The life and times of the house: multi-scalar perspectives on settlement from the Neolithic of the Alpine foreland

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Historical narrative: choosing and combining timescales

If the aim of history is to write true stories about the past (Arnold 2000: 13), that leaves open the question of the timescales at which such narratives are to be constructed. In past research, many European prehistorians have chosen to write on a rather long timescale. Some have been influenced by the concept of the *longue durée*, as used by Fernand Braudel and other *Annaliste* historians (Knapp 1992; Bintliff 2013); some have argued that the nature of the archaeological record for many periods does not anyway allow more than a long-term view (Bailey 2007); and many — including in research on the Neolithic period — have been content to operate within broad chronological frameworks created by ordering material evidence by typology and by visual inspection of radiocarbon dates, which often produces blocks of time spanning several centuries. It would be unfair to tar everyone with the same brush (see e.g. Schier 2010: 30), but broader chronological generalising remains the norm. Such an approach is also shared by some anthropologists, at least in an American context. Stephen Kowalewski has declared (2006: 94–95) that 'anthropology is more than the sum of all local histories; it is something more like the multiplication of histories, in which there are regularities in pattern and process and experiences shared by virtue of similar cause and effect as well as common tradition'.

Many historians would disagree. The broad trend in historical writing over past decades has been towards more detailed accounts over shorter time periods (Arnold 2000: chapters 2–3; Guldi & Armitage 2014). There is much suspicion of periodisation and over-generalisation, and a desire to make room for alternative and complementary if not contradictory narratives (e.g. Lorenz 2006; Nelson 2007). There are now well established traditions of 'microhistory' (Guldi & Armitage 2014: 11). Some of these differences have been summed up in a distinction between 'prospect history' and 'refuge history' (Brewer 2010). The latter is 'close-up and on the small scale. Its emphasis is on a singular place rather than space, the careful delineation of particularities and details, a degree of enclosure' (Brewer 2010: 89), and it promotes multiple points of view and the agency and emotions of individual protagonists. Such has been the dominance of what has been called the 'short past' (Guldi & Armitage 2014: 39), that there are now calls for giving attention again to the long-term (Guldi & Armitage 2014: chapters 3–4; cf. Shryock & Smail 2011).

Combining timescales is another option. An amalgam of 'grand narratives' and 'microhistories' has been envisaged, but without significant practical demonstration of how this is to be done (Brewer 2010: 90). The metaphor of 'tacking' between scales is quite frequently used (Guldi & Armitage 2014: 13). From an archaeological perspective, perhaps the most detailed and explicit framework for a multi-scalar approach has been set out by John Robb and Tim Pauketat (2013: fig. 1.1; cf. Robb 2014: plate 1). So far, this possibility is more talked about than practised in detail. In his famous Mediterranean study, Braudel in fact wrote much more about conjunctures and events than the *longue durée*, and in the end Robb and Pauketat (2013: 33) appear to favour 'big histories' at the scale of 'a few centuries' as revealing what is really going on, sidelining more detailed cycles and tipping points. As archaeologists, we are also generally better at thinking in terms of continuities, rather than abrupt changes, gaps and ruptures (as e.g. criticized in Knopf 2002).

In this context, and within a project focused on the interpretation of radiocarbon dates in a formal Bayesian statistical framework,[i] this paper asks what difference high-resolution chronologies, whether based on dendrochronology or the modelling of radiocarbon results, make to the kinds of narrative we write about Neolithic life, and how different timescales can be combined. Our subject is a selective study of Neolithic settlements in the Alpine foreland, from the late fifth to the earlier third millennia cal BC.[ii] A sister paper (Ebersbach et al., in prep.) will pose the same questions, focusing on cultural change.

Neolithic houses in the Alpine foreland

With around 1000 wetland sites recorded in the UNESCO world heritage database (Hafner 2010: 108), many with multiple houses and several spanning repeated phases of building, the remains of wooden structures form one of the main lines of evidence for understanding Neolithic life in the Alpine foreland. The details of construction — whether on stilts or on slightly raised floors on boggy ground — were long a topic of heated controversy in the so-called *Pfahlbauproblem* (Menotti 2001), but once the contemporaneous existence of a variety of substructures was recognised, researchers were understandably concerned with systematising the vast amount of data coming to light. Over the years, interest has shifted from trying to identify broad patterns of site layout and connecting them to particular archaeological cultures, to appreciating the varied and dynamic nature of wetland evidence, which is proving too complex for simple evolutionary schemes. The superficial unity of size and layout of many lake dwellings does not imply unity of the social roles a building could play — each house existed in a particular set of circumstances,

and thanks to the tight dendrochronological dating frameworks these can be traced in far greater detail than in dryland archaeological situations (Sherratt 2004: 271).

Yet counterintuitively, this chronological resolution has actually contributed to a marginalisation of the lake settlement evidence at the European level. There are so many detailed and varied biographies that it seems impossible to step back and reveal a bigger picture (as criticised by Sherratt 2004: 268). More recently, however, a new desire for synthesis and for developing new social models has begun to address this situation. One key step taken in this paper is to combine the various temporal and spatial scales at which we can investigate wetland sites.

Our case studies are from eastern France, Switzerland and southern Germany, covering a time span of over 1500 years (*c.* 4300–2700 cal BC) (Figure 1; Tables 1 and 2).[iii] House architecture in these areas can be characterised as both relatively simple (in terms of construction techniques, but also in the sense of lacking differentiation between buildings) and impermanent (Bleicher 2009b; Ebersbach 2013; Hofmann 2013). Regardless of whether they are raised on stilts or not, houses recurrently feature one, more rarely two, longitudinal post rows supporting the roof and are one- or two-roomed (Figure 2). Frequently identified internal features are fireplaces/hearths and sometimes domed ovens; some houses also have a roofed front porch (Hasenfratz & Gross-Klee 1995; Schlichtherle 1997a; 1997b). In spite of some size distinctions, on any one site houses are mostly of very similar dimensions and layouts, with the exception of smaller outbuildings (Leuzinger 2000: 61–87; Schlichtherle et al., 2010; but see below for the few exceptions). Walls can be made up of posts, planks or wattle and daub. Floors are often covered with clay, or bark strips and moss. Roof construction is often not well documented (Hasenfratz & Gross-Klee 1995; Schlichtherle 1997b; Leuzinger 2007: 25–40).

In what follows, we first outline the large-scale cultural patterns and trends that have been proposed and their often presumed connection to prime movers such as climate. We then look closely at buildings from the point of view of the interplay between stability and improvisation, coherence and flux, and present arguments connecting strikingly short-lived buildings to an explicit strategy of fluid social relations. However, these different analytical scales work best when they are not seen as diametrically opposed, but as informing each other. So we also trace the many intervening spatial and temporal scales and seek links between the everyday or short-term and the inter-generational and long-term, arguing that fluidity does not apply to all scales simultaneously. On that basis, we argue for the importance of continuity in the spatial and temporal frame of the landscape.

Rough and ready: interpretation at the large scale

A cultural narrative

There has been a tendency in much past writing on Alpine foreland Neolithic architecture to think in terms of a succession of archaeological cultures, supposedly internally homogenous, which chop development into blocks of time covering a few centuries (Table 1). In the early part of the sequence (*c.* 4300–3900 cal BC), houses of the Aichbühl and Schussenried cultures on Lake Federsee are generally two-aisled and two-roomed, a consistently repeated pattern across eastern Switzerland and south-west Germany on both wetland and dryland sites. There was a domed oven in the smaller front room, an open fireplace in one or both rooms, and a roofed porch outside. The houses are arranged in loose rows and are roughly 5–15m by 3–6m (Schlichtherle 1997a: 93; 2004; Strobel 2000: 275–80), although throughout the sequence intra-site variation of house sizes is often bigger than inter-site diversity.

Between 3900 and 3500 cal BC, houses of bog sites like Pestenacker or Ödenahlen still show the same pattern, but information about the internal structure of lakeshore houses is restricted. In addition, much is made in the literature of regional distinctions in site layouts (Hasenfratz & Gross-Klee 1995). In western Switzerland during the 36th to 34th centuries BC, one or two rows of houses generally face a set of smaller buildings, sometimes with a large gap between them spanned by trackways (for example Sutz-Lattrigen Riedstation: Figure 3; Clairvaux II; Pétrequin 1989). In contrast, Late Neolithic (3500–2700 cal BC) site layouts in eastern Switzerland and around Lake Constance (Bodensee) comprise several tightly packed rows of buildings (for example Arbon Bleiche 3: Figure 4). At Lake Federsee at this time, a *Strassendorf* layout with two rows of houses aligned either side of a central lane predominates (for example Bad Buchau Torwiesen II: Figure 8). Final Neolithic (2700–2400 cal BC) wetland sites then show a huge variety of house sizes, orientations and building techniques, as well as settlement layouts, within the same region (Figure 8), but as forthcoming publications will significantly change the evidence base here (e.g. Ebersbach et al., in press), this period is not our current focus.

Some people suggest that after that after 3100 BC, lake shore settlements became longer-lasting, and this may apply to some micro-regions (e.g. Viellet 2009), but there is not currently sufficient data to fully assess this claim. Nor are there clear-cut or immutable correlations between house form or size and culture, with inter- and even intra-site variation very much to the fore throughout the sequence.[iv] The cultural frame — the material *habitus* — is not lightly to be set aside (Ebersbach et al., in prep.), but working at a scale of centuries does not appear to cope with

the much more detailed narratives now available for individual houses and settlements, nor does it produce clear, linear trends.

Coming and going: the presence and absence of lakeshore settlements

The tight dendrochronological dating of lakeside dwellings has demonstrated both short interruptions and long gaps in lakeshore settlement (Stöckli 2009: 16). These hiatuses have been interpreted in different ways. Among these, climatic oscillations have recurrently been accorded a key role. During two periods of more pronounced cooling, Piora/Rotmoos I (*c.* 4100–3800 cal BC) and Piora/Rotmoos II (*c.* 3600–3200 cal BC), the tree line was at a lower altitude, glaciers expanded and summers were cooler and rainier. As a result, it is thought that lake levels rose, the growing season shortened and the likelihood of landslides increased (Magny et al., 2005a; 2005b; but see Bleicher 2013). The correlation of these cooler phases with a lack of lakeside settlements is often noted (for example Billamboz 2001: 56; Magny et al., 2005b), and it is argued that the lake dwellers moved to the hinterland at such times. In addition, short-term dramatic fluctuations within these larger cycles impacted on settlements in the form of rapid local inundations and cold snaps, or short-term ameliorations (e.g. Magny & Haas 2004; Pétrequin et al., 2005). As such, lake dwellers have in the past often been seen as constantly struggling, more or less successfully, against the limits and constraints imposed by climate (e.g. Magny & Haas 2004), although it is now argued that their subsistence system was actually well buffered (e.g. Colledge & Conolly 2014).

Another kind of interpretation suggests that the lake shores were unattractive environments and would only be settled during times of social instability and stress (e.g. Pétrequin et al., 1999; Pétrequin et al., 2005; Mainberger & Mainberger 2010). Gaps in the occupation of specific areas may also have been triggered by overuse of land and woodland degradation — as revealed for example by dendrotypological investigations around Lake Constance — provoking abandonment and relocation of settlement sites (Billamboz 2014), perhaps even away from the lakes. In this view too, lake dwellers were again constantly struggling against the limits imposed by climate and environment and anthropogenic change.[v] The outcome can be rather starkly phrased as an opposition of either 'success (in coping with the crisis and the permanence in the area) or defeat (abandonment and displacement)' (Menotti 2009: 64). Others merely consider impermanence a valid adaptation to less than ideal circumstances (e.g. Pétrequin 1996).

Climate, temperature or lake levels clearly affected human experiences and responses. It must also be acknowledged that dryland parts of the Alpine foreland landscape are greatly under-

researched, as well as having poorly preserved archaeological remains (but see Mauvilly & Boisaubert 2007). But there are good reasons to be very wary of the overall determinism, and the rigidly defined opposition between success and failure, which the kinds of models above imply (Whittle 2003). There are other ways of looking at the conditions in which people regularly moved around the landscape. For instance, impermanence has been seen as a major and probably positively valued feature of social relations (Ebersbach 2010b; Hofmann 2013). This argument relies very strongly on observations connected to the variability and deliberately short use-life of domestic architecture, taking us to a very different, much more precise, timescale.

The scale of the house: impermanence as a way of life

Variable living organs

To begin with, lake village houses are built with impermanent materials. Posts are small, generally not exceeding diameters of 7–12cm (Leuzinger 2000: 88). Oak, silver fir and ash can be used, but a wide variety of softer woods is present, including maple, apple, cherry, willow, alder, poplar or birch, amongst others (Leuzinger 2000: 61–87; Billamboz 2006: 318; Schlichtherle et al., 2010). This means that houses would necessitate frequent repairs. Indeed, where detailed studies are available, initial repairs were carried out after only two years or so (Ebersbach 2010a: 42). Larger re-building episodes were necessary after six or seven years. Floors built from clay could have been maintained at an even faster rhythm, as they were constantly sinking into the soft ground beneath (e.g. Strobel 2000: 151; Dieckmann et al., 2006: 222). Overall, houses rarely lasted more than ten to 15 years (e.g. Leuzinger 2000: 61–87; Strobel 2000: 31; Billamboz 2006: 321; Bleicher 2009a: 145–48; Viellet 2009). The house can thus be characterised almost as a 'living organ', forever demanding attention (Billamboz 2010: 86).

These repairs often go hand in hand with expansions or contractions, probably in response to an expanding or contracting group of inhabitants (Ebersbach 2010b: 198). This suggests that individuals, too, could maintain a certain degree of mobility between houses and/or sites. It has even been argued that some isolated buildings with atypical finds assemblages, notably the structure at Cham Eslen, could have housed flexibly composed task groups, in this case for instance concerned with fishing (Huber & Ismail-Meyer 2012: 102). There was also experimentation with different architectural solutions, even within sites. At Bad Buchau Torwiesen II, the presence or not of a central post row cross-cuts divisions based on house size and economic strategy. In addition, only one house was built on stilts, while the others had a slightly raised floor (Schlichtherle 2011: 19). At Pestenacker, only House 4 had a marked central post row to support the roof, and its floor was raised higher than that of the other buildings

(Bauer 2009: 189). This could indicate that people were relatively free to adapt styles that were common elsewhere, and had the know-how to do so.

Expedient layouts

While there are recurrent kinds of settlement plans — *Strassendörfer*, single rows and sets of rows — layouts, too, can vary between contemporary sites. In the Lake Constance area, the sites of Pfyn Breitenloo, Gachnang Niederwil and Hornstaad Hörnle 1B all date to the years around 3700 BC. Houses are arranged in an oval area with their long sides parallel to the outer edge and gables facing each other. At Gachnang Niederwil and Hornstaad Hörnle 1B, houses are re-built several times with precisely the same orientation and position, sometimes after a generation's interruption (Ebersbach 2010a: fig. 3). In contrast, preliminary information from the contemporaneous site of Zürich AKAD Pressehaus layer J shows houses arranged with their long sides parallel and relatively large gaps in between. Each house had a separate discard area at its short end. A similar organisation may also apply at Risch Oberrisch Aabach on Lake Zug. Local and regional differences in settlement sizes and layouts are even more obvious during the 36th to 34th centuries BC. Comparing settlements from the French Jura Lakes, the Three Lakes Region in western Switzerland and Lake Constance, site size ranges from only two houses at Sutz-Lattrigen Hauptstation to settlements of over 10ha like Marin Les Piécettes. Crucially, in contrast to the cultural narrative sketched above, local traditions of layout seem to have been largely independent of archaeological cultures.

It is also important to stress that layouts were not only diverse between sites, but were also constantly changing during the use life of a single site, in response to the appearance and lapsing of constituent houses. Settlements grew over a period of several years, often starting with only one or two 'pioneer houses' (Figure 4), but also shrank during their lifetime. At Seekirch Stockwiesen, Building 15 was in a ruinous state well before the abandonment of the site as a whole (Schlichtherle 2004: 23–32). Similarly, at Bad Buchau Taubried I (Strobel 2000: 270), Arbon Bleiche 3 (Ebersbach 2010a: 42) and Hornstaad Hörnle IA (Billamboz 2008: 148), some buildings were apparently abandoned before the remainder of the site. This resulted in gaps in the (more or less) neat rows of houses, with decaying buildings a visible reminder that the settlement was disintegrating.

Architectural flexibility and social implications

Thus, while there is considerable diversity in the precise details of house construction, one of the recurrent themes is the *ad hoc* nature of much building activity, whereby short-term solutions are

found for immediate structural problems, while the long-term stability of the buildings was not a priority. In general, lakeside architecture is thus described as 'expedient' (Schröter 2009: 131) or seen as characterised by minimal investment (Strobel 2000: 303). In line with contemporary dryland sites, the Alpine foreland house is small and not built to last — a 'shorthouse' (Whittle 2003: 143) in both a spatial and a temporal sense. This also applies to site layouts as a whole. The different aspects of architecture, such as house size, settlement size, layout and site longevity, do not all change at the same time and need to be traced separately, making the picture much more complex than that of the traditional culture-historical narrative. The resulting social dynamics have been identified as one of the most interesting aspects of recent research (Ebersbach 2013: 283; Hofmann 2013). In these models, architectural flexibility is seen as connected to social fluidity.

Strobel (2000: 74) stresses that the Alpine Neolithic way of life foregrounded the decisions of individuals or small groups, who could have moved away from a given site at any given point. What we now recognise as 'villages' is only the sum of the mobility of different households, lacking enduring spatial organisation and permanence. For Bleicher (2009a: 148), social organisation was such that it 'evidently allowed to integrate groups of people into an existing village structure at any time, doubling its size if necessary [and resulting] in a rather subtle kind of very loose or pragmatic community'.

Perhaps the most clearly articulated version of this model is that of Ebersbach (2010b), who refers to Hillier and Hanson's (1984) correspondence and non-correspondence systems. In the former, people's main residence coincides with the location of their other main identity-building groupings, such as age cohorts, religious congregations and so on. In the latter case, this spatial coherence is not given, and the place of residence loses its centrality in social life. Contacts and networks are more important than the physical permanence and demarcation of one's settlement, and there is consequently a focus on individual autonomy at the expense of centralised authority (Ebersbach 2010b: 204–47). We argue that it is this organisational structure, rather than climatic factors, which ultimately drives the relocation of sites (Ebersbach 2010b: 209).

This interpretation is able to combine evidence for the impermanence of buildings with indications for the existence of social ties and networks reaching beyond the settlement. Shifting the scale of analysis to the smaller social units has also resulted in a renewed willingness to challenge the normative assumptions of the culture model (Doppler & Ebersbach 2011).

However, in spite of the short average use-life of buildings, some effort still went into maintaining them, as evident in the sequences of floor renewal and repairs sketched above (see also Hofmann 2013). In addition, there are indications that individual houses did not move in isolation. When sites were newly established, house-sized gaps were sometimes left for several years (Figure 4), clearly in the expectation — mostly, but not always, fulfilled — that those with rights to build on these plots would eventually move in (Ebersbach 2010a: 46; Schlichtherle 2011: 20). Thus, while the length of their association with a particular place could be variable, houses were still embedded in wider social groupings that need to be traced (Ebersbach 2010a: 47; Doppler 2013: 204–08, 215–20).

The scales between: from houses to communities to landscapes

As recently summarised by Doppler et al. (2011: 145), there have been pervasive sets of assumptions regarding social relations across large parts of the Alpine foreland. These include not only the idea that nuclear families would be the basic, stable social unit, but also that each household comprised only one structure, was economically self-sufficient and did not produce much surplus, leading to egalitarian, kin-based and autonomous social units which all followed the same subsistence strategies. Similarly, at the settlement scale, it is generally assumed that each site acted as a coherent economic unit and exclusively controlled a section of the surrounding territory. All these assumptions can be challenged.

Beyond houses: the household

Indeed, it is most probably groups of several buildings which shifted their location at the same time that formed a household in the sense of a decision-making and production/consumption unit. For instance, at Bad Buchau Taubried I pairs of residential houses move simultaneously (Strobel 2000: 302), and this is paralleled at Hornstaad Hörnle IA (Dieckmann et al., 2006: 236). At Pestenacker IA and Gachnang Niederwil, adjacent buildings could go as far as to share parts of their foundation. The overall sequence of site establishment is crucial here and seems to follow a relatively regular pattern. One or two houses are built first, with another one or two in the following few years (Figure 4). Then there is a large construction boom, with the majority of houses erected within just a year or two. This is followed by a period of slow decline, with repairs to existing structures, but few new constructions (e.g. Hasenfratz & Gross-Klee 1995; Leuzinger 2000). It is often small groups of two or three houses which act together in this process (Hafner & Suter 2000: 44–47, 50–56; Strobel 2000: 302; Dieckmann et al., 2006: 234–36; Billamboz 2006: 317; Doppler 2013: 215–20). It even appears that the inhabitants of single houses may have almost waited for reinforcement before committing to a specific location — at Torwiesen II,

construction on the earliest house began in 3283 BC, but the house stood semi-finished for two years before the floor was put in, at which time the other houses on that site were also built (Schlichtherle 2011: 20).

House clusters could also have been important in the organisation of daily activities. At Arbon Bleiche 3 (Dufraisse & Leuzinger 2009: 796) and Bad Buchau Torwiesen II (Dufraisse 2011), amongst others, groups of houses apparently exploited different patches of forest with distinct species composition for building and the provision of firewood, suggesting that such resources were controlled at this level. In general, not everyone would have shared the same economic activities. Different houses and house groups preferred slightly different crop spectra (e.g. Maier 2001: 38; Bogaard et al., 2013) or exhibited diverging preferences in wild plant and animal exploitation (Arbogast et al., 1997; Marti-Grädel et al., 2004; Jacomet & Brombacher 2005: 82), opening an avenue for distinctions. At Arbon Bleiche 3, a series of house groupings using similar resources were defined (Figure 5). Doppler et al. (2011: 153) also suggest that houses need not only relate through similarity, but could instead be complementary units with distinct economic foci which regularly exchanged products. Whichever model one prefers, it is clear that co-operation and shared consumption bound sets of houses together.

These distinctions could be interpreted in status terms, as at Bad Buchau Torwiesen II (Schlichtherle et al., 2010) or Chalain 19 (Viellet 2002), but we should also keep in mind other possibilities. For instance, a focus on wild animals could relate to the chronological position of a house in the settlement sequence (a 'pioneer group' having to rely on wild resources), to a different age or gender group being over-represented in a house cluster, to personal preference, or to specialisation and/or restricted access to areas of land and their resources (Doppler et al., 2011: 154). Such choices would also influence a group's ability to respond to challenging situations such as climatic fluctuations or social change (Doppler et al., 2013; Röder et al., 2013a).

Were sites 'villages'?

Beyond the house group, it has been argued that the 'village' itself is a redundant scale of analysis, too influenced by our expectations of stable settlement systems, including our view of the European Middle Ages (Ebersbach 2010a; Rathbone 2013: 39; Röder et al., 2013b: 18–19). Added to this is the growing critique of the concept of 'community' as an overly idealised, sanitised and ahistorical version of a harmonious past which never existed in this form (Whittle 2009: 253; Harris 2014). As Strahm (1995: 22) has noted, the term 'village' is certainly too coarse to capture the variation in clustering, sizes and no doubt also strategies for community creation

that we see across the Alpine Neolithic. Moreover, we can only agree that connotations of stability and permanence are misplaced here.[vi] But in spite of the apparent ability of (groups of) houses to move away from a given site, it would be premature to conclude that the 'village' played no role in social relations. After all, while there are sites with just one to three buildings (e.g. Bad Buchau Dullenried; Alleshausen Hartöschle; Sutz-Lattrigen Solermatt; Cham Eslen), these are sufficiently rare to have been interpreted as 'failed villages' — communities who did not manage to attract followers while others grew at their expense (Pétrequin et al., 1999: 304; Trachsel 2005: 303). Given that the overall duration of these sites is often no shorter than that of others, 'failure' is too strong a term, but it usefully highlights the fact that people did choose, time and time again, to settle in collectivities of upwards of eight houses or so. The question then is not whether foreland sites breach some absolute size measure to qualify as 'small villages' rather than 'large hamlets' (Rathbone 2013: 52), and these terminological niceties are hardly enough to circumvent lingering assumptions about permanence or conviviality. Instead, we must ask whether these kinds of nucleated site 'affected the daily experience of those who lived within them, and how their presence affected those who lived without' (Rathbone 2013: 55). In other words, can we identify sets of practices or connections that would make this social scale salient, even if it was cross-cut by various interest groups?

While lakeshore sites mostly lack architectural foci such as specialised and/or communal buildings, or even open plazas (Ebersbach 2010a; but see below), communally maintained walkways, fences and palisades are relatively frequent (Gross & Ritzmann 1990: 171), and episodes of construction and repair would have to be co-ordinated at site level. This also applies to some instances of house repairs. For instance, at Marin Les Piécettes there were simultaneous hearth-replacement events across excavated portions of the site (Guélat & Honegger 2005). A village was performed, but through routine maintenance re-affirming one's belonging, rather than through monumental construction projects.

Links at the site level: time and space

In addition, there are many cases in which sites are re-established on the same spot after a gap of a generation or so, and sometimes (as at Twann Bahnhof, Zürich Mozartstrasse or Sipplingen Osthafen) thick stratigraphies spanning centuries were accumulated. Often, this is not simply because there were no suitable alternative locations, and so this choice — or indeed the choice not to re-settle a known earlier site — must have been deliberate (Whittle 2003: 147; Ebersbach 2010a: 46). Together with the propensity of (groups of) houses to be re-built in the same spot, or even in spaces reserved for them, this implies a sense of history or genealogy, referencing a long-

standing fabric of relations that may have included rights of access. Although it is likely that a given household had connections and possibly rights of settlement in several communities (Trachsel 2005), perhaps negotiated through an open system of bilaterally reckoned kinship, the physical reference to previously established and perhaps particularly successful communities may have been a strong factor in attracting new settlers. People made a choice to join a larger community, maybe one with a certain renown.

Within that community, there are indications that co-ordination of productive activities between houses and house clusters may have been a key aspect of daily life. For example, certain textile production stages at Wetzikon Robenhausen, or copper crucibles at Zürich Mozartstrasse, were limited to only a few buildings (Heumüller 2010: 233), but these did not necessarily show an accumulation of the final product. At Chalain 3, level VIII, the flint tools needed to work antler were concentrated in some houses, but the finished antler tools themselves clustered in other buildings (Beugnier 1999), creating chains of obligation between groups and possibly granting all involved a stake in the unknown final product. Clearly, houses within a site, although capable of carrying out all basic economic activities, were connected to each other by multiple threads of co-operation, obligation and exchange, as argued elsewhere in detail for Arbon Bleiche 3 (Doppler 2013: 108–88).

In addition, even though the regularity and permanence of site layouts have been overstressed in the past, it is clear that houses often crowded very close together, creating a kind of forced sensory intimacy between their occupants (Whittle 2003: 145). This was increased by the fact that many activities were carried out in roofed porches, open to the central lane, or in shared spaces in the settlement (e.g. Tardieu 2002). There would have been little opportunity to hide from others what activities were being prioritised, how successful they were, or even what was discussed around one's hearth. While this aspect may not equally apply to all sites and all phases, a comparison of these lived-in aspects of architecture may open new perspectives, for instance in how far this lack of social distance could have worked against the creation of hierarchies, instead driving a process of frequent village fissioning of the kind often observed ethnographically (e.g. Rival & Whitehead 2001; Bandy 2004; Metcalf 2010: 252; Barrier & Horsley 2014). This could have led to at least temporary differences in the size and economic power of individual sites.

Wider networks and the landscape scale

This question is still very hard to address, as it is very rare that several contemporary sites in the same settlement cluster have been excavated. One possible indication could be the special-

purpose buildings identified at a number of sites and interpreted as having a ritual function (listed by Ebersbach 2010b: note 5). These houses are generally not distinguished by their size, but rather by their position in the settlement (for instance on an artificially raised mound at Marin Les Piécettes: Figure 3), by their more elaborate decoration (such as the clay breasts and white paintings on the walls of a house at Ludwigshafen Seehalde) or by unusual artefact distributions (such as one house at Hornstaad Hörnle IA: Matuschik 2011: 205; or at Chalain 19: Viellet 2002). These kinds of building are not very frequent, nor are they more durable or more monumental than their residential counterparts, but it has been suggested that they were tied to unusually large sites, which thus gained social pre-eminence (Honegger 2005; 2007) and became a 'place of renown' known about further afield (Hofmann 2013).

In spite of such potential differences, there were also ties between settlements, suggesting that the cluster of sites in its landscape or taskscape was an important decision-making unit, sometimes referred to as *Siedlungskammer* or settlement cell (Ebersbach 2010a: 44), as shown here for Lake Biel (Figure 6). Several contemporaneous Late Neolithic settlements in the Federsee area, for example, apparently moved simultaneously roughly every ten years (Bleicher 2009a: 142).

In spite of this high mobility, patches in the landscape were continuously exploited, with fields periodically turned over to grazing and the coppicing of newly growing trees (Figure 7; Bleicher & Herbig 2010). Other indicators have come from dendro-archaeological studies and from pollen diagrams, both of which show that areas inland from lakes and marshes were used for forest management and agricultural activities even in phases with no known lake shore sites (Billamboz & Köninger 2008; Bleicher 2009a: 142; Ebersbach 2010a: 44; Billamboz 2010). In the vicinity of Sipplingen Osthafen on Lake Constance, Billamboz et al. (2010: 267–69; Billamboz & Köninger 2008) showed repeated cycles of initial forest clearance, use for coppicing, and further thinning out of old trees, indicating degradation and overuse. Each cycle lasted around 350 to 400 years (Billamboz 2013: 626), and in this area at least, there was a long-term trend towards a successively more open landscape and the development of grazing land in the Corded Ware culture (see also Jacomet 2008). However, Billamboz et al. (2010: 268) also caution that the details of forest use would have varied micro-regionally in response to local needs and conditions, and no doubt this would have had to be negotiated between settlements. In her study of herd management practices, Ebersbach (2002: 189) could show that several sites probably pooled their cattle herds. This sort of longer-term management of particular resources and sections of landscape could be connected to the creation of community territories in a broad sense (Schlichtherle 1990: 242),

whereby a rather loosely defined collective of households could communally maintain exploitation rights. This collective could comprise several settlements, and any one household could have the option of settling in more than one, creating the observed pattern of instability at the level of the single building and building cluster. Perhaps, following Gallay (1995), rights to land could have been defined through common descent from a real or mythical group of ancestors, whose sites were periodically re-settled. Alternatively, long-term investment of labour could itself have been the basis for granting access rights.

Whatever the preferred solution, these careful management practices show that the landscape was a resource which took a long time to build up to high productivity, needed to be tended regularly, and would therefore not be given up easily (e.g. Maier 2001: 92; Bleicher & Herbig 2010: 109). This point would be reinforced if fields were small-scale garden-style plots with intensive weeding and manuring (as argued by Jacomet 2004: 172; 2008: 372; Jacomet & Schibler 2010: 117; Bogaard et al., 2013), rather than the extensive slash-and-burn affairs advocated by Pétrequin (1996) and Rösch et al. (2014). Indeed, the opposition between these two solutions has perhaps been over-stressed (Baum 2014). In either case, requirements such as timber or hunting grounds may have been as important as agriculture when deciding on landscape interventions (Baum 2014; Jacomet 2008: 369). Resilience could have been increased by adapting different strategies flexibly (Baum 2014), but this would only have been possible if inhabitants of different sites acted in unison.

More will need to be done to relate this landscape continuity back to fissioning events at the site level to explore how far people were really moving.[vii] With few exceptions (e.g. Chalain/Clairvaux; Pétrequin et al., 1999), excavations have typically targeted only a single site, or sites of different periods. We do not know whether the gradual abandonment of one village resulted in the gradual building up of just one new site or whether households instead joined several different communities. At Hornstaad Hörnle IA, a devastating fire in 3910 BC, around seven years after establishment, seems to have caused a dent in its growth trajectory. While many dwellings were re-built, a sizeable number were not, potentially moving to the newly established site of Hornstaad Hörnle III only a few hundred metres away, which began in 3909 BC (Dieckmann et al., 2006: 234–36). It is likely that these 'leavers' would not have relinquished access to agricultural land, patches of forest and other resources, and mechanisms must have been in place to continue to manage them beyond the confines of a single settlement.

Elsewhere, contemporary sites have been identified, but it is not yet possible to trace potential population movement between them. Four partly contemporary Pfyn culture settlements in the Lake Constance hinterland (all established between 3708 and 3700 BC) are located within a few kilometres of each other, so that the local landscape must have been managed in mutual consensus. All four sites also shared external connections, importing stone from south of the Alps and Bavaria and copper artefacts with the same chemical composition (Benguerel et al., 2010), and similar ties could be documented in some of the French villages (e.g. Viellet 2009). Tightly-knit networks like these provided assistance in case of catastrophic events such as floods or fires, but were probably also the source of conflict, disagreement and friction in their own right (Benguerel et al., 2010: 160).

Joining up the scales

The fact that we are increasingly attuned to discovering flexibility and dynamism at all social scales in the Alpine foreland does not mean that there was no structure at all, or that no social rules and obligations existed (Ebersbach 2010a: 47). What we have here is the unique opportunity to trace how entities such as households or communities could define and perpetuate themselves at various spatial scales and temporal rhythms. The reason we see so much dynamism and flexibility is the much finer chronological resolution with which we can identify many more of the (sometimes conflicting) levels at which individuals and groups were connected in webs of alliance, allegiance, obligation, tradition, tension and competition.

Interestingly, the level with the greatest inherent permanence is not the one with the largest social scale, that is, of cultural affiliation. There are few enduring, exclusive material culture boundaries at the regional scale (Doppler & Ebersbach 2011), and few — if any — architectural choices or site layouts exclusively diagnostic of a single archaeological culture. Rather, it seems that the levels of the settlement cell and landscape see the most co-ordinated effort and the greatest longevity. This may only be possible because this is paired with great dynamism at the level of the site, house cluster, house, and probably even the individual. It is in this way that the pattern of lakeshore life — mostly short-lived settlements with fluctuating membership and little differentiation between houses or sites — could in itself be so stable, lasting over a millennium and a half.

Conclusion

Interpretive shifts in recent years have fundamentally altered our attitudes to the Alpine foreland Neolithic. In line with the expectations of culture history, archaeologists began by searching for

regularities and evolutionary trends towards increased permanence, unfolding at a steady pace. Now, fine temporal resolution has provided us with a dataset that emphasises variability and leaves little opportunity for generalising trends (Figure 8). Relative investment of effort and the durability and size of sites seem to fluctuate according to specific local circumstances. This fluidity is undoubtedly due to a multitude of factors, from larger-scale phenomena such as climatic changes to individual choices. In this context, establishing and maintaining a village community could only ever be a temporary achievement, arrived at through different architectural and social strategies (communal buildings, co-operation in productive activities, shared house walls, strict layouts and many more). Within settlements, differences between houses and house clusters occur in individual economic choices and preferences, traditions of material culture or access to long-distance networks. As a counterbalance, planned and co-ordinated long-term management of surrounding territories apparently existed, although it was shared among several communities.

This opens the possibility for reflecting on different scales of temporal, as opposed to just spatial, allegiance, something which is rather more implicit even in more recent writing. Flexibility at one level (in daily life, or in residential choices) may very well have been offset by a perceived continuity at other levels, such as a long-term link to a territory and its previous inhabitants (Bogaard et al., 2013). This is in line with a general trend in European Neolithic societies observed by Hodder (2013: 359), who traces a shift from domestic architecture as a key strategy of creating social cohesion towards greater impermanence in domestic buildings, coupled with the increased importance of tombs, cemeteries or lasting field systems. Yet the Alpine evidence still contrasts with the idea (Bogaard et al., 2013: 12593) that investment in land eventually caused 'spectacular statements of permanence and ancestry', such as enclosures, megaliths and bouts of extreme violence. Rather, it was the ephemeral act of building and re-building, the active participation in renewing social ties, which was central for one's place in this settlement network. In this sense, in the words of Andrew Sherratt (2004: 272), houses are 'at once a building technique and a way of life, a symbol of community'. Much more than an architectural solution for the problem of muddy, wet ground underfoot, they are a cultural phenomenon deeply embedded in people's worldviews.

There are important narratives to be constructed at multiple timescales, ranging from spans of centuries for cultural historical units to decades or more for the maintenance of fixed plots and the playing out of cycles of clearance, shorter-term cultivation and regeneration, so we do not claim that it is only the short lives of houses and sites, in this situation open to precise

measurement, that matters. But it is clear that the short term here provides a vital key to the values and worldviews of the people involved and is the hinge around which the other scales best revolve. Without this dimension, we are missing a major element of the historical process.

As we noted at the outset, the metaphor of tacking has been much used in discussions of how to do multi-scalar analysis. That is, perhaps, not an altogether useful concept, as the direction and kind of travel remain the same, assuming a constant wind. Alternatives of hinge, gear change or lens change might better apply. In this case, the evidence, despite its imperfections, allows us to situate people in their lived contexts, within ever-changing buildings which contrast with the tempo of change in both the material *habitus* and the landscape or taskscape. For other Neolithic societies at this time, much more differentiated social systems are often reconstructed (e.g. Schier 2010), with all the implications of top-down planning, static social relations and large-scale units of analysis. The challenge now is to identify whether these are down to real differences in social organisation, or rather to the much coarser dating frameworks available in these areas, where the lens is stuck on a single temporal focus.

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References

Altorfer, K. 2010. *Die prähistorischen Feuchtbodensiedlungen am Südrand des Pfäffikersees*. Zürich und Egg: Fotorotar.

Arbogast, R.-M., Beugnier, V., Delattre, N., Giligny, F., Maitre, A., Pétrequin, A.-M. & Pétrequin, P. 1997. La répartition des témoins et le fonctionnement de la cellule domestique. In: P. Pétrequin, ed. *Les sites littoraux néolithiques de Clairvaux-les-Lacs et de Chalain (Jura) III. Chalain station 3. 3200–2900 av. J.-C., vol. 2*. Paris: Editions de la Maison des Sciences de l'Homme, pp. 583–639.

Arnold, J.H. 2000. *History: a very short introduction.* Oxford: Oxford University Press.

Bailey, G. 2007. Time perspectives, palimpsests and the archaeology of time. *Journal of Anthropological Archaeology,* 26:198–223.

Bandy, M.S. 2004. Fissioning, scalar stress and social evolution in early village societies. *American Anthropologist,* 106:322–33.

Barrier, C.R. & Horsley, T.J. 2014. Shifting communities: demographic profiles of early village population growth and decline in the central American Bottom. *American Antiquity,* 79:295–313.

Bauer, S. 2009. Die Feuchtbodensiedlung Pestenacker — Holzkonstruktionen, Siedelphasen und Waldnutzung während der Altheimer Kultur. In: L. Husty, M. Rind & K. Schmotz, eds. *Zwischen Münchshöfen und Windberg: Gedenkschrift für Karl Böhm*. Rahden: Marie Leidorf, pp. 177–203.

Baum, T.G. 2014. Models of wetland settlement and associated land use in south-west Germany during the fourth millennium BC. *Vegetation History and Archaeobotany,* 23:67–80.

Benguerel, S., Brem, H., Hasenfratz, A. & Leuzinger, U. 2010. Eine Siedlungskammer der Pfyner Kultur zwischen Untersee und Thur. In: I. Matuschik & C. Strahm, eds. *Vernetzungen: Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg i.B.: Lavori, pp. 153–63.

Beugnier, V. 1999. Utilisation de l'outillage en silex et organisation de la production au Néolithique final. Le cas des villages lacustres. In: F. Braemer, S. Cleuzou & A. Coudart, eds. *Habitat et société. XIX Rencontres Internationales d'Archéologie et d'Histoire d'Antibes*. Antibes: Editions APDCA, pp. 283–95.

Billamboz, A. 1995. Die Bauhölzer der jungneolithischen Moorsiedlung Ödenahlen am nördlichen Federsee. Holzanatomische und jahrringanalytische Untersuchungen. In: Landesdenkmalamt Baden-Württemberg, ed. *Die neolithische Moorsiedlung Ödenahlen. Siedlungsarchäologie im Alpenvorland III*. Stuttgart: Theiss, pp. 347–70.

Billamboz, A. 2001. Beitrag der Dendrochronologie zur Frage der Besiedlungsdynamik und Bevölkerungsdichte am Beispiel der Pfahlbausiedlungen Südwestdeutschlands. In: A. Lippert, M. Schultz, S. Shennan & M. Teschler-Nicola, eds. *Mensch und Umwelt während des Neolithikums und der Frühbronzezeit in Mitteleuropa*. Rahden: Marie Leidorf, pp. 53–60.

Billamboz, A. 2006. Dendroarchäologische Untrsuchungen in den neolithischen Ufersiedlungen von Hornstaad-Hörnle. In: Landesamt für Denkmalpflege, ed. *Hornstaad-Hörnle 1A. Siedlungsarchäologie im Alpenvorland IX*. Stuttgart: Theiss, pp. 297–414.

Billamboz, A. 2008. Dealing with heteroconnections and short tree-ring series at different levels of dating in the dendrochronology of the southwest German pile-dwellings. *Dendrochronologia,* 26:145–55.

Billamboz, A. 2010. Dendroarchéologie sur les bords du lac de Constance: de la forêt au village, que de bois devant la maison palafittique! In: I. Matuschik & C. Strahm, eds. *Vernetzungen: Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg i.B.: Lavori, pp. 81–94.

Billamboz, A. 2013. Dendrochronology in wetland archaeology. In: F. Menotti & A. O'Sullivan, eds. *The Oxford handbook of wetland archaeology*. Oxford: Oxford University Press, pp. 617–31.

Billamboz, A. 2014. Regional patterns of settlement and woodland developments: Dendroarchaeology in the Neolithic pile-dwellings on Lake Constance (Germany). *The Holocene,* 24:1278–87.

Billamboz, A. & Köninger, J. 2008. Dendroarchäologische Untersuchungen zur Besiedlungs- und Landschaftsentwicklung im Neolithikum des westlichen Bodenseegebietes. In: W. Dörfler & J. Müller, eds. *Umwelt — Wirtschaft — Siedlungen im dritten vorchristlichen Jahrtausend Mitteleuropas und Südskandinaviens. Internationale Tagung Kiel 4.–6. November 2005*. Neumünster: Wachholtz, pp. 317–34.

Billamboz, A., Maier, U., Matuschik, I., Müller, A., Out, W., Steppan, K. & Vogt, R., with Affolter, J. & Feldkeller, A. 2010. Die jung- und endneolithischen Seeufersiedlungen von Sipplingen 'Osthafen' am Bodensee: Besiedlungs- und Wirtschaftsdynamik im eng begrenzten Naturraum des Sipplinger Dreiecks. In: I. Matuschik & C. Strahm, eds. *Vernetzungen: Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg i.B.: Lavori, pp. 253–86.

Billard, M., Ernst, T., Joly, F., Pétrequin, A.-M. & Pétrequin, P. 1997. Les potaux et les fondations des constructions. In : P. Pétrequin, ed. *Les sites littoraux néolithiques de Clairvaux-les-Lacs et de Chalain (Jura) III. Chalain station 3. 3200–2900 av. J.-C.* Paris: Editions de la Maison des Sciences de l'Homme, pp. 237–57.

Bintliff, J. 2013. *The complete archaeology of Greece: from hunter-gatherers to the 20th century A.D*. Malden and Oxford: Wiley-Blackwell.

Bleicher, N. 2009a. *Altes Holz in neuem Licht: archäologische und dendrochronologische Untersuchungen an spätneolithischen Feuchtbodensiedlungen Oberschwabens*. Stuttgart: Theiss.

Bleicher, N. 2009b. Stabilität und Dynamik von Dörfern und Siedlungsgemeinschaften aus dendroarchäologischer Sicht. *Jahrbuch Archäologie Schweiz,* 92:239–46.

Bleicher, N. 2013. Summed radiocarbon probability density cannot provide solar forcing of central European lake-level changes. *The Holocene,* 23:775–65.

Bleicher, N. & Herbig, C. 2010. Der Federsee: Landschaft und Dynamik im Neolithikum. In: I. Matuschik & C. Strahm, eds. *Vernetzungen: Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg i.B.: Lavori, pp. 95–112.

Bogaard, A., Fraser, R., Heaton, T.H.E., Wallace, M., Vaiglova, P., Charles, M., Jones, G., Evershed, R.P., Styring, A.K., Andersen, N.H., Arbogast, R.-M., Bartosiewicz, L., Gardeisen, A., Kanstrup, M., Maier, U., Marinova, E., Ninov, L., Schäfer, M. & Stephan, E. 2013. Crop manuring and intensive land management by Europe's first farmers. *Proceedings of the National Academy of Sciences,* 31:12589–94.

Brewer, J. 2010. Microhistory and the histories of everyday life. *Cultural and Social History,* 7:87–109.

Colledge, S. & Conolly, J. 2014. Wild plant use in European Neolithic subsistence economies: a formal assessment of preservation bias in archaeobotanical assemblages and the implications for understanding changes in plant diet breadth. *Quarternary Science Reviews,* 101:193–206.

de Capitani, A., Deschler-Erb, S., Leuzinger, U., Marti-Grädel, E. & Schibler, J. eds. 2002. *Die jungsteinzeitliche Seeufersiedlung Arbon Bleiche 3: Funde*. Frauenfeld: Huber.

Dieckmann, B., Harwath, A. & Hoffstadt, J. 2006. Hornstaad-Hörnle IA. Die Befunde einer jungsteinzeitlichen Pfahlbausiedlung am westlichen Bodensee. In: Landesamt für Denkmalpflege, ed. *Hornstaad-Hörnle 1A. Siedlungsarchäologie im Alpenvorland IX*. Stuttgart: Theiss, pp. 8–275.

Doppler, T. 2013. *Archäozoologie als Zugang zur Sozialgeschichte in der Feuchtbodenarchäologie: Forschungsperspektiven am Fallbeispiel der neolithischen Seeufersiedlung Arbon Bleiche 3 (Schweiz)*. PhD thesis, University of Basel. doi 10.5451/unibas-006089936.

Doppler, T. & Ebersbach, R. 2011. Grenzenlose Jungsteinzeit? Betrachtungen zur kulturellen Heterogenität im schweizerischen Neolithikum. Ein Projektbericht. In: T. Doppler, B. Ramminger & D. Schimmelpfennig, eds. *Grenzen und Grenzräume? Beispiele aus Neolithikum und Bronzezeit*. Kerpen-Loogh: Welt und Erde, pp. 205–15.

Doppler, T., Pollmann, B., Pichler, S., Jacomet, S., Schibler, J. & Röder, B. 2011. Bauern, Fischerinnen und Jäger: unterschiedliche Ressourcen- und Landschaftsnutzung in der neolithischen Siedlung Arbon Bleiche 3 (Thurgau, Schweiz)? In: J. Studer, M. David-Ebiali & M. Besse, eds. *Paysage... Landschaft... Paesaggio... L'impact des activités humaines sur l'environnement du Paléolithique à la période romaine*. Lausanne: Cahiers d'Archéologie Romande, pp. 143–58.

Doppler, T., Pichler, S., Röder, B. & Schibler, J. 2013. Coping with crises I: Subsistence variety and resilience in the Late Neolithic lakeshore settlement Arbon Bleiche 3 (Switzerland). In: T. Kerig & A. Zimmermann, eds. *Economic archaeology: from structure to performance in European archaeology*. Bonn: Habelt, pp. 163–74.

Dufraisse, A. 2011. Anthrakologische Untersuchungen in der endneolithischen Feuchtbodensiedlung Torwiesen II. In: H. Schlichtherle, R. Vogt, U. Maier, C. Herbig, E. Schmidt, K. Ismail-Meyer, M. Kühn, L. Wick & A. Dufraisse, eds. *Die endneolithische Moorsiedlung Bad-Buchau-Torwiesen II am Federsee. Band 1: naturwissenschaftliche Untersuchungen*. Hemmenhofen: Landesamt für Denkmalpflege, pp. 281–337.

Dufraisse, A. & Leuzinger, U. 2009. La collecte du bois de feu dans le village néolithique d'Arbon-Bleiche 3 (lac de Constance, Suisse): gestion du bois et déterminismes. *Bulletin de la Société Préhistorique Française,* 106:785–802.

Ebersbach, R. 2002. *Von Bauern und Rindern: eine Ökosystemanalyse zur Bedeutung der Rinderhaltung in bäuerlichen Gesellschaften als Grundlage zur Modellbildung im Neolithikum*. Basel: Schwabe.

Ebersbach, R. 2009. Gachnang-Niederwil TG-Egelsee: Neuinterpretation der Baubefunde. *Jahrbuch Archäologie Schweiz,* 92:97–116.

Ebersbach, R. 2010a. Vom Entstehen und Vergehen – Überlegungen zur Dynamik von Feuchtbodenhäusern und -siedlungen. In: I. Matuschik & C. Strahm, eds. *Vernetzungen: Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg i.B.: Lavori, pp. 41–50.

Ebersbach, R. 2010b. Seeufersiedlungen und Architektursoziologie — ein Anwendungsversuch. In: P. Trebsche, N. Müller-Scheeßel & S. Reinhold, eds. *Der gebaute Raum: Bausteine einer Architektursoziologie vormoderner Gesellschaften*. Münster: Waxmann, pp. 193–212.

Ebersbach, R. 2013. Houses, households, and settlements. Architecture and living spaces. In: F. Menotti & A. O'Sullivan, eds. *The Oxford handbook of wetland archaeology*. Oxford: Oxford University Press, pp. 283–301.

Ebersbach, R., Doppler, T., Hofmann, D. & Whittle, A. in prep. No time out: the flow of cultural change in the Alpine foreland Neolithic world.

Ebersbach, R., Ruckstuhl, B. & Bleicher, N. in press. *Zürich Mozartstrasse Band 5: Die neolithischen Befunde und die Dendroarchäologie*. Zürich: Fotorotar.

Furger, A., Orcel, A., Stöckli, W.E. & Suter, P.J. 1977. Vorbericht. *Die neolithischen Ufersiedlungen von Twann 1*. Bern: Staatlicher Lehrmittelverlag.

Gallay, A. 1995. Vorschlag für ein Modell der neolithischen Gesellschaften. In: W.E. Stöckli, U. Niffeler & E. Gross-Klee, eds. *Die Schweiz vom Paläolithikum bis zum frühen Mittelalter. Band II Neolithikum*. Basel: Verlag Schweizerische Gesellschaft für Ur- und Frühgeschichte, pp. 275–88.

Gassmann, P. 2007. L'exploitation de quelques chênaies durant le Lüscherz et l'Auvernier-Cordé ancien: quand les habitats du village littoral de Saint-Blaise/Bains des Damen (Neuchâtel, Suisse) allaient aux bois. In: M. Besse, ed. *Sociétés néolithiques : des faits archéologiques au fonctionnements socio-économiques. Actes du 27e Colloque interrégional sur le Néolithique (Neuchâtel, 1 et 2 octobre 2005)*. Lausanne: Cahiers d'Archéologie romande, pp. 101–14.

Gross, E. & Ritzmann, C. 1990. Die neolithischen und bronzezeitlichen Siedlungen im Zürcher Seefeld. In: M. Höneisen, ed. *Die ersten Bauern: Pfahlbaufunde Europas. Band I: Schweiz,*. Zürich: Schweizerisches Landesmuseum, pp. 161–76.

Guélat, M. & Honegger, M. 2005. Micromorphology applied to lakeside settlement at Marin/Les Piécettes (Neuchâtel, Switzerland): analysis of clay accumulations. In: P. Della Casa & M. Trachsel, eds. *WES'04 — Wetland economies and societies. Proceedings of the international conference in Zurich, 10–13 March 2004*. Zurich: Chronos, pp. 95–98.

Guldi, J. & Armitage, D. 2014. *The history manifesto*. Cambridge: Cambridge University Press.

Hafner, A. 1992. *Lattrigen VI, Riedstation, Siedlungsplan und Baugeschichte. Ufersiedlungen am Bielersee 4*. Bern: Staatlicher Lehrmittelverlag.

Hafner, A. 2010. Pfahlbauten rund um die Alpen. Kulturen des 5. und 4. Jt. v. Chr. im zirkumalpinen Raum. In: Badisches Landesmuseum, ed. *Jungsteinzeit im Umbruch: die „Michelsberger Kultur" und Mitteleuropa vor 6000 Jahren*. Karlsruhe: Badisches Landesmuseum, pp. 104–13.

Hafner, A. & Suter, P.J. 2000. *−3400. Die Entwicklung der Bauerngesellschaften im 4. Jahrtausend v. Chr. am Bielersee aufgrund der Rettungsgrabungen von Nidau und Sutz-Lattrigen*. Bern: Berner Lehrmittel- und Medienverlag.

Hafner, A. & Suter, P.J. 2004. *Aufgetaucht. 1984–2004. Begleitschrift zur Ausstellung "5000 Jahre. Abgetaucht"*. Bern: Archäologischer Dienst des Kantons Bern.

Harris, O. 2014. (Re)assembling communities. *Journal of Archaeological Method and Theory,* 21:76–97.

Hasenfratz, A. & Gross-Klee, E. 1995. Siedlungswesen und Hausbau. In: W.E. Stöckli, U. Niffeler & E. Gross-Klee, eds. *Die Schweiz vom Paläolithikum bis zum frühen Mittelalter. Band II Neolithikum*. Basel: Verlag Schweizerische Gesellschaft für Ur- und Frühgeschichte, pp. 195–229.

Heumüller, M. 2010. Perlenherstellung in der jungneolithischen Seeufersiedlung Hornstaad-Hörnle IA: Hinweise auf Spezialisierung, Arbeitsteilung und siedlungsinternen Austausch. In: I. Matuschik & C. Strahm, eds. *Vernetzungen: Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg i.B.: Lavori, pp. 223–36.

Hillier, B. & Hanson, J. 1984. *The social logic of space*. Cambridge: Cambridge University Press.

Hochuli, S., Schaeren, G. & Weiss, J. 1998. Ein Dorfbrand am Zugersee vor 5700 Jahren: ein archäologischer Glücksfall. *Archäologie Schweiz,* 21:134–43.

Hodder, I. 2013. From diffusion to structural transformation: the changing roles of the Neolithic house in the Middle East, Turkey and Europe. In: D. Hofmann & J. Smyth, eds. *Tracking the Neolithic house in Europe: sedentism, architecture and practice*. New York: Springer, pp. 349–62.

Hofmann, D. 2013. Living by the lake: domestic architecture in the Alpine foreland. In: D. Hofmann & J. Smyth, eds. *Tracking the Neolithic house in Europe: sedentism, architecture and practice*. New York: Springer, pp. 197–227.

Honegger, M. 2005. Les villages littoraux du Néolithique: égalité et autarcie ou complémentarité et mise en résau? In: P. Della Casa & M. Trachsel, eds. *WES'04 — Wetland economies and societies. Proceedings of the international conference in Zurich, 10–13 March 2004*. Zurich: Chronos, pp. 185–94.

Honegger, M. 2007. Le site de Marin-les-Piécettes (Neuchâtel, Suisse) et la question des sanctuaires néolithiques: potentiel et limite de l'approche archéologique. In: M. Besse, ed. *Sociétés néolithiques : des faits archéologiques au fonctionnements socio-économiques. Actes du 27e Colloque interrégional sur le Néolithique (Neuchâtel, 1 et 2 octobre 2005)*. Lausanne: Cahiers d'Archéologie romande, pp. 175–83.

Huber, R. & Ismail-Meyer, K. 2012. Cham-Eslen (Kanton Zug, Schweiz): Ein jungneolithisches Haus mit (fast) allem Drum und Dran? Taphonomische Aspekte einer Seeufersiedlung. In: T. Link & D. Schimmelpfennig, eds. *Taphonomische Forschungen (nicht nur) zum Neolithikum*. Kerpen-Loogh: Welt und Erde, pp. 83–106.

Jacomet, S. 2004. Archaeobotany: a vital tool in the investigation of lake-dwellings. In: F. Menotti, ed. *Living on the lake in prehistoric Europe: 150 years of lake-dwelling research*. London: Routledge, pp. 162–77.

Jacomet, S. 2008. Subsistenz und Landnutzung während des 3. Jahrtausends v. Chr. aufgrund von archäobotanischen Daten aus dem südwestlichen Mitteleuropa. In: W. Dörfler & J. Müller, eds. *Umwelt —Wirtschaft — Siedlungen im dritten vorchristlichen Jahrtausend Mitteleuropas und Südskandinaviens. Internationale Tagung Kiel 4. –6. November 2005*. Neumünster: Wachholtz, pp. 355–77.

Jacomet, S. & Brombacher, C. 2005. Reconstructing intra-site patterns in Neolithic lakeshore settlements: the state of archaeobotanical research and future prospects. In: P. Della Casa &

M. Trachsel, eds. *WES'04 — Wetland economies and societies. Proceedings of the international conference in Zurich, 10–13 March 2004*. Zurich: Chronos, pp. 69–94.

Jacomet, S. & Schibler J. 1985. Die Nahrungsversorgung eines jungsteinzeitlichen Pfynerdorfes am unteren Zürichsee. *Archäologie der Schweiz,* 8:125–41.

Jacomet, S. & Schibler, J. 2010. Subsistenzwirtschaft aus archäo(bio)logischer Sicht. In: I. Matuschik & C. Strahm, eds. *Vernetzungen: Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg i.B.: Lavori, pp. 113–25.

Jacomet, S., Brombacher, C. & Dick, M. 1989. *Archäobotanik am Zürichsee. Ackerbau, Sammelwirtschaft und Umwelt von neolithischen und bronzezeitlichen Seeufersiedlungen im Raum Zürich. Ergebnisse von Untersuchungen pflanzlicher Makroreste der Jahre 1979–1988*. Zürich: Orell Füssli.

Jacomet, S., Leuzinger, U. & Schibler, J. 2004. Synthesis. In: S. Jacomet, U. Leuzinger & J. Schibler, eds. *Die jungsteinzeitliche Seeufersiedlung Arbon Bleiche 3: Umwelt und Wirtschaft*. Frauenfeld: Huber, pp. 381–416.

Knapp, A.B. ed. 1992. *Archaeology, Annales, and ethnohistory*. Cambridge: Cambridge University Press.

Knopf, T. 2002. *Kontinuität und Diskontinuität in der Archäologie. Quellenkritisch-vergleichende Studien*. Münster: Waxmann.

Kowalewski, S.A. 2006. Coalescent societies. In: T.J. Pluckhahn & R. Ethridge, eds. *Light on the path: the anthropology and history of the southeastern Indians*. Tuscaloosa: University of Alabama Press, pp. 94–122.

Leuzinger, U. 2000. *Die jungsteinzeitliche Seeufersiedlung Arbon Bleiche 3. Befunde*. Frauenfeld: Huber.

Leuzinger, U. 2007. *Pfyn Breitenloo: die jungsteinzeitliche Pfahlbausiedlung*. Frauenfeld: Huber.

Lorenz, C. 2006. 'Won't you tell me, where have all the good times gone?' On the advantages and disadvantages of modernization theory for history. *Rethinking History,* 10:171–200.

Magny, M. & Haas, J.N. 2004. A major widespread climatic change around 5300 cal. yr BP at the time of the Alpine Iceman. *Journal of Quaternary Science,* 19:423–30.

Magny, M., Peyron, O., Bégeot, C. & Guiot, J. 2005a. Quantitative reconstruction of mid-Holocene climatic variations in the northern Alpine foreland based on Lake Morat (Swiss Plateau) and Lake Annency (French Pre-Alps) data. *Boreas,* 34:434–44.

Magny, M., Bégeot, C., Peyron, O., Richoz, I., Marguet, A. & Billaud, Y. 2005b. Habitats littoraux et histoire des premierères communautés agricoles au Néolithique et à l'Âge du Bronze: une mise en perspective paléoclimatique. In: P. Della Casa & M. Trachsel, eds. *WES'04 — Wetland economies and societies. Proceedings of the international conference in Zurich, 10–13 March 2004*. Zurich: Chronos, pp. 133–42.

Maier, U. 2001. *Archäobotanische Untersuchungen in der neolithischen Ufersiedlung Hornstaad Hörnle 1A am Bodensee. Siedlungsarchäologie im Alpenvorland VI*. Stuttgart: Theiss.

Mainberger, M. & Mainberger, C. 2010. Grenzland? Zum Naturraum und zu den Anfängen bäuerlicher Kultur zwischen Argen und Bodensee. In: I. Matuschik & C. Strahm, eds. *Vernetzungen: Aspekte siedlungsarchäologischer Forschung. Festschrift für Helmut Schlichtherle zum 60. Geburtstag*. Freiburg i.B.: Lavori, pp. 331–44.

Marti-Grädel, E., Deschler-Erb, S., Hüster Plogmann, H. & Schibler, J. 2004. Early evidence of economic specialization or social differentiation: a case study from the Neolithic lake shore settlement 'Arbon-Bleiche 3' (Switzerland). In: S. Jones O'Day, W. Van Neer & A. Ervynck, eds. *Behaviour behind bones: the zooarchaeology of ritual, religion, status and identity*. Oxford: Oxbow, pp. 164–76.

Matuschik, I. 2011. *Die Keramikfunde von Hornstaad-Hörnle I-VI: Besiedlungsgeschichte der Fundstelle und Keramikentwicklung im beginnenden 4. Jahrtausend v. Chr. im Bodenseeraum. Siedlungsarchäologie im Alpenvorland XII*. Stuttgart: Theiss.

Mauvilly, M. & Boisaubert, J.-L. 2007. Communautés villageoises néolithiques: rives des lacs et arrière-pays, une réelle osmose? L'exemple du canton de Fribourg (Suisse). In: M. Besse, ed. *Sociétés néolithiques. Des faits archéologiques au fonctionnements socio-économiques. Actes du 27e Colloque interrégional sur le Néolithique (Neuchâtel, 1 et 2 octobre 2005)*. Lausanne: Cahiers d'Archéologie romande, pp. 407–15.

Menotti, F. 2001. The *Pfahlbauproblem* and the history of lake-dwelling research in the Alps. *Oxford Journal of Archaeology,* 20:319–28.

Menotti, F. 2009. Climate variations in the circum-alpine region and their influence on Neolithic-Bronze Age lacustrine communities: displacement and/or cultural adaptation. *Documenta Praehistorica,* 36:551–83.

Metcalf, P. 2010. *The life of the longhouse: an archaeology of ethnicity*. Cambridge: Cambridge University Press.

Mook, W.G. 1986. Business meeting: recommendations/resolutions adopted by the twelfth International Radiocarbon Conference. *Radiocarbon,* 28:799.

Nelson, J.L. 2007. The Dark Ages. *History Workshop,* 63:191–201.

Pétrequin, P. ed. 1989. *Les sites littoraux néolithiques de Clairvaux-les-Lacs (Jura). 2, Le Neolithique moyen*. Paris: Editions de la Maison des Sciences de l'Homme.

Pétrequin, P. 1996. Management of architectural woods and variations in population density in the fourth and third millenia BC (lakes Chalain and Clairvaux, Jura, France). *Journal of Anthropological Archaeology,* 15:1–19.

Pétrequin, P. ed. 1997. *Les sites littoraux néolithiques de Clairvaux-les-Lacs et de Chalain (Jura) III. Chalain station 3. 3200–2900 av. J.-C.* Paris: Editions de la Maison des Sciences de l'Homme.

Pétrequin, P., Viellet, A. & Illert, N. 1999. Le Néolithique au nord-ouest des Alpes: rythmes lents d'habitat, rythmes rapides des techniques et des styles? In: F. Braemer, S. Cleuzou & A. Coudart, eds. *Habitat et société. XIX Rencontres Internationales d'Archéologie et d'Histoire d'Antibes*. Antibes: Editions APDCA, pp. 297–323.

Pétrequin, P., Magny, M. & Bailly, M. 2005. Habitat lacustre, densité de population et climat — L'exemple du Jura français. In: P. Della Casa & M. Trachsel, eds. *WES'04 — Wetland economies and societies. Proceedings of the international conference in Zurich, 10–13 March 2004*. Zurich: Chronos, pp. 143–68.

Rathbone, S. 2013. A consideration of villages in Neolithic and Bronze Age Britain and Ireland. *Proceedings of the Prehistoric Society,* 79:39–60.

Rival, L. & Whitehead, N. 2001. Forty years of Amazonian anthropology: the contribution of Peter Rivière. In: L. Rival & N. Whitehead, eds. *Beyond the visible and the material: the Amerindianization of society in the work of Peter Rivière*. Oxford: Oxford University Press, pp. 1–18.

Robb, J. 2014. The future Neolithic: a new research agenda. In: A. Whittle & P. Bickle, eds. *Early farmers: the view from archaeology and science*. Oxford: Oxford University Press, pp. 21–38.

Robb, J. & Pauketat, T. 2013. From moments to millennia: theorizing scale and change in human history, In: J. Robb & T. Pauketat, eds. *Big histories, human lives: tackling problems of scale in archaeology*. Sante Fe: School for Advanced Research Press, pp. 3–33.

Röder, B., Pichler, S. & Doppler, T. 2013a. Coping with crises II: The impact of social aspects on vulnerability and resilience. In: Kerig & A. Zimmermann, eds. *Economic archaeology: from structure to performance in European archaeology*. Bonn: Habelt, pp. 177–90.

Röder, B., Doppler, T., Pichler, S., Pollmann, B., Jacomet, S. & Schibler, J. 2013b. Beyond the settlement grid: investigating social differences through archaeobiology in waterlogged sites. *Journal of Neolithic Archaeology,* 15:12–46.

Rösch, M., Kleinmann, A., Lechterbeck, J. & Wick, L. 2014. Botanical off-site and on-site data as indicators of different land use systems: a discussion with examples from southwest Germany. *Vegetation History and Archaeobotany,* 23:121–33.

Schier, W. 2010. Jungneolithikum und Kupferzeit in Mitteleuropa (4500–2800 v. Chr.). In: Badisches Landesmuseum, ed. *Jungsteinzeit im Umbruch: die „Michelsberger Kultur" und Mitteleuropa vor 6000 Jahren*. Karlsruhe: Badisches Landesmuseum, pp. 26–36.

Schlichtherle, H. 1990. Aspekte der siedlungsarchäologischen Erforschung von Neolithikum und Bronzezeit im südwestdeutschen Alpenvorland. Siedlungsarchäologische Untersuchungen im Alpenvorland. *Bericht der Römisch-Germanischen Kommission,* 71:208–44.

Schlichtherle, H. 1995. Ödenahlen — eine jungneolithische Siedlung der 'Pfyn-Altheimer Gruppe Oberschwabens' im nördlichen Federseeried. Archäologische Untersuchungen 1981–1986. In: Landesamt für Denkmalpflege Baden-Württemberg, ed. *Die neolithische Moorsiedlung Ödenahlen. Siedlungsarchäologie im Alpenvorland III*. Stuttgart: Theiss, pp. 9–128.

Schlichtherle, H. 1997a. Neolithische und bronzezeitliche Häuser in den Feuchtbodensiedlungen Südwestdeutschlands. In: H. Beck & H. Steuer, eds. *Haus und Hof in ur- und frühgeschichtlicher Zeit: Gedenkschrift für Herbert Jankuhn*. Göttingen: Vandenhoeck and Ruprecht, pp. 86–136.

Schlichtherle, H. 1997b. Der Federsee, das fundreichste Moor der Pfahlbauforschung. In: H. Schlichtherle, ed. *Pfahlbauten rund um die Alpen*. Stuttgart: Theiss, pp. 91–99.

Schlichtherle, H. 2004. Große Häuser, kleine Häuser. Archäologische Befunde zum Siedlungswandel am neolithischen Federsee. In: J. Köninger & H. Schlichtherle, eds. *Ökonomischer und ökologischer Wandel am vorgeschichtlichen Federsee: archäologische und naturwissenschaftliche Untersuchungen*. Gaienhofen-Hemmenhofen: Landesdenkmalamt Baden-Württemberg, pp. 13–56.

Schlichtherle, H. 2006. Kulthäuser in neolithischen Pfahlbausiedlungen des Bodensees. In: A. Hafner, U. Niffeler, & U. Ruoff, eds. *Die neue Sicht —The new view. Unterwasserarchäologie und Geschichtsbild. Akten des 2. Internationalen Kongresses für Unterwasserarchäologie*. Basel: Archäologie Schweiz, pp. 122–45.

Schlichtherle, H. 2011. Die Ausgrabungen in der endneolithischen Moorsiedlung Bad Buchau-Torwiesen II. Eine Einführung in Befunde und Fundverteilungen. In: H. Schlichtherle, R. Vogt, U. Maier, C. Herbig, E. Schmidt, K. Ismail-Meyer, M. Kühn, L. Wick & A. Dufraisse, eds. *Die endneolithische Moorsiedlung Bad-Buchau-Torwiesen II am Federsee. Band 1: naturwissenschaftliche Untersuchungen*. Hemmenhofen: Landesamt für Denkmalpflege, pp. 11–28.

Schlichtherle, H., Bleicher, N., Dufraisse, A., Kieselbach, P., Maier, U., Schmidt, E., Stephan, E., & Vogt, R. 2010. Bad Buchau-Towiesen II: Baustrukturen und Siedlungsabfälle als Indizien der Sozialstruktur und Wirtschaftsweise einer endneolithischen Siedlung. In: E. Classen, T. Doppler & B. Ramminger, eds. *Familie — Verwandtschaft — Sozialstrukturen: sozialarchäologische Forschungen zu neolithischen Befunden*. Kerpen-Loogh: Welt und Erde, pp. 157–78.

Schlichtherle, H., Vogt, R., Maier, U., Herbig, C., Schmidt, E., Ismail-Meyer, K., Kühn, M., Wick, L. & Dufraisse, A. eds. 2011. *Die endneolithische Moorsiedlung Bad-Buchau-Torwiesen II am Federsee. Band 1: Naturwissenschaftliche Untersuchungen.* Hemmenhofen: Landesamt für Denkmalpflege.

Schönfeld, G. 2009. Die altheimzeitliche Feuchbodensiedlung von Pestenacker. *Bericht der Bayerischen Bodendenkmalpflege,* 50:137–56.

Schröter, R. 2009. *Die Ausgrabungen des Urgeschichtlichen Forschungsinstituts der Universität Tübingen (UFI) in Aichbühl und Riedschachen (1919–1930).* Stuttgart: Theiss.

Sherratt, A. 2004. The importance of lake-dwellings in European prehistory. In: F. Menotti, ed. *Living on the lake in prehistoric Europe: 150 years of lake-dwelling research*. London: Routledge, pp. 267–75.

Shryock, A. & Smail, D.L. eds. 2013. *Deep history: the architecture of past and present.* Berkeley: University of California Press.

Stöckli, W.E. 2009. *Chronologie und Regionalität des jüngeren Neolithikums (4300-2400 v. Chr.) im Schweizer Mittelland, in Süddeutschland und in Ostfrankreich aufgrund der Keramik und der absoluten Datierungen, ausgehend von den Forschungen in den Feuchtbodensiedlungen der Schweiz*. Basel: Archäologie Schweiz.

Strahm, C. 1995. Einführung: prähistorische Siedlungsmuster in Europa. In: A. Aspes, ed. *Symposium settlement patterns between the Alps and the Black Sea 5th to 2nd millennium BC, Verona-Lazise 1992*. Verona: Museo Civico di Storia Naturale, pp. 17–34.

Strobel, M. 2000. *Die Schussenrieder Siedlung Taubried I (Bad Buchau, Kr. Biberach): ein Beitrag zu den Siedlungsstrukturen und zur Chronologie des frühen und mittleren Jungneolithikums in Oberschwaben*. Stuttgart: Theiss.

Suter, P.J. 2007. Sutz-Lattrigen BE, Solermatt. *Jahrbuch Archäologie Schweiz,* 90:145.

Suter, P.J. & Schlichtherle, H. 2009. *Pfahlbauten — Palafittes — Palafitte — Pile dwellings —Kolisca. UNESCO Welterbe-Kandidatur "Prähistorische Pfahlbauten rund um die Alpen".* Biel/Bienne: Gassmann.

Suter, P.J., Fischer, J. & Francuz, J. 2014. Sutz-Lattrigen, Rütte. Erste Ergebnisse der Tauchuntersuchungen 2011-2013. *Jahrbuch Archäologie Bern,* 2014:184–91.

Tardieu, C. 2002. Application d'une méthode d'analyse spatiale au village lacustre néolithique de Charavines-les-Baigneurs (Isère, France). *Bulletin de la Société Préhistorique Française,* 99:313–30.

Trachsel, M. 2005. Feuchtbodensiedlungen als sozialgeschichtliche Quelle. Ergänzungen und Perspektiven nach 150 Jahren Forschung. In: P. Della Casa & M. Trachsel, eds. *WES'04 — Wetland economies and societies. Proceedings of the international conference in Zurich, 10–13 March 2004*. Zurich: Chronos, pp. 299–326.

Viellet, A. 2002. The isolated structure of the Neolithic site 19, Lake Chalain (Jura, France): dendrochronological study of oak pilings (*Quercus* sp.) *Dendrochronologia,* 20:310–12.

Viellet, A. 2009. Apport des études dendrochronologiques à la connaissance des sites lacustres de Chalain et Clairvaux (Jura). Clairvaux II–IIbis, Chalain 19 et Chalain 2. *Gallia Préhistoire,* 51:273–318.

Whittle, A. 2003. *The archaeology of people: dimensions of Neolithic life*. London: Routledge.

Whittle, A. 2009. The people who lived in longhouses: what's the big idea? In: D. Hofmann & P. Bickle, eds. *Creating communities: new advances in central European Neolithic research*. Oxford: Oxbow Books, pp. 249–63.

Figure captions

Fig. 1. Location of main sites mentioned in the text. Site numbers are given in Table 2. © **TBC**

Fig. 2. Reconstructions of different kinds of houses (after Ebersbach 2013: fig. 17.2). © R. Ebersbach.

Fig. 3. Examples of different village layouts. After (clockwise from top left): Ebersbach et al., in press; Dieckmann et al., 2006: fig. 146; Suter et al., 2014: Abb. 3; Schönfeld 2009: fig. 1; Schlichtherle et al., 2004: fig. 15; Honegger 2007: fig. 1. © R. Ebersbach.

Fig. 4. The development of Arbon-Bleiche 3, showing initial establishment by few settlers, construction boom and beginning abandonment (after Doppler 2013: 207 fig. 52). © T. Doppler.

Fig. 5. Arbon-Bleiche 3; connections between houses. The house clusters shown here are suggested on the basis of subsistence activities, artefact links (e.g. ceramic styles) and settlement

dynamics. Further groups can be suggested, but do not share the same broad range of criteria (after Doppler 2013: 219 Abb. 53). © T. Doppler.

Fig. 6. The *Siedlungskammer* in the bay of Sutz-Lattrigen (Lake Biel). Gray: extent of preservation of cultural layers; dashed line: edge of excavations. After Suter and Schlichtherle 2009: 26–7. © **TBC**

Fig. 7. Reconstruction drawings of lake villages in their landscape. Note the managed sections of woodland and the nearby presence of additional settlements. Clockwise from top left: Arbon Bleiche 3 (Leuzinger 2000: fig. 269); Sutz-Lattrigen Riedstation (after Hafner & Suter 2000: 49); the head of Lake Zürich in the Corded Ware period (*c.* 2700 BC); the head of Lake Zürich in the Pfyn period (*c.* 3700 BC), both from Jacomet et al., 1989: figs 59 and 60. © **TBC**

Fig. 8. A chronological and regional comparison of site layouts. It can be shown that settlement size, site layout and longevity do not follow simple linear trends through time. Only definitely reconstructable houses are drawn. Site numbers are given in Table 2. © R. Ebersbach.

Table captions

Table 1. Main archaeological cultures mentioned in the text and their approximate cal BC dates.

Table 2. List of sites mentioned in the text. Dates provide an approximate guide; see text for details.

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[i] *The Times of their Lives*.

[ii] Following international scientific convention (Mook 1986), we use BC for dendrochronological dates, and cal BC for calibrated radiocarbon dates. We refer to larger spans of time principally in cal BC terms (generally estimated informally), whereas site biographies are normally discussed in BC terms (and based on detailed dendrochronological analysis). For further discussion of correlations between the two, see Stöckli (2009).

[iii] Case studies will of necessity be very selective, as it is rare to have high-quality data for both architecture and finds from the same site. In addition, preliminary site reports must be treated with caution, as only definitive dendrochronological study can reveal short gaps in site sequences and variability between houses (see Leuzinger 2000: 175; Bleicher 2009b: 239). We concentrate on settlements and houses for which we have checked the available evidence and consider the results to be reasonably well established.

[iv] The influence of taphonomy, while crucial, cannot be addressed in this paper. It is however being tackled in a new SNF-funded project, 'Formation and taphonomiy of archaeological wetland deposits: two transdisciplinary case studies and their impact on lake shore archaeology', at the IPNA in Basel.

[v] Although of course not everyone agrees that life was constantly precarious, the idea that wild resources would only increase in times of need remains (see e.g. Jacomet et al., 2004: 396–97).

[vi] Nor is permanence crucial to the definition of a village. Other than size (of more than 20 houses or more than 50 inhabitants), Rathbone (2013: 41) merely cites the proviso that a 'village' should be inhabited year-round, even if only by a part of its population during some periods. It is on this basis that the term is occasionally retained here to refer to the collectivity beyond the cluster of two to three buildings.

[vii] As is currently being attempted for Arbon Bleiche 3 using isotopic analyses (www.i-bone.ch).