior to a shift in emphasis toward the higher lying alpine areas (Bagolini / Pedrotti 1992; Broglio 1994; 1996), Trentino with the Adige Valley and its tributaries were for long a traditional focus of Middle Stone Age research. Following the discovery of »Ötzi« at the Tisenjoch in the Ötztal Alps, archaeological investigations focusing on the north Italian alpine Stone Age also intensified, which led mainly to the discovery of new Mesolithic sites. Generally speaking, the spatial distribution of sites implies the existence of two different activity zones. On the one hand, many sites are located along the cardinal valleys of the Adige, the Eisack, and the Renz, i.e. in areas with a high biodiversity; others, on the other hand, are situated in altitudes of or in excess of 2000 m above sea level, between the alpine ridge and the lower lying foothills (Alessio et al. 1996; Cattani / Guerreschi / Romagnoli 2002, 140p.).

Late Mesolithic

The earliest Late Mesolithic layers known from the area were discovered at the Abri Romagnano Loc III, the most extensive stratigraphic Mesolithic sequence in the region with accumulations of between 200 and 250 cm. The earliest Late Mesolithic layers from this site can be dated to between c. 7100 and 6900 cal BC. In comparison, those from the nearby site of Riparo Gaban have been dated to shortly before 6800 cal BC (for the latest compilation of Late Mesolithic and Early Neolithic dates, see Perrin 2005). It was on the basis of the lithic assemblages from Romagnano III that the north Italian Sauveterriano and Castelnoviano were defined (Broglio / Kozłowski 1984). It should be noted that during the entire Late Mesolithic, with its quadrangular microliths and parallel edged blades, there also occur microlith forms resembling Early Mesolithic types (including particularly small pieces, such as edge retouched microliths, points with retouch on both edges, and slender triangular pieces). These differ stylistically from those of the Sauveterriano in detail, though their proposed function as lateral inserts in shafts was probably the same. The adoption of new quadrangular forms and the use of indirect percussion in the production of parallel edged blades were innovative elements which were probably picked up and integrated into the already prevailing tool assemblages. Prevailing core reduction concepts were, at least partially, still a legacy of the Early Mesolithic period. On the other hand, whereas in the Castelnoviano comparatively wide, parallel edged blades were used as blanks for microlith production, in the earlier inventories so called pygmy-blades were used. It was not until the earliest Neolithic at approximately 5300 cal BC that microliths resembling Early Mesolithic forms actually ceased to be produced at the site. This observation also applies to the nearby site of Riparo Gaban. However, from the contemporaneous (radiocarbon dated) abri site of Vatte di Zambana located only a few kilometres from Romagno III, it has been discovered that during the period c. 6800 cal BC to perhaps 6400 cal BC both

the prevailing blade methods and microliths were produced according to Early Mesolithic traditions only. Thus, we may assume that in the second half of the 7th millennium at least two contemporaneous groups, one conservative and one innovative, were living side by side in the region.

In the stratigraphic sequences from the Adige Valley a general hiatus in settlement activity has been established for the centuries between c. 6100 and 5800 cal BC. The absolute dates for Late Mesolithic assemblages in Tuscany range between c. 6300 and 6200 cal BC. In Emilia-Romagna there are dates from around 6500 cal BC and again from around 5800 cal BC. In the Veneto and in Lombardy there are only two dated archaeological accumulations, the first of which has been dated to shortly before 5800, and the other to around 5700 cal BC. From the higher elevations in the Alps there are very few absolute dates. With the exception of some older measurements with extremely high standard deviations from Splügenpass, there are two dates from between c. 6300 and 6150 cal BC, and two others, the first of which corresponds to shortly after 6000 and the second to around 5700 cal BC. At present, dates are too few and far between to correlate this proposed hiatus with the prominent climatic event at 6200 cal BC (Gehlen / Schön 2005; Weninger et al. 2005). Nevertheless, it is conceivable that for a period of one or two centuries there prevailed an altered bearing on settlement behaviour. However, and judging from the fact that there are no identifiable typological unconformities between the older and younger lithic assemblages, the larger region was probably not uninhabited during this period. In future research, the coherences between climate and settlement behaviour certainly require further consideration.

Generally speaking, it is assumed that the alpine regions were used differently in the Late Mesolithic than they were in the Early Mesolithic. Most of the Castelnoviano sites so far located have been found in valleys, with only very few at higher elevations. Early Neolithic settlements or resting places, on the other hand, are so far unknown from alpine regions. As the abri sites can be considered as near permanent settlements, it is assumed that Mesolithic lifeways were characterised by transhumance between alpine regions, which were good for summer hunting, with stays in the valleys during the winter. Due to the fact that the alpine forest limit line was considerably higher during the Holocene climatic optimum than in foregoing periods, it is believed that this led to a decrease in the availability of suitable pastures and to the consequent retreat of the ibex and the chamois into areas of much higher altitudes less attractive to the Late Mesolithic populations, though this requires confirmation from further survey work. Whereas in the Apennine Mountains Mesolithic occupation is characterised by an intensive usage of mid-range altitudes, finds from similar altitudes in the Alps are still unknown. However, this is probably due to the poor visibility of archaeological sites in an area presently covered with thick forest.

The aforementioned microlith types – mainly asymmetrical trapezoids and rhombi but also symmetrical trapezes with two concave sides and occasional rhombic transverse arrowheads – occur in Late Mesolithic assemblages in all parts of Northern Italy, from the Alps to northern Tuscany and Emilia-Romagna. Nearly all forms are left oblique. Extremely common is the *piquant-trièdre*, the facets resulting from the microburin-technique not eliminated through retouch, and long retouched sides, which often make an irregular, near denticulated appearance, with a »kink« between the retouched edge and the *piquant-trièdre*. Symmetrical trapezoids with two concave sides, which occur relatively frequently in the alpine region, display notched retouched edges with two *piquant-trièdres*. In contrast to the alpine sites, the Late Mesolithic assemblages from the Apennine Mountains feature hardly any Early Mesolithic microlith forms. Due to the fact that almost exclusively younger sites from south of the Po River plain have produced no absolute dates, and owing also to the current state of publication, which is considerably worse than for the Adige Valley, no further conclusions can be made with respect to this region at present. However, judging from the few illustrations of cores and the dimensions of the relatively short, slim, and thin blades, and the prevailing preparation methods, I presume that these were produced using pressure flaking techniques. Indeed, pres-

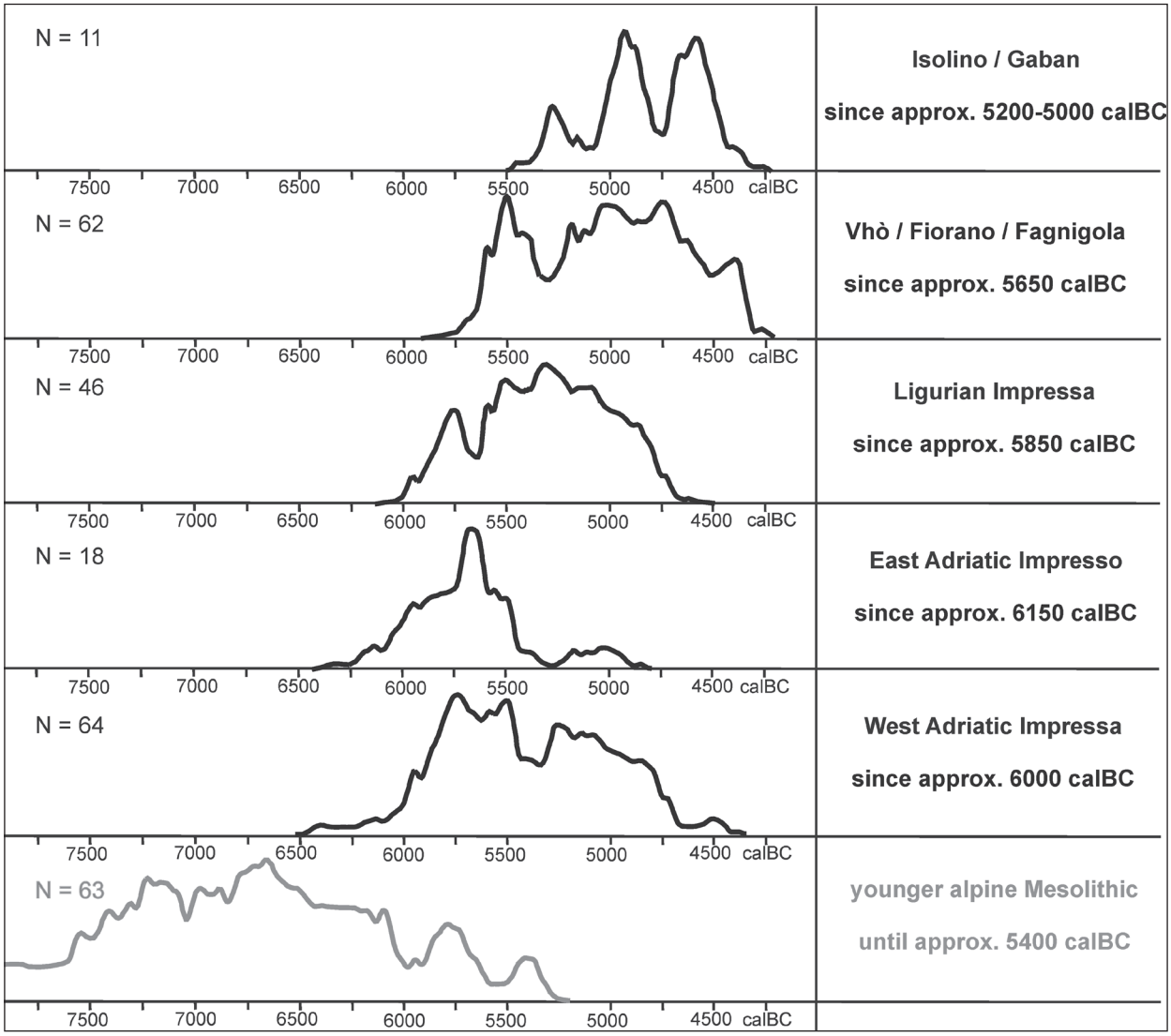

Fig. 4 Absolute Chronology of the Late Mesolithic and Early Neolithic in Northern Italy (calibration with CalPal 2000; *www.calpal.de*) (drawing Birgit Gehlen).

sure flaking tools made from stag antler were found together with parallel edged blades and a blade core in the burial at Mondeval de Sora in the Dolomites, which has been dated to shortly after 6200 cal BC (Alciati et al. 1994; Fontana / Vullo 2000; Fontana / Guerreschi 2003).

Symmetrical and rhomboid trapezoids have also been discovered in the Austrian Alps (see e.g. Kompatscher / Kompatscher 1998; 2005). Furthermore, I regard two asymmetrical oblique trapezoids (in the Italian refered to as rhombi) from the Late Mesolithic site of Forggensee 2 in southern Bavaria as direct evidence for contacts with Northern Italy. A small number of artefacts made from Lessinian flint from the same site serve to confirm this assumption. Both the finds from Austria and southern Bavaria provide evidence of direct contacts between the north and south facing flanks of the Alps. Another assemblage, which in its overall character closely resembles that of Forggensee 2, has also been discovered at the open air site of Sopra Fienile Rossino in the Monte Baldo region and is dated to c. 5700 cal BC (Accorsi et al. 1987). The assemblage from Sasso di Marnerba in Lombardy (Biagi 1981), with its quadrangular microliths, makes a

more extrinsic impression for Northern Italy and would correspond better to a Southern German or older Swiss context. Nevertheless, the transverse arrowheads from the northwestern Alps, i.e. from present day Northern Italy and Switzerland, are very similar (symmetrical or slightly symmetrical trapezoids with two concave sides), which certainly leads me to the idea that there may well have existed reciprocal relationships between Northern Italy and the Swiss region on the one hand and between Northern Italy and Southern Germany on the other hand. This is most definitely a topic worthy of consideration in future research.

Early Neolithic

Continuity from the Late Mesolithic to the Early Neolithic is evident both in the blade method as well as in many quadrangular arrowheads. Additionally, it should be noted that the microburin-technique is documented in all cultural contexts and that the illustrated asymmetrical forms – except for one artefact from a Mesolithic context – display left lateral retouch only. The differences in the spatial distribution of settlements are, without a doubt, a reflection of the poor visibility of Mesolithic open air sites in the heavily farmed regions of the Po River plain and the Veneto. Despite recent research, the extent to which the Alps experienced a different usage during the Neolithic, at which time the old settlement sites were no longer frequented and the alpine sites at high elevations were less attractive, remains unresolved. Certainly, the intensive use of good quality southern alpine flint and greenstone, which probably stem from the Piedmontese Alps, also suggests a specific use of alpine raw materials during the Early Neolithic.
Pottery producing groups associated with the more or less well attested cultivation of crops and animal breeding are documented from around 5800-5700 cal BC. Even at this early stage, various groups are differentiated on the basis of their pottery assemblages:

1. The western Impressa Cultures of Liguria and the Piedmont, from c. 5800 cal BC.
2. The Vhò Group from the central Po River plain, from 5200 cal BC.
3. The Gaban Group in the Adige Valley, from 5000 cal BC.
4. The Isolino Group in the central alpine - Italio-Swiss border region, Ticino, Graubünden, Valais, and in the alpine foothills of Lombardy, from 5200 cal BC.
5. The Fiorano Culture in the southern Po River plain and in the adjacent Emilia-Romagna to the south, from 5700 cal BC.
6. The Fagnigola Group in the Friuli plain, from 5700 cal BC.
7. The northwest Adriatic Impressa Culture, from 5500 cal BC (**fig. 4**).

Although contacts are known to have existed between the Neolithic groups living in the Po River plain and those of the alpine foothills, there is no indication that these were in touch with groups in more distant regions. This was not the case in the Ligurian and the northwestern Adriatic Impressa, both of which are found on the Mediterranean littoral. The oldest dates from Liguria have produced results of c. 5800 cal BC, whereas those from the northwest Adriatic are considerably younger, dating to c. 5500 cal BC. In Liguria there are presently no Mesolithic sites known from the coastal zone. However, here we find one of the most important Early Neolithic sites, Arene Candide (Maggi 1997; Tiné 1999). In the Ligurian hinterland, Early Neolithic settlements are still unknown. Thus, it is assumed that there was a coexistence of Early Neolithic coastal societies and a Late Mesolithic mountain population (Biagi / Maggi / Nisbet 1990). However, a presumable loss of flat coastal areas through rising sea levels may mean that preservation of archaeological sites in this region is only fragmentary (Maggi / Negrino 1992, 375p.). The fundamental difference in the lithic assemblages of the Late Mesolithic and the Early Neolithic complexes lies not in the blade technique – both groups are characterised by parallel edged blades produced by using indirect percussion – but in the arrow-

heads. Characteristic for Impressa assemblages in Liguria are triangular or trapezoid transverse arrowheads, predominantly with facial retouch. Such artefacts are also known from levels IX/X of the Franchthi cave in the southern Peleponnese but at this site are around 1000 years older (Perlès 1990; 2001, 48). Despite the considerable spatial and temporal distance between these two regions, I am nevertheless convinced that this still bears witness to connections which could have linked the coasts of the Eastern Mediterranean with the Tyrrhenian Sea. Impressa assemblages also feature steep retouched symmetrical transverse arrowheads and seldom asymmetrical trapezoids. Of interest are the symmetrical trapezes with dorsal facial retouch at the edges, which are also characteristic for the Cardial of Southern France (see below), and the fact that the microburin-technique is lacking in both cultural contexts. These technological attributes, together with the arrowheads, link the Early Neolithic of northwestern Italy with that of Southern France. Direct connections between the two regions are also attested in the decorative elements found on pottery.

In Northern Italy the differences between the Early Neolithic coastal societies and those of the Po River plain, the alpine foothills, and the Alps are particularly evident both in their pottery styles and in their characteristic lithic assemblages. Indeed, these differences may even be a reflection of different lifeways, i.e. on the one hand a sea-going coastal population and on the other inland, land-based communities. The latter type, however, appears to have been less pronounced in the northwestern Adriatic region and Veneto, as here lithic artefacts of a Castelnovien tradition have been found associated with Impressa pottery (Bermond Montanari / Massi Pasi / Mengoli 1994; Bermond Montanari / Massi Pasi 2001). Finds of obsidian from Palmarola and Sardinia in Ligurian Impressa inventories and from Palmarola and Lipari in assemblages belonging to the northwest Adriatic Impressa demonstrate connections of Early Neolithic groups both to the west and the east of the Apennines with the islands in the Tyrrhenian Sea and Southern Italy (Ammerman / Polglase 2001). In the settlements of the Fagignola Group in the Friuli plain, which appear to have been in contact with settlements in the northwestern Adriatic, occasional finds of obsidian from the Aeolian Islands have been made. Thus, although still very vague, small sections of different Early Neolithic networks are becoming discernable. Furthermore, in the Early Neolithic assemblages of Friuli there is new evidence of other, far slung and complex communication networks, as attested by greenstone from the Piedmontese Alps and – at present in the form of just one artefact – of Carpathian obsidian. At the moment still very little is understood of this latter network which may have been oriented along an east-west axis. However, it may also be attested in similarities in the pottery assemblages from the younger Impresso Culture (Danilo Phase) in the eastern Adriatic region (Pessina 2000; Ferrari / Pessina / Visentini 2001).

Central parts of Italy are still very much a *terra incognita*. Here, little is known about the Late Mesolithic or the Early Neolithic periods, though a small number of finds from a few Early Neolithic sites in Lazio are indicative of further variants of material culture, i.e. pottery and lithic assemblages. However, without further research, the regions of Central and Southern Italy cannot be further considered in our considerations of neolithisation processes.

The uppermost Late Mesolithic layer AA from Romagno III, from which the youngest radiocarbon sample dates to c. 5400 cal BC, has yielded pottery with impressed decoration, the cultural origin of which is still uncertain. For this reason, this horizon is usually referred to as »Neolithic« though some sherds from this layer were refitted to others from the overlying and clearly Neolithic level T4 (Bagolini / Biagi 1977, 229 note 25). This latter level, which has been dated to 5000 cal BC, contained pottery evidently influenced by Fiorano (Broglio / Kozłowski 1984, 145 note 12). Besides asymmetrical transverse arrowheads and rectangular asymmetrical trapezoids with clear evidence of *piquant-trièdres*, it would appear that rhombic parallelograms are particularly characteristic (Bisi et al. 1987, 403pp.). The first of the two forms mentioned link the assemblages with the Castelnoviano and the latter with the Early Neolithic complexes of the Po River plain. In his recently published study of the lithic assemblage from Riparo Gaban, Perrin (2005) stresses the

differences between the Late Mesolithic and Early Neolithic inventories which in my opinion are only slight. At both sites, Romagno III and Riparo Gaban, Early Mesolithic forms no longer appear in Early Neolithic accumulations. Thus, even if the material from layer AA at Romagno III does constitute an intermixed assemblage, the first appearance of pottery at the site does not pre-date 5400 cal BC.

The earliest absolute dates for pottery assemblages which can be assigned with certainty to the Gaban Group date to around 5000 cal BC. At present, little is known about the economy of this group, though the faunal assemblage from the Gaban level at Riparo Gaban has provided evidence for sheep/goat and pig, with the coprolites of these domesticates also being found in the uppermost sediments (Pedrotti 2001). Unfortunately, the Early Neolithic deposit from Dos de la Forca north of Trento, which features pottery from the Gaban Group together with bones from sheep/goat and pig, is undated (Clark 2000, 111pp.). The cultivation of cereals and legumes is attested by macrofossils from various open air sites of the Gaban Group, e.g. at La Vela and Villandro Plunacker (Pedrotti 2001). In my opinion, this represents one of the few clear examples of the gradual adoption of a new form of economy. Contacts between the inhabitants of the Adige Valley and the Po River plain were certainly commonplace from the onset of the Castelnoviano at the latest and are attested by the exceedingly similar lithic assemblages. In the Adige Valley, site continuity would appear to have been an important feature not only during the Early and Late Mesolithic periods but also in the Early Neolithic, and this not only in the Abris but also at the open air site of La Vela (Bazzanella et al. 2001).

Even today, the earliest reliable evidence for farming from Neolithic contexts in Northern Italy is still rather ambiguous, with botanical remains from Neolithic settlements still underrepresented in research projects. Apart from the regions of Liguria and Friuli, there are very few associated finds, and the majority of these are undated. Consequently, we have no concept of the potential regional differences in the use of landscape and agricultural practices. According to presently available data, during the Early Neolithic the north Italian Po River plain was covered by a mixed oak forest with different regional components. It would also appear that only particular trees were used for firewood. For example, among the macrofossils are numerous hazelnuts, though wood from the hazel was seldom burned. At Sammerdenchia a large number of beechnuts were recorded though its wood is hardly ever found as charcoal. The earlier opinion that the various cereal types were introduced successively in the course of the Early Neolithic is probably incorrect. At those sites which have experienced some degree of archaeobotanical analysis, different types of wheat and barley as well as einkorn and emmer have always been attested. Apart from hazelnuts the remains of wild fruits have only seldom been recovered from Early Neolithic settlements. These, however, include grape, sloe, apple, acorn, blackberry, cornel, and elderberry. Legumes have been recorded only rarely in Early Neolithic contexts, and evidence for poppy and linum is still lacking. Even though the earliest evidence for farming is still somewhat inconclusive, the pollen profiles from the Po River plain show that this region must have been a cultural landscape as early as the Early Neolithic period at around 5600 cal BC (Castelletti / Rottoli 2001). As a cultural landscape can only develop in the course of long drawn-out transformation processes, this must mean that the, as yet, earliest encountered Neolithic populations in the region must have arisen from an older generation whose influence had already led to an observable transformation of the landscape at an earlier point in time.

Neolithisation

From the evidence presented above, it is clear that by the middle of the 6th millennium cal BC the Late Mesolithic inhabitants of the northern Italian mountain ranges had moved into the Po River plain where, under the influence of the Eastern Adriatic region and the Balkans, they began to farm the land and produce their own pottery. Furthermore, it did not take long before these same populations split into different groups,

each with its own characteristic pottery traditions. It was only then that the alpine regions were resettled. Of course, this is an extremely simplified account of the potential historical events, and a glance at the distribution of radiocarbon dates shows that there is even a hiatus between c. 5650 and 5500 cal BC. Indeed, this gap might correlate with the relocation of settlements from the Alps into the lowerlying plains and into the adjacent Apennines. It is at this point in time that the earliest Neolithic groups appear in Friuli and in the Po River plain, the pottery of which differs clearly from that of the Adriatic and Ligurian Impressa. Therefore, it is **not** likely that the genesis of these Neolithic groups can be traced back to a massive influx of immigrants from the Mediterranean region. However, as Late Mesolithic sites dating to this period are unknown from the Po River plain and as those in Tuscany and in Emilia-Romagna are inadequately published, it remains difficult to come to any conclusions regarding the further development of the Late Mesolithic at this time.
The Early Neolithic pottery producing groups in the Po River plain, the alpine regions, on the northwestern Adriatic coast, and in Veneto, all of which display only slight differences in their lithic assemblages and pertain to continuity from the Late Mesolithic period. Both, this and their relative diversity, imply that these groups were not immigrants but were the descendents of Late Mesolithic populations, which under the influence of Neolithic cultures from the Eastern Mediterranean and/or the Balkans developed into farming communities with their own specific traditions. In the inland regions and on the northwestern Adriatic coast, little is known about the onset of the pottery Neolithic. The oldest absolute date of around 5700 cal BC stems from a sample of domesticated cattle bone from a pit in Piancada in Friuli. Pollen analyses have shown that cereal is in evidence at Lago di Ledro in Lombardy (Beug 1964) and at Brixen in the northern Dolomites (Seiwald 1980) as early as the end of the Boreal period. These finds would correlate with those made in Tyrol, on the Swiss plateau, in the German Alpine foothills, and in France (Richard 2003; Gehlen / Schön 2003; Gehlen 2006a; 2006b). This early finds of cereals north of the Alps were recently confirmed by new pollen-evidence from Soppensee on the Swiss plateau (Tinner / Nielsen / Lotter 2007). Nevertheless, owing to a lack of absolute dates and the absence of further similar finds in the region, any evidence for such an early use of cereals in Northern Italy must remain ambivalent.

Scenario

Considering the very early evidence for cereals in Switzerland and from Tyrol, it is perfectly feasible that the non-radiocarbon dated evidence from Northern Italy, otherwise assigned to the end of the Boreal period, should also be seen in the same context. Indeed, the oldest dates for parallel edged blades and quadrangular microliths in Europe outside of Greece come from the alpine and circumalpine regions and date to around, and shortly after, 6900 cal BC. Thus, it is likely that these new methods of blade production and arrowheads arrived at the southern alpine regions from Greece and from here were transferred to Southern Germany. Contacts between Northern Italy and Southern Germany are certainly attested on the basis of microlith types and raw materials (flint) for the Late Mesolithic period. Therefore, in the context of these Late Mesolithic/Initial Neolithic networks, knowledge of cereal cultivation may also have been transferred to these regions, a fact which, however, still remains inadequately proven.

Future research

Problematic is the geographical dichotomy apparent at Mesolithic and Neolithic sites, which can be traced back partially to difficult preservation conditions, both in the mountainous regions as well as in the Po

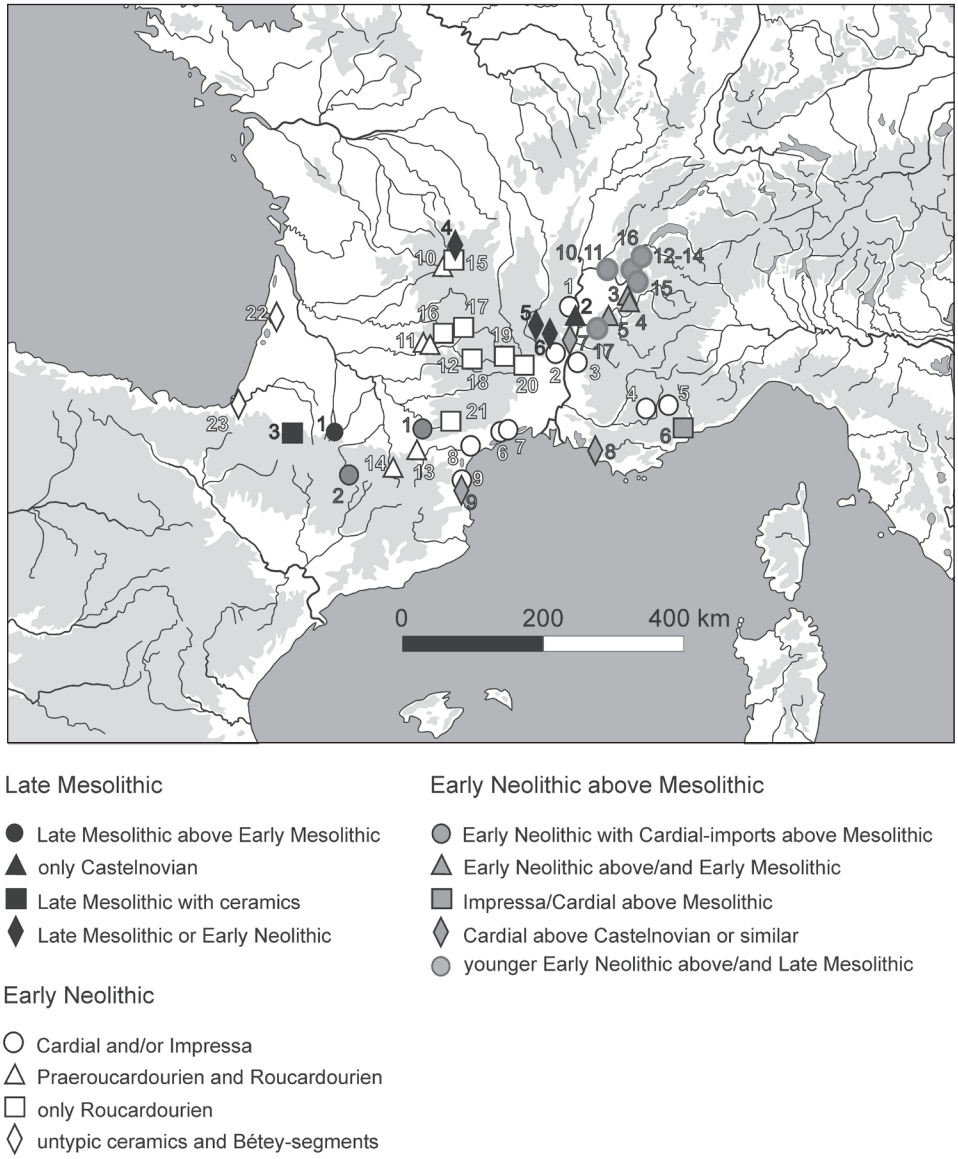

Fig. 5 Significant Late Mesolithic and Early Neolithic sites in Southwestern France and the French Alps (drawing Birgit Gehlen).

River plain. At the same time, little is known about the lifeways of the Late Mesolitihc and Early Neolithic inhabitants, as up to now only small trenches have been excavated and only small areas investigated. The state of publication is, generally speaking, worse than might be assumed from the available evidence. At present, only old radiocarbon measurements are available for the Mesolithic period, and it goes without saying that these dates do not stand up to comparison with more recent measurements. A comparative analysis of raw material for the region of Northern Italy, a most promising project considering the well-known sources of flint and radiolarite, has never been undertaken, although on this basis contacts between the different social networks and their potential continuity could be investigated. This has to be one of the most pressing aims for future research in Northern Italy. Furthermore, excavations of larger areals and an increase in the number of archaeobotanical analyses are required. Last but not least and most importantly, more reliable radiocarbon dates from verified contexts are essential.

Second example: Southwestern France

Southern France connects the aforementioned regions of Italy not only with western Mediterranean regions but also with those of the Atlantic littoral. The state of Late Mesolithic and Early Neolithic research in these key regions is, despite all hopes to the contrary, very heterogeneous, and absolute dates by far are not as numerous as required. **Figure 5** shows the most important Late Mesolithic and Early Neolithic sites in Southwestern France, which are sequences discovered predominantly in caves or in abris. With respect to the Late Mesolithic and Early Neolithic lithic assemblages, this region is characterised by a sheer cultural diversity, the cultural complexity of the assemblages being best illustrated by the many different signatures recognised: in Aquitaine the Roucadourien and the Pre- Roucadourien; in Provence and in the middle Rhône Valley the Castelnovien; and particularly on the Mediterranean littoral and in the associated inland regions Impressa and Cardial. Generally speaking, all remaining groups are located between the Pyrenees and the Massif Central. Even the terminology used, i.e. Castelnovien and Impressa, implies links to Northern Italy, though more regional entities are also discernable.

Castelnovien

The region of the Mediterranean littoral and its hinterland shows quite different cultural developments compared to the region between the Pyrenees and the Massif Central; and others can be distinguished in its western foreland and in the Dordogne area. Although different types of arrowheads provide some evidence for contacts between these groups, even in the following Early Neolithic period these regions were still inhabited by quite different communities. For this reason, I assume that the various social groups, which were already living in these parts during the Late Mesolithic, also had only superficial contacts. For both the Late Mesolithic and the Early Neolithic the available absolute dates are unsatisfactory. Many stem from older research and were made on samples of molluscs or shells, and time and again, the archaeological context from which these samples were taken is, from a modern perspective, totally ambiguous. Therefore, a large number of absolute dates can no longer be accepted (compare the compilation in Manen / Sabatier 2003). This, together with diverse stratigraphical problems encountered when alluding to old excavations, is the reason why the basis required for an evaluation of neolithisation processes in Southwestern France is, in fact, worse than that discussed previously for Northern Italy. As early as the late 1940s, excavations were being conducted at some of the most important Late Mesolithic and Cardial abri sites known to date, for example at the Abri de la Font-des-Pigeons near Châteauneuf-les-Martigues (Escalon de Fonton 1973; 1978; Courtin / Evin / Thommeret 1985; Binder 1987). This site, eponymous for the Late Mesolithic of Southern France, has so far produced the only absolute dates associated with lithic artefacts for the Castelnovien. The earliest acceptable measurements are slightly older than c. 6700 cal BC. In addition to various asymmetrical trapezoid forms, characteristic are rhombic transverse arrowheads, symmetrical trapezoids with two concave retouched sides, and so called Châteauneuf-triangulates. The latter display a predominantly flat ventral retouch at their base. Arrowheads were produced using the microburin-technique. Results from recent follow-up excavations in the 1980s, which were conducted with considerably more care than the earlier investigations, have also shown that the Late Mesolithic assemblage comprised hypermicroliths in Early Mesolithic style. Furthermore, it is assumed that the parallel edged blades, from which the majority of transverse arrowheads were made, were produced using the pressure technique (Binder 1987).
Absolute dated Castelnovien complexes are either unpublished (only data) or are located further to the north, for example at La Baume de Montclus in the department of Gard (dated to as recently as 6150 cal BC)

or in the French Alps. At Montclus it is evident that prior to the Castelnovien there existed a Late Mesolithic of a different character, distinguished by symmetrical trapezoids in an otherwise Early Mesolithic-looking assemblage (Rozoy 1978, 362pp.). This has been dated to c. 6300 cal BC. Thus, we have here a rare case in which two, temporally adjacent Late Mesolithic complexes, which in my opinion represent very different groups with different social identities, are present at just one site.

Pre-Roucardourien

Other assemblages from the vicinity of the Pyrenees, from the southern and western peripheries of the Massif Central, and from the Dordogne region are indicative of further Late Mesolithic communities. In the Dordogne region the assemblage from Rouffignac, which dates to around 6000 cal BC, shows affinities not only to material from northern France but also to adjacent regions to the southwest (Rozoy 1978, 325pp.). These are characterised by so-called Martinet-trapezoids, the first examples of which were discovered at the eponymous site of Grotte de Martinet near Sauveterre-la-Lémance in the department Lot-et-Garonne. Here, the overall Mesolithic sequence can be observed, which even today – as in the case of the stratigraphies from sites of Cuzoul de Gramat and La Borie del Rey in the same region – remain without a single radiocarbon date. All three stratigraphies, however, display parallels in their sequences (Roussot-Larroque 1977; Rozoy 1978, 362pp.). The potential Late Mesolithic layers are grouped together into a single cultural entity, referred to as Pre-Roucadourien. In addition to the Martinet-trapezoids, this unit is characterised by trianguloid, facial retouched points and particularly by quadrangular or trianguloid, facial retouched transverse arrowheads. The use of the microburin-technique is attested and can be regarded as the heritage of the Early Mesolithic Sauveterrien. The assemblages also contain parallel edged blades, which often display a lateral retouch or use traces, probably produced by using the pressure technique. In the Abri Chez Jugies, about 40 km northeast of Rouffignac in the department Corrèze, in a small tributary valley of the Corrèze River, a further assemblage was discovered which has also been assigned to the Pre-Roucadourien (Mazière / Raynal 1984, 98pp.). Here, a five metre sequence of sediment has been shown to contain levels dating to a period which ranges from the Azilien to the Late Neolithic. Consequently, the site serves as a stratigraphic reference for the entire lower Limousin region. Whereas the level 3b, probably disturbed in its upper part owing to local hydrological factors, contained no trapezoids, the level 3a, which is assigned by the authors to the Pre-Roucadourien II, contained Sauveterrien microliths, Montclus-triangulates (three-sided retouched hypermicroliths), and trapezoids. The same horizon was void of pottery and contained faunal remains from wild animals only. A sample submitted for radiocarbon analysis dates this assemblage to around 5900 cal BC.

Further Late Mesolithic groups

In central and western parts of the Pyrenees, complexes with Martinet-trapezoids are also known. These otherwise comprise so-called hypermicroliths of the Sauveterrien[1]. A totally different type of Late Mesolithic arrowhead has been discovered in a pre-Neolithic but unfortunately undated deposit in the Grotte Gazel on the southern edge of the Massif Central (Barbaza / Guilaine / Vaquer 1984; Guilaine / Manen 1997; Vaquer 1998). Here, asymmetrical, trianguloid points made on short flakes display a steep retouch on the one edge and a facial retouch on the other. Neither the microburin-technique nor parallel edged blades are attested at this site. The facial retouch links these artefacts to those of the Pre-Roucadourien, and asymmetrical

trapezoids connect these with Castelnovien assemblages and with one Impressa and two Roucadourien sites. Asymmetrical trapezoids have, however, also been published for two undated Pre-Roucadourien complexes. In my opinion, these pieces are indicative of contacts on a personal level between members of different traditional groups. Apart from the Castelnovien, double concave, retouched symmetrical trapezoids are also known from the Mesolithic complex of the Grotte d'Unang (Paccard 1991) located in the mid-Rhône Valley region, and from the Impressa assemblages at Pendimoun (Binder et al. 1993). I am convinced that the fact that these forms have so far only been found in Provence and the mid-Rhône region is by no means accidental. In the Rhône region they tend to be younger than in Provence. Double concave trapezoids with retouch belong to the typical form spectrum of the alpine Castelnoviano in Italy. As Martinet-trapezoids do not occur in Castelnovien assemblages, these artefacts are possibly the best evidence we have for the existance of two contemporaneous Late Mesolithic traditions in Southern France, both characterised by exlusively left oblique, retouched, asymmetrical forms; the occurrence of retouche inverse plate; the use of the microburin-technique; and the production of parallel edged blades using the pressure technique. It is extremely likely that the Late Mesolithic deposit from Montclus, which apart from a few symmetrical trapezoids with steep retouch knows only Early Mesolithic forms of local tradition (especially tiny triangular Montclus-triangulates with retouch on three edges), represents a further facies – the *Montclusien récent*. However, such an occurrence has only ever been dated using absolute methods at this site (shortly before 6300 cal BC). It is no coincidence that the Montclus-trapezoids, which so resemble the Martinet-trapezoids and which have so far only been soundly dated at the eponymous site itself, occur in a region which was probably located at an interface between two different cultural spheres of influence. The only absolute date for such artefacts also stems from Montclus. Its date of c. 6150 cal BC is considerably younger than those for the Martinet-trapezoids (at Rouffignac c. 6600 cal BC, and at the Abri de Buholoup in the Pyrenees c. 6400 cal BC).

Roucardourien

Even today, both the correct definition and chronological allocation of the Roucadourien remains unresolved. This Early Neolithic group is named after the site of Roucadour (department Lot), an approximately 140 m long and 60 m wide cave located in a sinkhole on the western periphery of the Massif Central. Since its discovery by the speleologist Martel in 1925, this site has been the focus of small archaeological excavations. A large scale investigation of the entrance area was carried out in the 1950s and resulted in the discovery of a 3 m long sequence comprising Neolithic and Metal Age deposits. The results from these excavations were published by Niederlender, Lacam, and Arnal in 1966. The lowermost layer C contained stone artefacts and predominantly coarse wares of poor quality. The few decorated sherds display both impressed and incised decoration which had been applied to vessel walls and/or rims. It is thought that this decoration partly may imitate the imprint with the Cardium marine mollusc. Among the stone artefacts are both narrow and wide parallel edged blades with retouched notches or use traces and especially small tranguloid and quadrangular transverse arrowheads with facial retouch, which resemble Flèches de Montclus or the Cardial transverse arrowheads. According to the radiocarbon dates, this level is very young (between c. 5000 and 4800 cal BC). The Neolithic economy is attested by carbonised wheat and a few pig bones. However, there is still a clear dominance of wild fauna (94 %) which shows that the inhabitants of Roucadour at this time subsisted predominantly on hunting.
As pottery has not been found at all sites belonging to the Roucadourien, stone tools are still of particular significance when considering the affiliation of this cultural unit. Of particular note is the overall stylistic

continuity between the probably Late Mesolithic Pre-Roucadourien and the Early Neolithic assemblages belonging to the Roucadourien (Roussot-Larroque 1987, 452p.; Roussot-Larroque 1998). The lithic artefact complexes of the Roucadourien are characterised by a particularly high microlith component. Whereas right-angled and rhomboid trapezoids are seldom present, Martinet-trapezoids dominate the quadrangular microlithic forms. Bétey-segments (segments with a flat dorso-ventral retouch) are also present. Slightly larger triangular arrowheads with a concave base and facial retouch are attested in Le Martinet and La Borie del Rey. Two such pieces are also known from layer 2 of the Grotte Gazel which dates slightly younger to c. 5300 cal BC. Particularly characteristic are also trianguloid and trapezoid transverse arrowheads with facial retouch – *Flèches de Montclus* and derivatives. In the Roucadourien at Le Martinet, single symmetrical transverse arrowheads with a facial retouch along the edges occur as are typical for the Cardial (Roussot-Larroque 1987, 474 fig. 14, 11; 16). In the Roucadourien assemblages are irregular (*style de Coincy*) and regular (*style de Montbani*) blades, whereby the ratio of the two varies among the individual complexes.
On the basis of the undecorated course pottery and the transverse arrowheads with facial retouch, Dourgne has been assigned to the Early Neolithic facies of the Roucadourien also, whose main area of dispersal can be assumed to lie to the southwest of the Massif Central (Roussot-Larroque 1990).

Cardial and Impressa

The onset of classical Cardial, as found only on the Mediterranean coast and in the mid-Rhône Valley, is today still fixed on very heterogeneous radiocarbon dates from Châteauneuf-les-Martigues. Here, although pottery sherds were recorded in several stratigraphic layers, they were only ever encountered in extremely small numbers. The internal chronological structure of the Mediterranean Cardial is still an unresolved problem, there being too few radiocarbon dates from too few sites. However, on the basis of this small number of dates, it may be assumed that the onset of both Cardial and Impressa in France dates to around 5700 cal BC. A small number of Roucadourien assemblages from the vicinity of the Massif Central are slightly older. Here, pottery, together with small domesticated ungulates (sheep/goat) and cattle are known to date from c. 5900 cal BC. In my opinion, this might indicate that these groups were not new to animal breeding, i.e. that they commanded of a certain degree of experience in this field, a feature not necessarily to be expected in an initial Neolithic community. Nevertheless, it should be stressed that these observations by no means falsify the thesis that Early Neolithic groups carrying cardium decorated pottery migrated into the region but it might imply that the Neolithic economy and the production of pottery in Southern France is, in fact, older than previously believed. In this respect, a complex network connecting Early Neolithic communities can be proposed for southern parts of France on the basis of a number of observations: first, stone artefacts characteristic of the Castelnovien are found together with Impressa pottery; second, lithic assemblages of the Pre-Roucadourien or Roucadourien, together with such artefacts as trianguloids with facial retouch from the Grotte Gazel, have been found associated with cardium decorated pottery; and third, symmetrical trapezoids with facial retouch serve as a link between the Cardial and the Roucadourien. Against this background, the Cardial, which up to now has always been considered as particularly characteristic of this period, is relegated to the status of one facies among several existing at this time. Once this is accepted, the particular attributes of lithic assemblages with Cardial pottery from the Ebro catchment area and from the Spanish Mediterranean littoral, which in these areas have long been the subject of extensive discussions, become quite clear and even expected (for a comprehensive account of the history of research, see van Willigen 2006; Gehlen 2010). However, as the Cardial encountered in this region dates from around 5800 cal BC, the overall origin of this facies, the lithic assemblages of which found in Spain are quite different

from those of the Ligurian and Corsican Impressa, remains – in my opinion – uncertain. In fact, in Northern Spain it might be older than in Southern France where the possible western and eastern influences became mixed affecting the Early Neolithic groups there in different ways. Connections between Southwestern France and Spain during the Early Neolithic are particularly evident in the arrowheads found in the Ebro region and along the Mediterranean coast. In fact, it is extremely likely that these networks go back to the Early Mesolithic period (Gehlen 2010). Indeed, the term »Cardial franco-ibérique« (Manen 2002; van Willigen 2006) is particularly apt to describe the Cardial of Spain and Southwestern France, in that it not only stresses the cultural similarities during the earliest part of the Neolithic but also pertains to the genesis and the spread of the so-called Epicardial, which must be at least contemporaneous with the younger Cardial (from c. 5300 cal BC). The Epicardial probably developed within the Ebro catchment (van Willigen 2006). The study and description of these Mesolithic and Early Neolithic networks which connected Southern France with Northern Spain are of prime importance for future research focusing on the neolithisation process in these areas. Thus, due to a lack of data and some still contentious evidence, at present it remains uncertain when farming and animal husbandry first appeared in Southern France.

Further Early Neolithic groups

In the Grotte de Camprafaud, in the southern Montagne Noire, a stratigraphic sequence measuring 3,50 m, comprising 20 different layers was discovered stretching from the Bronze Age to the Early Neolithic (Rodriguez 1982). Of particular relevance to this paper is the bottommost level 20, which was exposed in an area of just one square metre and with a depth of 10 cm. This deposit yielded a small number of undecorated pottery sherds and a total of five stone artefacts comprising a small blade with parallel edges and ridges, a scraper, two flakes, and a symmetrical trapezoid with two concave retouched sides and with heavy scarring to its long, sharp edge. Both radiocarbon dates from this level have very high standard deviations, and provide a summed average date range of between c. 6800 and 6300 cal BC. Between this layer and the overlying level 19 there occurs a clear hiatus of more than 1000 years. Level 19, which produced Cardial pottery as well as sherds with stabbed and radial decoration, is dated to between 5400 and 5200 cal BC. The small lithic assemblage is characterised by a relatively low number of blades, a few transverse arrowheads, neither further specified nor illustrated, and some retouched flakes. Even if the dates from level 20 were to date earlier due to the old wood effect, a pre-Cardial period with undecorated pottery is certainly distinguishable. The only microlith from this assemblage is a form which occurs only very rarely in the Castelnovien.
Unfortuantely, without acceptable absolute dates (those available were made on samples taken from land snails) is the complex stratigraphy of the Abri Dourgne in the departement of Aude (Guilaine 1987), which features both Mesolithic and Early Neolithic deposits. The two caves which make up this site lie at 720 m a.s.l. on the left bank of the Aude in the foothills of the Pyrenees. The site is surrounded by mountains with heights of between 1500 and 2000 metres. The levels 10 to 8 contained Early Mesolithic finds assigned to the Sauveterrien. As of level 9 Late Mesolithic forms such as occasional parallel edged blades, asymmetric trapezoids, and trianguloids with facial retouch occur. Level 7 is regarded as »pure« Late Mesolithic, i.e. Early Mesolithic forms are no longer attested. Besides asymmetrical trapezoids, a variety of different forms occur including Gazel-points (Barbaza et al. 1999, 140 fig. 10). Overlying this layer, layers 6 and 5 are assigned to an Early Neolithic owing to the occurrence of pottery. Important is the continuous development of the Mesolithic to the Neolithic stone assemblages. There is no obvious change in the supply with raw material, and new artefact forms and methods of production appear to have been introduced successively. The microliths from the levels 10 to 7 were produced using the microburin-technique. As of level 6, the rep-

ertoire of geometric arrowheads is then complemented by the introduction of transversal arrowheads with facial retouch; also a coarse, undecorated pottery appears. Level 5 is assigned to the Epicardial owing to the occurrence of radial decorated pottery. In this assemblage there is a clear increase in the number of blades compared to earlier levels, and transverse arrowheads occur in many different forms. In addition to the silex artefacts, two ground axes, and grinding stones were discovered. The, more or less, continuous usage of the cave is attested by the numerous fireplaces and pits, which are more frequent in the levels with pottery than in the earlier deposits. As of level 8, domesticated caprinae occur in all levels. As already stated above, the few radiocarbon dates from the cave are, unfortunately, useless. Nevertheless, it is evident that at this site we are not encountering what could be termed a »typical« Castelnovien, as revealed at the eponymous site of this facies, and no Cardial pottery was found.

Late Mesolithic and Early Neolithic relations

Apart from the region of the Castelnovien-Cardial on the French Mediterranean coast, it is quite possible in all regions of Southern France, on the basis of lithic artefacts (irrelevant of the quality and quantity of absolute dates), to identify a continuity from the Mesolithic to the regional facies of the Early Neolithic period. Dated Martinet-trapezoids are known from the Early Neolithic at Roquemissou (Arnal 1995) and from the Roucadourien at Poujade (Arnal 1984; 1987; 1995) and Combe Grèze (Costantini / Maury 1986). The corresponding absolute dates fluctuate between 5900 and 5300 cal BC. This form illustrates best the local Mesolithic traditions during the Early Neolithic, in an area outside the spheres of influence emanating from Castelnovien and Impressa/Cardial. The assemblages with Martinet-trapezoids are usually associated with trianguloid microliths with facial retouch and triangular arrowheads of various forms and sizes. Triangles with facial retouch and small triangular points also occur in assemblages with Gazel-points. It is in this respect that the connection between the sites in Aquitaine and those in the Pyrenees becomes apparent. Furthermore, one might also include in such deliberations the triangulates with facial retouch from Balma de Margineda in Andorra. It is important, and should be stressed, that these forms, as is the case with the Gazel-points, all occur in Early Neolithic contexts. With the exception of the Late Mesolithic *Montclusien récent*, simple symmetrical trapezoids are also known from Impressa assemblages and from at least one Cardial complex. Bétey-triangulates and segments were only found in the Roucadourien deposits at the Abri Jean Cros, which dates to around 5500 cal BC (Barbaza et al. 1999), and in the undated Roucadourien levels at Le Martinet, where such pieces are described as being extremely common. These represent a clear connection to the Early Neolithic of northeastern Spain. On the basis of available radiocarbon dates the so called *Flèches de Montclus*, which remained undated at the eponymous site, though occurring together with Cardial pottery, appear not to be a Mesolithic but instead a Neolithic arrowhead form of Southern France. They occur not only in Impressa but also in Cardial and Roucadourien contexts. These artefacts are considered as a very characteristic element of the Pre-Roucadourien, though still lacking absolute dating evidence. A correlation with the Early Neolithic Impressa assemblage, which appeared at around 5500 cal BC, fits in well with the postulated contacts of these people to Liguria and Elba, made on the basis of pottery decoration and where such transverse arrowheads were also typical components of the Impressa assemblage although dating somewhat earlier (from c. 5900 cal BC) (Binder 2000). The prominent symmetrical trapezoids with facial retouch discovered at Arene Candide in Liguria constitute an interesting link between the Ligurian Impressa and the Cardial of Southern France.

It is evident that as of about 5700 cal BC various Early Neolithic assemblage complexes existed in Southern France in the proximity of the Mediterranean coast; and although only hypothetical, these facies might

be associated with different social groups. Indeed, the earliest pottery (see Camprafaud) might date even earlier.

On the basis of mineralogical analyses of clay and tempering agents used in the production of Cardial and other vessels found at some of the aforementioned sites, Barnett (1990; 2000, 106pp.) assumes that exchange networks did exist at the time between different groups. In this way, he has identified contacts between people living at Gazel, Camprafaud (both Montagne Noire), Jean Cros (upper Têt Valley), and Leucate-Corrège (modern-day coast). Whereas some of the vessels analysed were shown to stem from the region of the Grotte Gazel, the clay used for pots found at Gazel appears to have originated from a region further east in the vicinity of Camprafaud and others again in the vicinity of Leucate-Corrège. From the latter, further vessels made their way to Jean Cros. In Leucate-Corrège, Jean Cros and Camprafaud other pots were discovered which must have come from the region of Peiro Signado (near Portiragnes, lower Hérault valley). Only at Jean Cros is there no evidence for locally produced pottery. In the Balma de Margineda in Andorra predominantly locally produced vessels were discovered. Here, only a single pot with Cardial decoration does not come from the region and remains without any known parallel in adjacent Southern France. Naturally, it could also have been imported from the region of modern-day Spain (Barnett 1990, 862). Indeed, and this should be stressed, whereas any occurrence of either Cardial or Impressa pottery in these contexts must always be considered an import, undecorated pottery or vessels decorated in other manners were mainly produced locally. Furthermore, Barnett sees differences between the mountainous regions and the lowlands. In the mountains red colours are dominant, in lowlands black. Be this as it may, Barnetts data prove difficult to fix in a temporal frame, for example, the dates from Camprafaud are roughly 200 to 300 years younger than those from other sites. Therefore, the contemporaneity of these contacts must remain tentative. The exchange of pottery between the individual regions is, however, very likely a reflection of social ties between the members of these different groups.

The results of analyses describe a geographical area between the foothills of the Pyrenees, the southern Massif Central, and the Mediterranean coast, in which, and among other things, differences in the arrowhead repertoire have led to the assumption that at least two different social groups with quite different traditions (Pre-Roucadourien und Castelnovien) were living side by side from at least the Late Mesolithic period.

Scenario

Despite the lack of data, continuity from the Late Mesolithic to the Early Neolithic can be assumed for inland regions on the grounds of the presented arrowhead forms. In those regions with Castelnovien and Impressa /Cardial, discontinuity is also observed. Furthermore, it is possible that the hinterland of the coastal regions was subject to more pronounced processes of cultural change owing to both immigrants and/or the diffusion of cultural innovations. At this point, it should be stressed that the coasts of the early climate optimum now lie submerged following a subsequent rise in sea levels and remains archaeological *terra incognita*. It is very likely that groups living in what is now Southern France, which were characterised by diverse traditions and different forms of economy and who used the landscape in contrasting ways, were not only contemporaneous but were part of an intensive and extensive communication network.

Therefore, the neolithisation of Southern France cannot be explained by simple, linear models. A point which is highlighted by the evidence for cereal cultivation from pollen profiles from the lagoons of the Mediterranean coast dating to c. 6300 cal BC, i.e. at a time when neither Impressa nor Cardial were present. The results from – more or less – well dated pollen profiles have been available for a while now from the lagoons of the Mediterranean coast in the department of Hérault (Étang de Berre, Étang du Méjean, Étang

de Capestang). On the basis of these results, the use of cereals and the onset of landscape change can be expected from as early as c. 6300 cal BC, i.e. as early as the Late Mesolithic Catelnovien (Puertas 1998; 1999; 2004). Further such finds are also known from various parts of France, from Brittany to the French Jura Mountains (see papers in Richard 2003; Frank in prep.), and correlate well with those from the Swiss plateau and Tyrol in Austria. As it is now thought that wild types of cereals were never indigenous to France, the findings from sites in the southern part of the country could be interpreted as evidence for »pre-Neolithic seafaring« on the Mediterranean. The expansion of the agricultural economy from eastern parts of the Mediterranean via Northern Italy and the Alps also correlates well with the spread of technological innovations mentioned earlier in this paper, i.e. quadrangular microliths and parallel edged blades. The cereals could have originated in Southern Italy (wild types are in discussion, see Costantini / Nencioni 2001) but more probably came from Greece, where at this time the »fully developed Neolithic« was already at least 700 years old (see Gehlen / Schön 2003).

In the early excavations of the Castelnovien deposits at the site of Châteauneuf-les-Martigues, Ducos (1958) identified the remains of sheep. As I understand Ducos, these bones were encountered in all of the Castelnovien levels but in the publication he fails to describe their assemblages in any closer detail. The age pattern of the Mesolithic sheep is homogeneous, i.e. there are just as many young animals as there are fully grown individuals which is more indicative of unsystematic hunting than herding. In the following Cardial and younger levels, the remains of animals belonged to individuals in the best slaughtering age. This situation was interpreted by Ducos at the time as reflecting the unsystematic approach of the Late Mesolithic inhabitants to animal farming. Consequently, these early finds of sheep led to much debate of the possibility of the indigenous domestication of a wild sheep in Southern France (see Rozoy 1978, 1073pp.; more recently and from a critical standpoint Zilhão 1993, 47pp.; 2000, 169). Later, Ducos distanced himself from his earlier proposition and explained this in his reference to the unclear stratigraphic situation at Châteauneuf (Ducos 1991, 19). It has been assumed for a while now that wild types of sheep never existed in Western Europe (Vigne / Helmer 1994). If this is the case and the bones from Châteauneuf stem from the Castelnovien deposits and were identified correctly (i.e. are not from ibex or chamois), then they are important evidence of early contacts between the regions of the eastern and western parts of the Mediterranean. In my opinion, this is perfectly acceptable given that seafaring was common practice since the Mesolithic. Unfortunately, the faunal assemblages from the early excavations are no longer in stratigraphical order meaning that AMS-dates can no longer be made on the potential Mesolithic sheep (Binder 2000, 130). Furthermore, indisputable sheep bones have never been discovered in a Castelnovien context since, even though – undated – Mesolithic, domesticated small ungulates have been discussed for the Grotte Gazel and the Abri Dourgne. The absolute dates for sheep and goats in the Mesolithic remain problematic, as the bones could just as easily stem from ibex or chamois or even be intrusive (Geddes 1993; Binder 2000, 130p.). In 1987 Uerpmann proposed that the goats and sheep of the Cardial could not have descended from those in the Near East. This would then mean that these animals could not have been imported directly from the eastern Mediterranean region but it would imply that domestication of animals had a much longer history outside of this region. Incidentally, it is quite astounding that an unequivocal identification of sheep/goat in a Cardial context was successful at all and that there were no recorded difficulties due to the potential confusion with bone from steinbock and chamois, even though the site is located in a mountain region and remains of quarry were present (Helmer 1991). Apart from the site of Châteauneuf no further sites with Castelnovien complexes from the Mediterranean region of France have so far been published. Due to the poor and confusing state of affairs, it is perhaps wise to put on ice any discussion focusing on »Mesolithic« sheep and goats or »Mesolithic« animal domestication prior to 5900 cal BC (finds from the Roucardourien) in Southern France, until new and better dated finds are made.

Equally as controversial are finds of legumes in Late Mesolithic deposits in the abris of Dourgne, Abeurador, Sapètre, and Les Usclades from Early Mesolithic contexts (van Willigen 2006, 93p.). A natural origin from the western Mediterranean for some of the taxa is still unclear. Even if these legumes cannot be referred to confidently as cultivated, they are nevertheless an indication for an enhanced gathering activity, which illustrates well the prevailing knowledge of various plants and their importance in diet at the time.

Future research

The absolute chronologies of the Late Mesolithic and Early Neolithic periods in Southern France prove particularly problematic. Although old radiocarbon dates from early excavations are no longer accepted, there are no new investigations (see Manen / Sabatier 2003). The great complexity of both social relationships and regional connections as well as of geographical factors means that a regionally adopted mode of investigation must be integral to any future research. The attempt should also be made to better investigate both Mesolithic and Early Neolithic open air sites, so that we may at last learn more about the living conditions of these people at these times. A further major shortcoming is our poor knowledge of the economies of the individual groups. The potentially complex cultural developments, rich in ties and contacts, and the multifaceted geographical situation featuring high and medium mountain ranges, river valleys, and shorelines make southwestern France one of the most interesting areas of research with regard to the neolithisation. After some decades of relative inactivity – and the apparent discordance among archaeologists working in the region – this should now give way to a period of renewed efforts, new methods, and the investigations of new sites.

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Annotation

1) For example Abri de Buholoup (Philibert 2002, 52 tab. 12).

References

Accorsi et al. 1987: C. A. Accorsi / M. Bandini Mazzanti / P. Biagi / L. Castelletti / M. Cremaschi / L. Leoni / M. Pavarani, Il sito Mesolitico sopra Fienile Rossino sull'altopiano di Cariadeghe (Serle-Brescia). Aspetti pedostratigrafici, archeologici, antracologic e palinologici. Natura Bresciana 23, 1986 (1987) 239-292.

Alciati et al. 1994: G. Alciati / L. Cattani / F. Fontana / E. Gerhardinger / A. Guerreschi / S. Milliken / P. Mozzi / P. Rowley-Conwy, Mondeval de Sora: a high altitude Mesolithic campsite in the Italian Dolomites. Preistoria Alpina 28, 1994, 351-366.

Alessio et al. 1996: M. Alessio / D. E. Angelucci / A. Broglio / S. Improta, New data for the chronology of the Mesolithic in the Dolomites. The radiocarbon dates from Plan de Frea (Selva Val Gardena, Italy). Preistoria Alpina 30, 1994 (1996) 145-154.

Ammerman / Polglase 2001: A. J. Ammerman / Ch. Polglase, Obsidian at Neolithic sites in Northern Italy. Preistoria Alpina 34, 1998 (2001) 291-296.

Arnal 1984: G.-B. Arnal, Le Néolithique ancien des regions Caussenardes. In: G. Maziere (ed.), Influences méridionales dans l'est et le centre-est de la France au néolithique: le rôle du Massif Central. Actes du Colloque Interrégional sur le Néolitique. Le Puy-en-Velay 3 et 4 octobre 1981. Centre de Recherches et d'Études Préhistoriques de l'Auvergne 1 (Clermont-Ferrand 1984) 41-43.

1987: G.-B. Arnal, Le Néolithique primitif non Cardial. In: J. Guilaine / J. Courtin / J.-L. Roudil / J.-L. Vernet (eds.), Premières communautés paysannes en Méditerranée occidentale. Actes du colloque International du CNRS, Montpellier, avril 1983 (Paris 1987) 541-544.

1995: G.-B. Arnal, Le Néolithique roucadourien. In: J.-L. Voruz (ed.), Chronologies néolithiques. De 6000 à 2000 avant notre ère dans le bassin rhodanien. Actes du colloque d'Ambérieu-en-Bugey, 19 et 20 septembre 1992 (Ambérieu-en-Bugey 1995) 67-74.

Bagolini / Biagi 1977: B. Bagolini / P. Biagi, Introduzione al neolitico dell'Emilia Romagna. Atti della 29 Riunione Scientifica dell'Istituto Italiano di Preistoria e Protostoria in Emilia Romagna, 11-14 ottobre 1975 (Firenze 1977) 79-136.

Bagolini / Pedrotti 1992: B. Bagolini / A. Pedrotti, Vorgeschichtliche Höhenfunde im Trentino-Südtirol und im Dolomitenraum vom Spätpaläolithikum bis zu den Anfängen der Metallurgie. In: F. Höpfel / W. Platzer / K. Spindler (eds.), Der Mann im Eis 1. Bericht über das Internationale Symposium 1992 in Innsbruck. Veröffentlichungen der Universität Innsbruck 187 (Innsbruck 1992[2]) 359-377.

Barbaza / Guilaine / Vaquer 1984: M. Barbaza / J. Guilaine / J. Vaquer, Fondements chrono-culturels du Mésolithique en Languedoc occidental. L'Anthropologie (Paris) 88, 1984, 345-365.

Barbaza et al. 1999: M. Barbaza / F. Briois / N. Valdeyron / J. Vaquer, L'Épipaléolithique et le Mésolithique entre Massif Central et Pyrénées. Epipalaeolithic and Mesolithic between Massif Central and Pyrennees. In: A. Thévenin / P. Bintz (eds.), L'Europe des derniers chasseurs. Épipaléolithique et Mésolithique. Peuplement et paléoenvironnement de l'Epipaléolithique et du Mésolithique. Actes du 5e colloque international UISPP, Grenoble, 18-23 septembre 1995 (Grenoble 1999) 125-143.

Barnett 1990: W. K. Barnett, Small-scale transport of Early Neolithic pottery in the west Mediterranean. Antiquity 64, 1990, 859-865.

2000: W. K. Barnett, Cardial pottery and the agricultural transition in Mediterranean Europe. In: T. D. Price (ed.), Europe's First Farmers (Cambridge 2000) 93-116.

Bazzanella et al. 2001: M. Bazzanella / M. Lanzinger / L. Moser / A. Pedrotti, The Mesolithic levels of La Vela (Trento). 1987-88 excavation campaigns. Preistoria Alpina 33, 1997 (2001) 15-16.

Bermond Montanari / Massi Pasi / Mengoli 1994: G. Bermond Montanari / M. Massi Pasi / D. Mengoli, L'insediamento neolitico di Fornace Cappuccini di Faenza (Ravenna). Preistoria Alpina 27, 1991 (1994) 173-195.

Bermond Montanari / Massi Pasi 2001: G. Bermond Montanari / M. Massi Pasi, New data on the Neolithic age in Romagna. Preistoria Alpina 34, 1998 (2001) 263-269.

Beug 1964: H.-J. Beug, Untersuchungen zur spät- und postglazialen Vegetationsgeschichte im Gardaseegebiet unter besonderer Berücksichtigung der mediterranen Arten. Flora 154, 1964, 401-444.

Biagi 1981: P. Biagi, Introduzione al Mesolitico della Lombardia. Atti del 1 Convegno Archeologico Regionale Lombardo, 1981, 55-76.

Biagi / Maggi / Nisbet 1990: P. Biagi / R. Maggi / R. Nisbet, Liguria: 11,000-7000 BP. In: C. Bonsall (ed.), The Mesolithic in Europe. Papers presented at the Third International Symposium Edinburgh 1985 (Edinburgh 1989) 533-540.

Binder 1987: D. Binder, Le Néolithique ancien provençal. Typologie et technologie des outillages lithiques. Gallia Préhistoire. Supplément 24 (Paris 1987).

2000: D. Binder, Mesolithic and Neolithic interaction in Southern France and Northern Italy: new data and current hypotheses. In: T. D. Price (ed.), Europe's First Farmers (Cambridge 2000) 117-143.

Binder et al. 1993: D. Binder / J.-E. Brochier / H. Duday / D. Helmer / Ph. Marinval / St. Thiébault / J. Wattez, L'abri Pendimoun à Castellar (Alpes-Maritimes): nouvelles données sur le complexe culturel de la céramique imprimée méditerranéenne dans son contexte stratigraphique. Gallia Préhistoire 35, 1993, 177-251.

Bisi et al. 1987: F. Bisi / A. Broglio / G. Dalmeri / M. Lanzinger / A. Sartorelli, Les bases mésolithiques du Néolithique ancien au sud des Alpes. In: J. K. Kozłowski / St. K. Kozłowski (eds), Chipped Stone Industries of the Early Farming Cultures in Europe. Archaeologia Interregionalis (Warszawa, Kraków 1987) 381-422.

Broglio 1994: A. Broglio, Mountain sites in the context of the North-East Italian upper Palaeolithic and Mesolithic. Preistoria Alpina 28, 1992 (1994) 293-310.

1996: A. Broglio, The formation of the Mesolithic complexes in the Alpine-Po valley region. In: St. K. Kozłowski / C. Tozzi (eds.), The Mesolithic. Colloquium XIII. Formation of the European Mesolithic Complexes. International Union of Prehistoric and Protohistoric Sciences 7 (Forlí 1996) 41-46.

Broglio / Kozłowski 1984: A. Broglio / St. K. Kozłowski, Tipologia ed evoluzione delle industrie mesolitiche di Romagnano III. Preistoria Alpina 19, 1983 (1984) 93-148.

Castelletti / Rottoli 2001: L. Castelletti / M. Rottoli, New data on Neolithic agriculture and environment in Northern Italy. Preistoria Alpina 33, 1997 (2001) 57-62.

Cattani / Guerreschi / Romagnoli 2002: L. Cattani / A. Guerreschi / S. Romagnoli, Les Alpes italiennes et les chasseurs paléolithiques et Mésolithiques du Tardiglaciaire au début de la période atlantique. In: H. Richard / A. Vignot (eds.), Équilibres et ruptures dans les écosystèmes depuis 20000 ans en Europe de l'Ouest. Actes du colloque international de Besançon, 18-22 septembre 2000. Collection Annales Littéraires. Série Environnement, Sociétés et Archéologie 3 (Besançon 2002) 137-142.

Clark 1958: J. G. D. Clark, Blade and trapeze industries of the European Stone Age. Proceedings of the Prehistoric Society 24, 1958, 24-42.

1980: J. G. D. Clark, Mesolithic Prelude. The Palaeolithic-Neolithic Transition in Old World Prehistory (Edinburgh 1980).

Clark 2000: R. Clark, The Mesolithic Hunters of the Trentino. A Case Study in Hunter-Gatherer Settlement and Subsistence from Northern Italy. British Archaeological Reports. International Series 832 (Oxford 2000).

Costantini / Nencioni 2001: L. Costantini / L. Nencioni, Archaeobotanical evidence and biomolecular archaeology for the beginnings of agriculture in Italy. Origini 23, 2001, 71-84.

Costantini / Maury 1986: G. Costantini / J. Maury, Le néolithique ancien de l'abri de la Combe-Grèze, commune de la Cresse (Aveyron). Bulletin de la Société Préhistorique Française 83, 1986, 436-451.

Courtin / Evin / Thommeret 1985: J. Courtin / J. Evin / Y. Thommeret, Révision de la Stratigraphie et de Chronologie absolue du site de Châteauneuf-les-Martigues (Bouches-du-Rhône). L'Anthropologie 89, 1985, 543-556.

Dalmeri / Ferrari / Peresani 2004: G. Dalmeri / S. Ferrari / M. Peresani, Rise and fall in the utilization of trapezoidal microliths during the late Upper Palaeolithic in Europe. An overview from the

Italian record. In: Th. Terberger / B. V. Eriksen (eds.), Hunters in a Changing World. Environment and Archaeology of the Pleistocene-Holocene Transition (ca. 11000 – 9000 B.C.) in Northern Central Europe. Workshop of the U.I.S.P.P.-Commission XXXII at Greifswald in September 2002 (Rahden / Westf. 2004) 243-251.

Ducos 1958: P. Ducos, Le gisement de Châteauneuf-lez-Martigues (Bouches-du-Rhône). Les mammifères et les problèmes de domestication. Bulletin du Musée d'Anthropologie Préhistorique de Monaco 5, 1958, 119-133.

1991: P. Ducos, Problèmes propres à l'étude de la domestication dans le Mésolithique et le Néolithique ancien des pays de la Méditerranée occidentale. In: Actes du 113e Congrès National de Société Savantes. 1988 Strasbourg. Commission de Pré- et Protohistoire Mésolithique et néolithisation en France et dans les régions limitrophes (Strasbourg 1991) 17-28.

Escalon de Fonton 1973: M. Escalon de Fonton, Montclus series, Gard – Châteauneuf-les-Martigues series (B.-du.R.) – Comments. In: J. Evin / G. Marien / Ch. Pachiaudi, Lyon natural radiocarbon measurements IV. Radiocarbon 15, 1973, 526-527.

1978: M. Escalon de Fonton, Les civilisations de l'Épipaléolithique et du Mésolithique en Provence littorale. In: La Préhistoire Française 1-2 (Paris 1978) 1367-1378.

Ferrari / Pessina / Visentini 2001: A. Ferrari / A. Pessina / P. Visentini, The Neolithic age in the Friuli area: new results on recent researches. Preistoria Alpina 34, 1998 (2001) 233-244.

Fontana / Guerreschi 2003: F. Fontana / A. Guerreschi, Highland occupation in the southern Alps during the Early Holocene. In: L. Larsson / H. Kindgren / K. Knutsson / D. Loeffler / A. Åkerlund (eds.), Mesolithic on the Move. Papers presented at the Sixth International Conference on the Mesolithic in Europe, Stockholm 2000 (Oxford 2003) 96-102.

Fontana / Vullo 2000: F. Fontana / N. Vullo, Organisation et fonction d'un camp de basse saisonnier au coeur des Dolomites: Le gisement mésolithique de Mondeval de Sora (Belluno, Italie). In: A. Thévenin / Ch. Cupillard / A. Richard / H. Richard / (eds.), Les derniers chasseurs-cueilleurs d'Europe occidentale (13000-5500 av. J.-C.). Actes du Colloque international de Besançon (Doubs, France), 23-25 octobre 1998 (Besançon 2000) 197-208.

Frank in prep.: K. Frank, Bäuerliche Wildbeuter oder wildbeutende Bauern? Human impact und Getreidenutzung im späten Mesolithikum: Nachweise aus Frankreich und der Schweiz. In: B. Gehlen / W. Schön (eds.), Ernährung im Mesolithikum und Neolithikum Europas. Archäologisches Lesebuch 1 (Kerpen-Loogh in prep.).

Geddes 1993: D. Geddes, La faune de l'abri de Dourgne: paléontologie et paléoéconomie. In: J. Guilaine / M. Barbaza / J. Gascó / D. Geddes / J. Coularou / J. Vaquer / J.-E. Brochier / F. Briois / J. André / G. Jalut / J.-L. Vernet (eds.), Dourgne: derniers chasseurs-collecteurs et premiers éleveurs de la Haut-Vallée de l'Aude (Toulouse, Carcassonne 1993) 365-397.

Gehlen 1993: B. Gehlen, Die Grabung in der Burghöhle Dietfurt, Gemeinde Inzigkofen-Vilsingen, Kreis Sigmaringen. Archäologische Ausgrabungen in Baden-Württemberg 1992 (1993) 50-56.

2001: B. Gehlen, Rast am Fuße der Alpen. Die allerødzeitliche Abristation bei Füssen im Ostallgäu. Mit einem Beitrag von Jutta Meurers-Balke. In: B. Gehlen / M. Heinen / A. Tillmann (eds.), Zeit-Räume. Gedenkschrift für Wolfgang Taute. Archäologische Berichte 14 (Bonn 2001) 475-552.

2006a: B. Gehlen, Bäuerliche Wildbeuter – wildbeutende Bauern? Kulturelle und wirtschaftliche Komplexität im südwestlichen Mitteleuropa zwischen 7000 und 5300 calBC. Jahrbuch des Heimat- und Altertumsvereins Heidenheim an der Brenz e.V. 2005/2006 (2006) 30-56.

2006b: B. Gehlen, Late Mesolithic – Proto-Neolithic – Initial Neolithic? Cultural and economic complexity in southwestern Central Europe between 7000 and 5300 calBC. In: C.-J. Kind (ed.), After the Ice Age. Settlements, Subsistence and Social Development in the Mesolithic of Central Europe. Materialhefte zur Archäologie in Baden-Württemberg 78 (Stuttgart 2006) 41-57.

2010: B. Gehlen, Innovationen und Netzwerke. Das Spätmesolithikum vom Forggensee (Südbayern) im Kontext der ausgehenden Mittelsteinzeit und des Altneolithikums in der Südhälfte Europas. Edition Mesolithikum 2 (Kerpen-Loogh 2010).

Gehlen / Schön 2003: B. Gehlen / W. Schön, Das »Spätmesolithikum« und das initiale Neolithikum in Griechenland – Implikationen für die Neolithisierung der alpinen und circumalpinen Gebiete. Archäologische Informationen. Mitteilungen zur Ur- und Frühgeschichte 26, 2003, 255-273.

2005: B. Gehlen / W. Schön, Klima und Kulturwandel: Mögliche Folgen des «6200-Events» in Europa. In: D. Gronenborn (ed.), Klimaveränderung und Kulturwandel in neolithischen Gesellschaften Mitteleuropas, 6700-2200 v. Chr. RGZM – Tagungen 1 (Mainz 2005) 53-73.

Gietz 2001: F. J. Gietz, Spätes Jungpaläolithikum und Mesolithikum in der Burghöhle Dietfurt ab der oberen Donau. Materialhefte zur Archäologie in Baden-Württemberg 60 (Stuttgart 2001).

Gronenborn 1997: D. Gronenborn, Sarching 4 und der Übergang vom Früh- zum Spätmesolithikum im südlichen Mitteleuropa. Archäologisches Korrespondenzblatt 27, 1997, 387-402.

Guilaine 1987: J. Guilaine, Expressions culturelles dans le Néolithique ancien Méditerranéen. In: J. Guilaine / J. Courtin / J.-L. Roudil / J.-L. Vernet (eds.), Premières communautés paysannes en Méditerranée occidentale. Actes du Colloque International du CNRS, Montpellier, 26-29 avril 1983 (Paris 1987) 749-752.

Guilaine / Manen 1997: J. Guilaine / C. Manen, Contacts sud-nord au Néolithique ancien: témoignages de la grotte Gazel en Languedoc. In: Ch. Jeunesse (ed.), Le Néolithique danubien et ses marges entre Rhin et Seine. Actes du 22ème colloque interrégional sur le Néolithique, Strasbourg 27-29 octobre 1995. Cahiers de l'Association pour la Promotion de la Recherche Archéologique en Alsace. Supplément 3 (Zimmersheim 1997) 301-311.

Helmer 1991: D. Helmer, La faune et sa gestion. In: D. Binder, Une économie de chasse au Néolithique Ancien. La grotte Lombard à Saint-Vallier-de-Thiey (Alpes-Maritimes). Monographie du Centre de Recherches Archéologiques 5 (Paris 1991) 115-139.

Kompatscher / Kompatscher 1998: K. Kompatscher / N. Kompatscher, Fundchronik 1997. Ältere und Mittlere Steinzeit. Tirol. Fundberichte aus Österreich 36, 1997 (1998) 729.

2005: K. Kompatscher / N. Kompatscher, Steinzeitliche Feuersteingewinnung. Prähistorische Nutzung der Radiolarit- und Hornsteinvorkommen des Rofangebirges. Der Schlern 79, 2, 2005, 24-35.

Kozłowski 1987: S. K. Kozłowski, The pre-Neolithic base of the Early Neolithic stone industries in Europe. In: J. K. Kozłowski / St. K. Kozłowski (eds), Chipped Stone Industries of the Early Farming Cultures in Europe. Archaeologia Interregionalis 9 (Warszawa, Kraków 1987) 9-19.

Maggi 1997: R. Maggi (ed.), Arene Candide: a functional and environmental assessment of the Holocene sequence. Memorie dell'Istituto Italiano di Paleontologia Umana. Nuova Serie 5 (Roma 1997).

Maggi / Negrino 1992: R. Maggi / F. Negrino, Upland settlement and technological aspects of the eastern ligurian Mesolithic. Preistoria Alpina 28, 1992 (1994) 373-396.

Malone 2003: C. Malone, The Italian Neolithic: a synthesis of research. Journal of World Prehistory 17, 2003, 235-312.

Manen 2002: C. Manen, Structure et identité des styles céramiques du Néolithique ancien entre Rhône et Èbre. Gallia Préhistoire 44, 2002, 121-165.

Manen / Sabatier 2003: C. Manen / Ph. Sabatier, Chronique radiocarbone de la néolithisation en Méditerranée nord-occidentale. Bulletin de la Société Préhistorique Française 100, 2003, 479-504.

Mauvilly et al. 2004: M. Mauvilly / L. Braillard / L. Dafflon / J.-L. Boisaubert, avec une contribution de F.-X. Chauvière / L. Chaix, Arconciel / La Souche, nouveaux éléments pour la connaissance du Mésolithique récent et final. Cahiers d'Archéologie Fribourgeoise / Freiburger Hefte für Archäologie 6, 2004, 82-101.

Mazière / Raynal 1984: G. Mazière / J.-P. Raynal, Mésolithisation et néolithisation dans l'ouest du Massif Central. In: Influences méridionales dans l'est et le centre-est de la France au néolithique: le rôle du Massif Central. Actes du 8e Colloque Interrégional sur le Néolitique Le Puy-en-Velay, 3 et 4 octobre 1981. Cahier Centre de Recherches et d'Étude Préhistorique de l'Auvergne 1 (Clermont-Ferrand 1984) 95-107.

Niederlender / Lacam / Arnal 1966: A. Niederlender / R. Lacam / J. Arnal, Le gisement néolithique de Roucadour (Thémines-Lot). Gallia Préhistoire Supplément 3 (Paris 1966).

Paccard 1991: M. Paccard, Du Mésolithique récent au Néolithique ancien dans la vallée de la Nesque: rupture ou continuité? In: Actes du 113e Congrès National de Société Savantes. 1988 Strasbourg. Commission de Pré- et Protohistoire Mésolithique et néolithisation en France et dans les régions limitrophes (Strasbourg 1991) 53-75.

Pedrotti 2001: A. Pedrotti, The Neolithic Age in Trentino Alto Adige. Preistoria Alpina 34, 1998 (2001) 19-25.

Perlès 1990: C. Perlès, Les Industries lithiques taillées de Franchthi (Argolide, Grèce). II: Les Industries du Mésolithique et du Néolithique Initial. Excavations at Franchthi Cave, Greece 5 (Bloomington, Indianapolis 1990).

2001: C. Perlès, The Early Neolithic in Greece. The First Farming Communities in Europe (Cambridge 2001).

Perrin 2005: Th. Perrin, Nouvelles réflexions sur la transition Mésolithique récent – Néolithique ancien à l'abri Gaban (Trento, Italie). Preistoria Alpina 41, 2005 (2006) 89-146.

Pessina 2000: A. Pessina, Il primo neolitico dell'Italia settentrionale. Problemi generali. In: A. Pessina / Muscio (eds.), La neolitizzazione tra oriente e occidente. Atti del Convegno di Studi, Udine, 23-24 aprile 1999 (Udine 2000) 81-90.

Philibert 2002: S. Philibert, Les derniers «sauvages». Territoires économiques et systèmes technofonctionnels mésolithiques. British Archaeological Reports. International Series 1069 (Oxford 2002).

Puertas 1998: O. Puertas, Palynologie dans le delta du Lez. Contribution à l'histoire du paysage de Lattes. Lattara 11 (Lattes 1998).

1999: O. Puertas, Premiers indices polliniques de néolithisation dans la plaine littorale de Montpellier (Hérault, France). Bulletin de la Société Préhistorique Française 96, 1999, 15-20.

2004: O. Puertas, Premières traces d'influence de l'homme sur le couvert végétal à la fin du VIIe millénaire avant notre ère dans la plaine littorale de Montpellier (Hérault, France). In: H. Richard (ed.), Néolithisation précoce. Premières traces d'anthropisation du couvert végétal à partir des données polliniques. Annales Littéraires de l'Universite de Franche-Comté 777. Série Environnement, Sociétés et Archéologie 7 (Besançon 2004) 173-178.

Richard 2003: H. Richard (ed.), Néolithisation précoce. Premières traces d'anthropisation du couvert vegetal à partir des données polliniques. Annales Littéraires 777. Série environnement, sociétés et archéologie 7 (Besançon 2004).

Rodriguez 1982: G. Rodriguez, Le Néolithique ancien de la grotte de Camprafaud (Ferrieres-Poussarou, Hérault). In: J. Bousquet (ed.), Le Néolithique ancien méditerranéen. Actes du colloque international de préhistoire, Montpellier 1981. Revue de la Fédération Archéologique de l'Hérault Sète. Archéologie en Languedoc (Montpellier 1982) 61-80.

Roussot-Larroque 1977: J. Roussot-Larroque, Néolithisation et Néolithique ancien d'Aquitaine. Bulletin de la Société Préhistorique Française 74, 1977, 559-582.

1987: J. Roussot-Larroque, Le cycle Roucadourien et la mise en place des industries lithiques du Néolithique ancien dans le sud de la France In: J. K. Kozłowski / St. K. Kozłowski (eds), Chipped Stone Industries of the Early Farming Cultures in Europe. Archaeologia Interregionalis 9 (Warszawa, Kraków 1987) 449-519.

1990: J. Roussot-Larroque, Le mystère du Lot (suite). Roucadour et le Roucadourien. In: J. Guilaine / X. Gutherz (eds.), Autor de Jean Arnal. Recherches sur les Premièrs Communautés Paysannes en Méditerranée Occidentale (Montpellier 1990) 55-100.

1998: J. Roussot-Larroque, Le Sud-Ouest de la France. In: J. Guilaine (ed.), Atlas du Néolithique Européen Vol. 2 B. L'Europe occidentale. Études et Recherches Archéologiques de l'Université de Liège 46 (Liège 1998) 689-761.

Rozoy 1978: J.-G. Rozoy, Les derniers chasseurs. L'épipaléolithique en France et en Belgique. Essai de synthèse. Bulletin de la Société Archéologique Champenoise Spécial Juin 1978 (Charleville 1978).

Seiwald 1980: A. Seiwald, Beiträge zur Vegetationsgeschichte Tirols IV: Natzer Plateau – Villanderer Alm. Bericht der naturwissenschaftlich-medizinischen Vereinigung Innsbruck 67, 1980, 31-72.

Tiné 1999: S. Tiné (ed.), Il Neolitico nella caverna delle Arene Candide (scavi 1972-1977). Collezione di Monografie Preistoriche ed Archeologiche 10 (Bordighera 1999).

Tinner / Nielsen / Lotter 2007: W. Tinner / E. H. Nielsen / A. F. Lotter, Mesolithic agriculture in Switzerland? A critical review of the evidence. Quaternary Science Reviews 26, 2007, 1416-1431.

Uerpmann 1987: H.-P. Uerpmann, The origin and relations of Neolithic sheep and goats in the western Mediterranean. In: J. Guilaine / J. Courtin / J.-L. Roudil / J.-L. Vernet (eds.), Premières communautés paysannes en Méditerranée occidentale. Actes du Colloque International du CNRS, Montpellier, 26-29 avril 1983 (Paris 1987) 176-179.

Vaquer 1998: J. Vaquer, Le Midi méditerranéen de la France. In: J. Guilaine (ed.), Atlas du Néolithique Européen Vol. 2 A. L'Europe occidentale. Études et Recherches Archéologiques de l'Université de Liège 46 (Liège 1998) 413-498.

Vigne / Helmer 1994: J.-D. Vigne / D. Helmer, Nouvelles analyses sur les débuts de l'élevage dans le Centre et l'Ouest méditerranéens. In: J. Vaquer (ed.), Le Néolithique du nord-ouest Méditerranéen. 24e Congrès Préhistorique de France. Carcassonne 26-30 septembre 1994 (Paris 1994) 129-146.

Weninger et al. 2005: B. Weninger / E. Alram-Stern / E. Bauer / L. Clare / U. Danzeglocke / O. Jöris / C. Kubatzki / G. Rollefson / H. Todorova, Die Neolithisierung von Südosteuropa als Folge des abrupten Klimawandels um 8200 cal BP. In: D. Gronenborn (ed.), Klimaveränderung und Kulturwandel in neolithischen Gesellschaften Mitteleuropas, 6700-2200 v. Chr. Climate Variability and Culture Change in Neolithic Societies of Central Europe, 6700-2200 ca. BC. RGZM – Tagungen 1 (Mainz 2005) 75-117.

van Willigen 2006: S. van Willigen, Die Neolithisierung im nordwestlichen Mittelmeerraum. Iberia Archaeologica 7 (Mainz 2006).

Zilhão 1993: J. Zilhão, The spread of agro-pastoral economies across Mediterranean Europe: a view from the far west. Journal of Mediterranean Archaeology 6, 1993, 5-63.

2000: J. Zilhão, From the Mesolithic to the Neolithic in the Iberian Peninsula. In: T. D. Price (ed.), Europe's First Farmers (Cambridge 2000) 144-182.

Appendix

Northern Italy – list of sites (see fig. 3)

Late Mesolithic (black dots)

1.2 Forggensee 2 and 6 (Southwest Bavaria, Germany)
3 Arconciel / La Souche (Kanton Fribourg, Switzerland)
4 Pian dei Cavalli
5 Cornizzolo
6 Cemiglio
7 Plan de Frea
8 Seiser Alm
9 Mondeval de Sora
10 Crestoso
11 Provaglio
12 Manerba
13 Fienile
14 Pagnano
15 Covoloni
16 Meolo
17 Muzzana
18 Biarzo
19 Breg (Istria, Croatia)
20 Pod Crmukljo (Istria, Croatia)
21 Dedkov Trebes (Istria, Croatia)
22 Baglioletto Alto
23 Bosco
24 Pian del Re
25 Passo della Comunella
26 Lama Lite
27 Isola Santa
28 Camalura
29 Góttero
30 Cucco
31 Molinatico
32 Kopaćina Spilja (Brac, Croatia)

Mesolithic-Neolithic sequences (grey dots)

1 Tec Nev (Switzerland)
2 Romagnano Loc III
3 Riparo Gaban
4 Pradestel
5 Vatte di Zambana
6 Doss de la Forca
7 Grotta Benussi
8 Grotta Azzurra
9 Grotta Tartaruga
10 Grotta Edera
11 Grotta Ciclami
12 Pupićina (Istria, Croatia)
13 Cabriolini
14 Odmut (Montenegro)
15 Crvena Stijena (Croatia)
16 Konispol (Albania)
17 Sidari (Corfu, Greece)
18 Mura
19 Grotta di Latronico 3
20 Grotta della Madonna
21 Prazziche

Early Neolithic (white dots)

1 Sion Planta (Switzerland)
2 Castel Grande (Switzerland)
3 Isolino
4 Pizzo di Bodio
5 Brignanao
6 Ostiano
7 Vhò
8 Fiorano Modenese
9 Ragogna
10 Fagnigola
11 Sammardenchia

12 Piancada
13 Arene Candide
14 Suvero
15 Lugo di Romagna
16 Fornace
17 Moterado
18 Miramare
19 Maddalena
20 Tinj-Podlivade (Croatia)
21 Pokrovnik (Croatia)
22 Gospodska (Montenegro)
23 Ùkarin (Montenegro)
24 Obre I (Montenegro)
25 Coppa Nevigata
26 Rendina
27 Passo di Corvo
28 Monte Aquilone
29 Torre Sabea

Southern France – list of sites (see fig. 5)

Late Mesolithic (black)

Late Mesolithic above Early Mesolithic
1 Abri de Buholoup

only Castelnovian
2 Les Moulins

Late Mesolithic with ceramics
3 Poeymaü

Late Mesolithic or Early Neolithic
4 Chez Jugie
5 Longtraye
6 Vernon

Early Neolithic above Mesolithic (grey)

Early Neolithic with Cardial-imports above Mesolithic
1 Grotte Gazel
2 Balma Margineda (Andorra)

Early Neolithic above/and Early Mesolithic
1 Coufin
2 Balme Rousse
3 Ambel

Impressa/Cardial above Mesolithic
1 Abri Pendimoun à Castellar

Cardial above Castelnovian or similar
1 Baume de Montclus
2 Châteauneuf lès Martigues
3 Cova del Esperit

younger Early Neolithic above/and Late Mesolithic
1 Pas de L´Echelle
2 Charmate
3 Balme-de-Thuy
4 l`Aulp du Seuil
5 Grande Rivoire
6 Jaboul
7 Aiguille
8 Grotte d'Unang

Early Neolithic (white)

Cardial and/or Impressa
1 Lalo
2 Oulins
3 Le Baratin
4 Fontbrégoua
5 Grotte Lombard
6 Peiro Signado, Portraignes
7 Pont de Roque-Haute
8 Aussières
9 Leucate-Corrège

Pre-Roucardourien and Roucardourien
1 Rouffinac
2 Grotte de Martinet
3 La Borie
4 Abri Jean Cros
5 Abri du Roc de Dourgne

only Roucardourien
6 Cieux, abri des Fées
7 Cuzoul
8 Roucadour
9 Combe Grèze
10 Grotte de la Poujade
11 Grotte de Camprafaud

untypical ceramics and Bétey-segments
1 Bétey
2 Mouligna

Zusammenfassung / Abstract / Résumé

Neolithische Übergangsprozesse in Südeuropa: Der gegenwärtige Forschungsstand und seine Lücken im nördlichen Italien und südwestlichen Frankreich

Die Dissertation der Autorin über den so genannten Trapezhorizont des späten Mesolithikums in der Südhälfte Europas zeigt anhand von ^{14}C-Daten einerseits ein differenzierteres chronologisches Bild dieser Zeit und andererseits große Forschungslücken in vielen Regionen Europas auf. Dies geht im Wesentlichen auf eine geringe oder nur einseitig auf das Frühneolithikum ausgerichtete Forschungstätigkeit zurück und entspricht keinesfalls den historischen Gegebenheiten. Im vorliegenden Beitrag wird diese Forschungssituation anhand zweier Beispielregionen – Norditalien und Südfrankreich – ausführlich illustriert.

Aus Norditalien liegen dank der langen Forschungsgeschichte zahlreiche Publikationen zur mesolithischen Besiedlung der alpinen Gebiete vor. Auch wenn selbst die wichtigsten Fundstellen bis heute nicht in extenso veröffentlicht sind, so können wir uns ein grobes Bild von der dortigen mesolithischen Kulturentwicklung machen. Weniger gut ist der Forschungsstand zur Mittelsteinzeit des nördlichen Apennin und kaum etwas ist aus der Poebene und dem Voralpenland bekannt. Erst seit etwa zwei Jahrzehnten wird die Erforschung des frühen Neolithikums in Norditalien intensiver betrieben. Die Arbeitsgebiete dazu liegen hauptsächlich in der Poebene, im Voralpenland und nahe der adriatischen Küste. Diese Dichotomie der Arbeitsgebiete und der dort jeweils schwerpunktmäßig erforschten Kulturphasen macht es bis heute schwierig, die Ergebnisse schlüssig zusammenzubringen.

Südwestfrankreich verbindet Norditalien mit anderen Gebieten des westlichen Mittelmeeraumes, aber auch mit denen an der Atlantikküste. Der Forschungsstand zum späten Mesolithikum und frühen Neolithikum in dieser Schlüsselregion ist entgegen aller Hoffnung sehr heterogen, die absoluten Daten lange nicht so zahlreich, wie dies notwendig wäre. Das Gebiet der Mittelmeerküste und dem dazugehörigen Hinterland zeigt deutlich andere kulturelle Entwicklungen als das zwischen Pyrenäen und Massif Central, wieder andere sind aus dessen westlichen Vorland und der Dordogne bekannt. Es gibt zwar über die Bewehrungsformen einige Hinweise auf Kontakte zwischen diesen Traditionsgruppen, aber da die Regionen im Prinzip auch im folgenden Frühneolithikum von unterschiedlichen Gemeinschaften bewohnt worden sind, kann man davon ausgehen, dass hier schon während des späten Mesolithikums verschiedene soziale Gruppen gelebt haben, die anscheinend nur oberflächlich miteinander in Kontakt gestanden haben.

Die beiden Beispiele zeigen, dass die Neolithisierung in regional ganz unterschiedlichen historischen Prozessen ablaufen kann. Diesem Fakt muss in der modernen Forschung Rechnung getragen werden.

Neolithic transition processes in Southern Europe: The present state of knowledge and its deficiencies in Northern Italy and Southwestern France

The dissertation of the author concerning the so-called Trapeze-Horizon of the Late Mesolithic in the southern part of Europe shows a differentiated chronology of this period based on ^{14}C-dates. At the same time large deficiencies in archaeological research have become obvious. This is due to the fact that archaeologists in many regions were only interested in investigating the Early Neolithic for a long time. The following paper illustrates this situation with examples from two regions important for the understanding of Neolithisation processes.

From Northern Italy we know relatively much about the Late Mesolithic, because of the long-lasting archaeological research in the alpine Etsch Valley and its neighbouring areas. This is not the case for the Po-Valley, the prealpine hills, and the Appenin Mountains, were only little is known from this period. Only during the last two decades investigations into the early Neolithic were intensified. The main research areas lie in the Po-Valley, in the prealpine hills, and the western part of the Adriatic. This dichotomy in intensity of research for the Late Mesolithic on the one hand, and the Early Neolithic on the other, makes it difficult to combine the results of any archaeological investigations.

Southwestern France connects Northern Italy with the west Meditarrenean and the Atlantic coast. The state of archaeological knowledge for the Late Mesolithic and the Early Neolithic is problematic. In this region several groups with different cultural traditions seem to have lived between the Pyrenees and the Massif Central and between the Atlantic coast, the Alps, and the Mediterranean during the period of neolithisation. The arrowheads reveal only loose contacts between these regional groups and unfortunately there are not enough ^{14}C-dates to establish a reliable absolute chronology.

Both examples show that Neolithisation is to be investigated on a regional scale and has to rely on a regional absolute chronology. This should be taken into account in modern archaeological research.

Les processus de transition néolithique dans le sud de l'Europe : l'état actuel des recherches et ses lacunes en Italie du Nord et dans le sud-ouest de la France

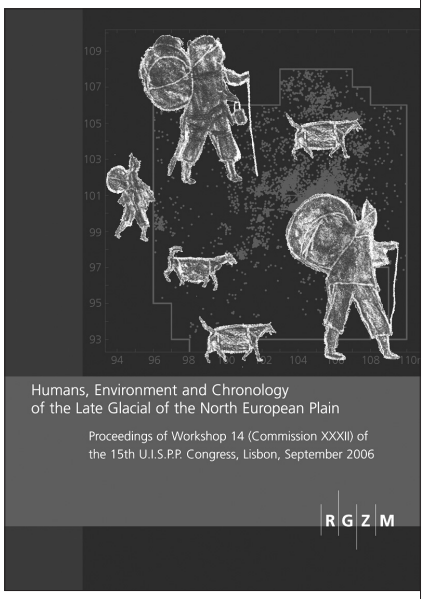
Le travail de thèse de l'auteur concernant le dit «horizon à trapèzes» du Mésolithique récent dans la moitié sud de l'Europe présente une chronologie fine de cette période fondée sur des datations radiocarbones. Parallèlement, d'importantes lacunes ont pu être constatées quant à la recherche archéologique. Ceci est dû au fait que, dans la plupart des régions, les archéologues se sont intéressés pendant longtemps davantage à l'exploration des sites du Néolithique ancien. La présente contribution illustre cette situation avec des exemples provenant de deux régions clés pour la compréhension des processus de néolithisation. Nos connaissances relatives au Mésolithique récent en Italie du Nord sont assez riches grâce à une longue tradition de recherche archéologique, notamment dans la vallée de l'Adige et les régions avoisinantes. Ceci n'est pas le cas dans la vallée du Pô, dans les collines des Préalpes et dans la chaîne de l'Apennin où seulement peu de vestiges sont connus pour cette période. Ce n'est qu'au cours de ces vingt dernières années que les recherches concernant le Néolithique ancien y ont été intensifiées. Les zones d'investigation principales se situent dans la vallée du Pô, dans les collines des Préalpes et dans la partie occidentale de l'Adriatique. Cette dichotomie dans l'intensité de la recherche concernant le Mésolithique d'une part et le Néolithique de l'autre, rend la comparaison des résultats issus des interventions sur le terrain difficile.

Le sud-ouest de la France relie l'Italie du Nord à la Méditerranée occidentale et à la côte atlantique. L'état des connaissances archéologiques concernant le Mésolithique récent et le Néolithique ancien se révèle être problématique. Dans cette région, plusieurs groupes, caractérisés par des traditions culturelles différentes, semblent avoir évolué entre les Pyrénées et le Massif Central ainsi qu'entre la côte atlantique, les Alpes et la Méditerranée pendant la période de néolithisation. Les pointes de flèches laissent entrevoir l'existence de contacts épars entre ces groupes régionaux, le nombre de datations radiocarbones étant malheureusement insuffisant pour établir une chronologie absolue fiable.

Les deux exemples montrent que l'étude de la néolithisation doit être placée à une échelle régionale et qu'elle doit être fondée sur une chronologie régionale absolue. Ceci doit être pris en compte lors de futures recherches.

(traduit de l'anglais par Karoline Mazurié de Keroualin)

NEUERSCHEINUNGEN



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Humans, Environment and Chronology of the Late Glacial of the North European Plain

Proceedings of Workshop 14 (Commission XXXII) of the 15th U.I.S.P.P. Congress, Lisbon, September 2006

The volume »Humans, Environment and Chronology of the Late Glacial of the North European Plain« assembles papers presented during a workshop for the 15th Congress of the »Union International des Sciences Préhistoriques et Protohistoriques« held in Lisbon in September 2006. The workshop was organised under the remit of U.I.S.P.P. Commission XXXII which focuses on the »The Final Palaeolithic of the Great European Plain«, and the present volume continues the series of conference proceedings that have been published at regular intervals during the past decade. This most recent contribution underlines the geographical spread and chronological depth of research into this topic, with papers ranging from those on the British Isles to the eastern Baltic and from the Paris Basin to southern Scandinavia, and covering a period of time extending from the late Magdalenian to the early Mesolithic.

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Thomas Zimmermann

Die ältesten kupferzeitlichen Bestattungen mit Dolchbeigabe

Archäologische Untersuchungen in ausgewählten Modellregionen Alteuropas

In vorgeschichtlicher Zeit nimmt der Dolch eine hervorgehobene Stellung innerhalb der Nahkampfwaffen ein, deren älteste datierbare Vorformen in Vorderasien bis in das 9. Jahrtausend v. Chr. zurückreichen. Ab der zweiten Hälfte des 3. Jahrtausends v. Chr. spielt der Dolch schließlich im Rahmen der endneolithisch/kupferzeitlichen »Glockenbecherepoche« (Mitte 3. Jahrtausend v. Chr.) im Vorfeld der »klassischen« Frühbronzezeit (spätes 3. und frühes 2. Jahrtausend v. Chr.) eine zentrale Rolle beim Grabritus.
Diese Studie erfasst und analysiert geschlossene Einzelgrabbefunde Mitteleuropas mit Silex- oder Metalldolchbeigabe des 3. Jahrtausends v. Chr. Um sich dem Problemkomplex umfänglich zu nähern, werden auch die frühesten Belege zweischneidiger Stichwaffen Ost- und Südosteuropas, Westkleinasiens sowie dem prädynastischen Ägypten in ihrem grabrituellen Umfeld mit berücksichtigt. Neben der Diskussion chronologischer Aspekte dieser Bewaffnungssitte steht die Frage nach der Genese und Verbreitung formaler und technologischer Traditionen der Dolche im Zentrum. Dies führt zu sozialgeschichtlichen Überlegungen, inwiefern der Dolch generell als statusbildendes Zubehör verstanden werden darf.

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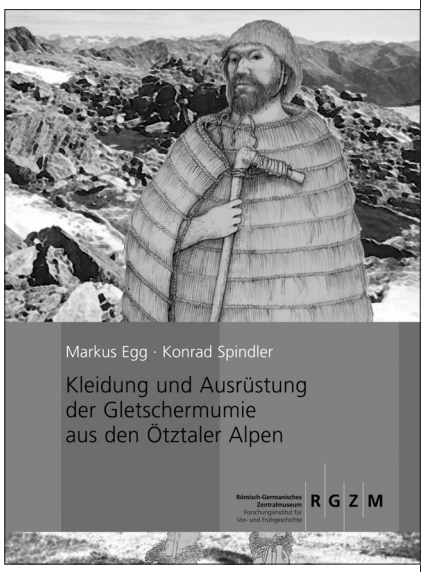

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Markus Egg · Konrad Spindler †

Kleidung und Ausrüstung der Gletschermumie aus den Ötztaler Alpen

Mit der Entdeckung des Mannes im Eis 1991 wurde die Geschichte der Archäologie um eine bemerkenswerte Episode reicher. Selten gelang es, eine derart große Forschergemeinschaft weltweit zu bündeln, um den Fundkomplex zu ergründen. Noch 18 Jahre später beschäftigen sich Medizin, Natur- und Geisteswissenschaft mit dem Schicksal eines Mannes, der vor 5300 Jahren in den Ötztaler Alpen einen gewaltsamen Tod erlitten hat. Auch das archäologische Programm lässt noch viele Wünsche offen. So gesehen ist die Edition des vorliegenden Bands von Markus Egg und Konrad Spindler, der die umfassende Vorlage der Ausrüstung und Kleidung beinhaltet, eine ungemein wichtige und vertiefende Ergänzung zu den bisher getroffenen archäologischen Aussagen.

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Markus Egg · Dieter Quast

Aufstieg und Untergang – Zwischenbilanz des Forschungsschwerpunktes Eliten

Seit einigen Jahren besteht am RGZM der Forschungsschwerpunkt »Eliten«. Hier wird besonders das Phänomen der Prunkgräber untersucht. In einer Zwischenbilanz werden nun vor allem die Bereiche der Metallzeiten und des frühen Mittelalters vorgelegt. Die Studien erlauben, Entwicklungen aufzuzeigen und somit die Frage nach dem »Aufstieg und Untergang« zu diskutieren. Es zeigt sich dabei ein facettenreiches Bild, doch werden auch »Konstanten« erkennbar. Sie deuten an, dass Macht schon in vor- und frühgeschichtlichen Gesellschaften auf vier wesentlichen Säulen ruhte: einer ökonomischen, sozialen, religiösen und militärischen.

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