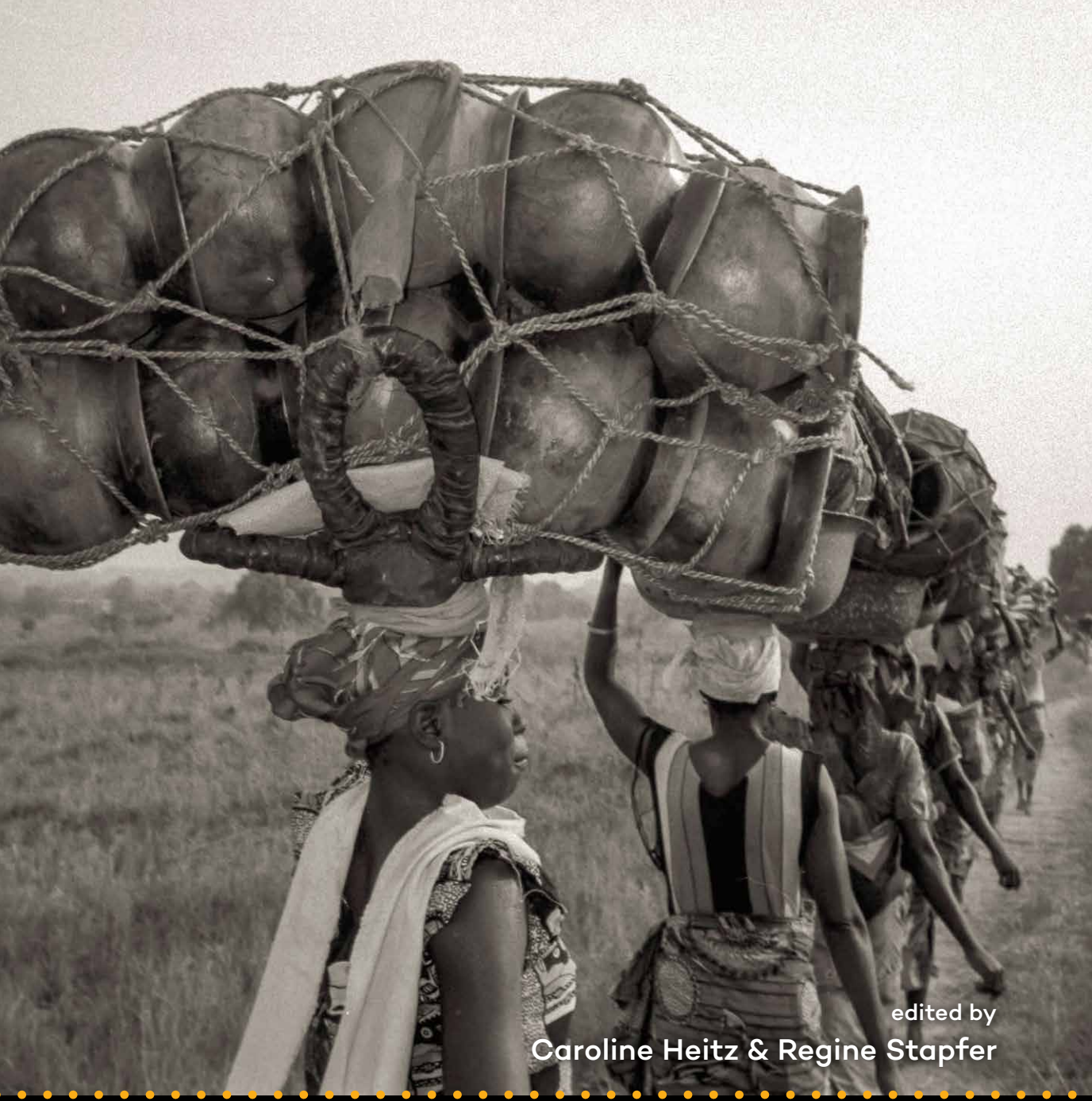

edited by
Caroline Heitz & Regine Stapfer

Mobility and Pottery Production

ARCHAEOLOGICAL & ANTHROPOLOGICAL PERSPECTIVES

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PART THREE ACTOR-CENTRED PERSPECTIVES: MOVEMENTS OF MAKING – MOBILITIES OF POTS, POTTERS, SKILLS AND IDEAS

Foreword

Albert Hafner

This publication is the welcome result of an interdisciplinary collaboration dating back to a workshop entitled 'Mobilities and pottery productions: archaeological and anthropological perspectives' that took place in 2015 at the University of Bern. As part of the research project 'Mobilities, entanglements and transformations in Neolithic societies on the Swiss Plateau (3900-3500 BC)' funded by the Swiss National Science Foundation (SNSF), researchers from various archaeological disciplines and from the field of anthropology, who study hand-built pottery, came together to attend the workshop. From the point of view of their individual fields of expertise they discussed the connections between the manufacture, distribution and use of pottery and different types of mobility in prehistoric and present-day societies.

Mobility and migration are amongst the most important socio-political topics of our time. Whenever individuals and population groups move around, interpersonal encounters take place, which raise questions of identity and alterity. This gives rise to a variety of cultural exchanges, ranging from appropriation to rejection, where objects also play a decisive role. In times when archaeology was focused on cultural history and diffusionism, migration was seen as one of the main driving forces behind all types of cultural change. All other small to large-scale forms of mobility, which played a role in the production, distribution and consumption of artefacts, were neglected. In contrast, both the research project and the workshop focus on the full scope of human mobility, thereby creating a link to the everyday politics of the present. Moreover, an innovative approach is taken by combining the topics of prehistoric archaeology with perspectives of cultural and social anthropological research. The fact that this is seen as innovative is astonishing, since prehistoric archaeology and anthropology had much in common in the early days and were long perceived as sister disciplines. In the beginning both fields of study were firmly based on collecting material evidence of past or – as they were seen at the time – disappearing cultures. Many trend-setting impulses in early prehistoric research came from the field of anthropology which, due to European colonial expansion, made available seemingly archaic objects from far-flung regions and promised to provide the key to many questions raised by local prehistory.

The workshop and publication were made possible thanks to funding provided by many different organisations, to which I would like to express my heartfelt gratitude here. The workshop received contributions from the Intermediate Staff Association of the University of Bern (MVUB) and from the university management funds of the Committee for Research and Young Academics Support of the Faculty of Humanities at the University of Bern. This publication also received funding from the Bern University Research Foundation, the Johanna Dürmüller-Bol Foundation and the Prehistoric Archaeology Department of the Institute for Archaeological Sciences at the University of Bern.

I would also like to thank C. Heitz and R. Stapfer for taking on the enormous task of conceptualising and organising the workshop and for their tireless efforts in inviting the various referees and subsequently convincing them to contribute papers for the publication. A big thank you also goes to all the authors for their invaluable work. I am grateful to the Swiss National Science Foundation (SNSF) for supporting the research project 'Mobilities, entanglements and transformations in Neolithic societies on the Swiss Plateau (3900-3500 BC)' in 2015-2018 and I would also like to thank the publishers, Sidestone Press, Leiden, The Netherlands, for including the publication in their programme and for their invaluable assistance during the production process.

Albert Hafner
Bern, March 2017

PART ONE

Changing perspectives, changing insights

Mobility and pottery production, what for? Introductory remarks

Caroline Heitz & Regine Stapfer

Abstract

This edited volume deals with the mobility of humans, materials and things. Pottery studies of ancient Europe and contemporary Africa are taken as examples to illustrate how pottery vessels were made in different ways. Whether they were used, sold, given away or passed on over generations, they participated in human practices and mobilities, ranging from everyday life to single long-term migration events. By studying the making and the mobility of pots, potters, pottery mongers and pottery users, the focus shifts from ideas of one-sided notions of stable 'cultures' to ideas of appropriations, transformations and thus the negotiation of cultural forms.

In the book's first section, the relationship between anthropology and archaeology is illuminated and the disciplines' different takes on 'culture', 'practice', 'mobility' and 'things' throughout major paradigmatic shifts are addressed. The second section unites empirical, object-centred archaeological case studies in which the examination of materials and pottery styles reveals that notions of fixed cultural entities are empirically untenable. The contributions in the third part argue from more actor-centred or symmetrical perspectives. It can be shown how humans and things are intertwined through practices and various rhythms of movement and mobility. Thus, they offer alternative ways to approach the (re)production, negotiation and transformation of cultural practices and their material forms.

Keywords: *concepts of culture, practice turn, mobility turn, material turn*

Introduction

Why could it be worthwhile to think about mobility and pottery production? Pottery – ceramic containers and their production – might come across as quite an 'old fashioned' research topic, lacking the potential to foster current debates in archaeology and, more so, anthropology. In contrast, spatial mobility – moving from place to place – has experienced a noticeable upturn as a field of research in both disciplines in recent years: fine-meshed networks of fast moving transport systems

allow us to commute on a daily basis, to change continents in a few hours and to send materials and goods around the globe. Moreover, migration especially has become a key issue in our present societies. Against this backdrop, focussing on mobility when addressing pottery might carry the danger of falling into the trap of actualism. Furthermore, it might not seem obvious to combine the two topics. Why, of all things, should we think of the heavy, brittle pottery vessels when addressing mobility? Are they not rather the typical items of predominately sedentary societies of the past?

Not necessarily. Such ideas rather entail a few shortcomings:
First, they are based on an empirically untenable dualism of mobility *versus* sedentarism, thereby adopting a reduced notion of movement and the spatial organisation of human life. They neglect that the very process of making things already involves mobility of all kinds: of humans, materials and things. In addition, places of production do not always correspond with places of consumption and the producers are not forcibly the consumers of the things in question. Things have their own itineraries and histories: taken on journeys or passed on they can travel to various places during their material existence, shifting between different contexts of meaning and practice. Hence, things might outlast human lives.

Second, many examples show that there is no primary affiliation between pottery and a predominately sedentary way of life (*e.g.* Beck 2009; Grillo 2014): the world's oldest ceramic vessels known so far were made and used by semi-mobile or mobile foraging societies in East Asia, some 10,000 years before the first sedentary communities there (Wu *et al.* 2012, 1697). It is also well known that the early sedentary farming communities in, *e.g.*, the Levant in the period of the Pre-Pottery Neolithic, did not make or use ceramic containers but lived in and around permanent settlements (Akkermans 2013; Goring-Morris and Belfer-Cohen 2013).

Third, it is short-sighted to think that pottery vessels are rather outdated things of the past. In contrast, taken as a category of things, pottery was and still is a success story in the history of human made things. Since its creative invention in various places in the world, pottery was appropriated by many societies and has even persisted up until today's entangled, glocalised world of computational technologies and synthetic materials: as handmade items or off-the-shelf products, from the widespread IKEA plates to the more local '*chawan*', the '*matcha*' tea cup used in the Japanese tea ceremony.

The abundance of pottery, its many possibilities of use, the ability of the potter's clay to be moulded in different forms and the resistance of fired clay to processes of erosion, make it one of the most intensively researched category of things of past and present societies. Hence, the study of pottery has experienced many paradigmatic twists and turns in archaeology as well as anthropology. The culture-historical approach of the early 19th century, equating pottery styles with different 'cultures' and ethnic identities, probably had the longest lasting impact. This certainly accounts for the archaeology of Neolithic Continental Europe, the field in which we are conducting our current research (Hafner *et al.* 2016). Despite wide criticism, such models still loom large in the narratives about prehistoric societies, fostering notions of stability, cultural homogeneity and spatial boundedness. As a side effect, major transformations in pottery and thus 'archaeological

cultures' are explained by migration and the thereby triggered 'culture contacts', 'acculturations', 'mixtures of cultures' or 'cultural adoptions' (see the contributions of Hafner, Stapfer and Heitz in this volume). The treatment of allegedly sedentary farming communities underestimates movement and mobility in models of everyday life. Also, it is assumed that pottery was mainly made and used within the same settlements or even households. In consequence, possible exchanges of pottery vessels (or their contents) are largely lacking in such models, to the same degree as temporarily mobile potters are lacking.

To address these issues, a workshop on 'Mobilities and pottery production: archaeological and anthropological perspectives'[1] was organised at the University of Bern in June 2015. Thus, this volume's objectives, which have largely emerged from the workshop's presentations and discussions are:

1. To review how 'culture', 'mobility' and 'things' were conceptualised throughout the research histories of archaeology and anthropology and the major paradigmatic shifts.
2. To question concepts of culture that are based on homogeneity, spatial boundedness and stability by taking the mobility of humans, things and ideas into account regarding the making and usage of pottery.
3. To demonstrate how mobility could be addressed empirically by means of case studies on pottery production in Neolithic and Roman, as well as contemporary African societies.
4. To explore the potential alternatives to the culture-historical approach that shift the focus from object-centred to actor-centred perspectives or even to the mutuality in human-thing relations.

We think that especially the recent paradigmatic shifts, the so-called 'mobility', 'practice' and 'material turn', are providing a new common ground for archaeology and anthropology. Arguing from different angles, these three turns meet in their capacity to describe and understand the dynamic flow of human life. Hence, focussing on the various forms of mobility of the potter's materials, the potters themselves and their knowledge, as well as their pots, allows a deeper understanding of both the reproduction of cultural material forms and the practices (stability) as well as their transformations (change). Thus 'mobility and pottery production' can be taken as an example case to debate fundamental key questions on 'culture', 'human-thing relations' and differences between former and current epistemological stances. Given the practical limits of the present volume, this vast field of research can never be exhaustively reviewed. Its contribution should therefore be seen as an academic snapshot that includes different takes, current perspectives and trends in order to foster future discussions. To contextualise the different sections of the volume, we would like to highlight three enmeshed lines of thought that led to recent paradigmatic shifts: 'structure and practice', 'movement and mobility' and 'humans, materials and things'. Before examining them in the following sections, the key issues in former concepts of culture shall be briefly reviewed.

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1 https://www.academia.edu/12438368/Workshop_Mobilities_and_Pottery_Production_Archaeological_and_Anthropological_Perspectives [20.5.2017].

Concepts of culture

Undoubtedly, archaeology and anthropology[2] share some common ground. Especially in their early times during the first half of the 19th century, they had a shared interest in understanding the perceived 'otherness' and 'foreignness' of past and present societies (Hahn 2012, 35). The early attempts to collect the more or less *whole* 'inventory' of present societies by ethnographers (Hahn 2016, 24; Schmid 2012, 3) and the collection of 'artefacts' from past societies by archaeologists illustrate the attempts at saving evidence from 'vanishing' or already vanished cultures.

In anthropology, those attempts were guided by one of the first definitions of 'culture' that was proposed by the British anthropologist E. B. Tylor (1832-1917) in his most significant work 'Primitive culture':

> *"Culture, or civilization, taken in its broad, ethnographic sense, is that complex whole which includes knowledge, belief, art, morals, law, custom, and any other capabilities and habits acquired by man as a member of society.",* Tylor 1920 [1871], 1.

This definition led to the notion that 'cultures' contain a fixed set of typical features. After the paradigm of evolutionism, differences in these sets could only be explained by different stages in the unilineal development of humankind that followed natural steps, referred to as grades of civilisation (Hahn 2012, 35; Probst 2000, 156). Mobility did not play a role in the evolution paradigm, as culture was seen as the result of the human mastery of nature.

This radically changed with the next paradigmatic shift: diffusionism. The idea that cultural, social and technological inventions *etc.* were made only once at one place in the history of humankind and then could spread over the whole world as 'cultural artefacts' was suggested by the German geographer F. Ratzel (1844-1904) and others. This model was taken as an explanation for different or similar 'cultures' respectively (Eriksen and Nielsen 2013, 37; Veit 2014, 352). To explain the spread of 'cultural traits', several diffusion patterns were adopted: a partial penetration of two cultures, the overlapping of a 'weaker' culture by a 'stronger' one, the parallel mixing of almost all cultural aspects, or only sporadic adoptions. Although mobility was not addressed as such, it was seen as the cause of all cultural differences.

Based on that, the German anthropologist L. Frobenius (1873-1938) later grouped similar cultures into so-called '*Kulturkreise* (culture circles)', leading to the '*Kulturkreislehre* (culture circle studies)' (Bernbeck 1997, 27; Eriksen and Nielsen 2013, 36; Hahn 2014, 271). The more similar features of two cultures were, the greater the probability of historical contact, it was assumed.

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2 We refer first and foremost to prehistoric archaeology in the following when using the term 'archaeology', while 'anthropology' covers both social and cultural anthropology, unless indicated otherwise.

These definitions of culture as a complex whole and as a container of features as well as the idea of different territorially fixed cultures also find their reflection in the earliest archaeological definitions. The German G. Kossinna (1858-1931) developed the so-called '*Siedlungsarchäologische Methode* (settlement archaeology method)' (see Bernbeck 1997, 26-27): Lacking scientific dating methods at that time, sets of regularly co-occurring artefacts – mainly pottery or metal objects – were used to establish chronological units. These units were taken as indications of peoples with a certain culture. Their spatial distribution was referred to as '*Kulturprovinzen* (culture provinces)'. In consequence, sets of artefacts were interpreted as chronological and social units, as Kossinna's famous definition shows:

> *"Scharf umgrenzte archäologische Kulturprovinzen decken sich zu allen Zeiten mit ganz bestimmten Völkern und Völkerstämmen."*[3], Kossinna 1920, 3.

It was believed that the history of ethnic groups could be traced back on the basis of artefacts and their typo-chronological evolution in a region (Bernbeck 1997, 27). V. G. Childe (1892-1957) adopted Kossinna's thought for his definition of 'culture' as "certain types of remains – pots, implements, ornaments, burial sites, house forms, constantly recurring together" (Childe 1929, v – vi; cited after Roberts and Vander Linden 2011, 2). By equating the constructed spatial and chronological blocks of distinct sets of things with 'cultures' and 'peoples', changes over time could only be explained by the 'replacement of cultures' and thus migrating people (Leary 2014, 4; Van Dommelen 2014, 478). S. Hakenbeck has put it plainly:

> *"Culture-historical notions of migration assumed the migration of a defined ethnic group, taking place over a relatively short time, involving large-scale population displacement, long-distance journeys and a profound cultural impact on the receiving areas.",* Hakenbeck 2008, 13.

In both disciplines, anthropology and archaeology, attempts were made to draw conclusions about the history and the age of the 'peoples' through the spatial distribution of certain artefact types or cultural characteristics. These attempts can all be summarised as a 'culture-historical approach' that was firmly established in both disciplines until the First World War (Hahn 2012, 36; 2014, 272; Hakenbeck 2008, 12).

From the second half of the 20th century onwards, North American and European anthropology took different paths. This lead to the emergence of 'social' and 'cultural anthropology' in Europe and in North America, respectively.

In Europe, the bias of evolutionism to social Darwinism as well as the ideological exploitation of the *Kulturkreislehre* (culture circle studies) and the *Siedlungsarchäologische Methode* (settlement archaeology method) by National Socialism led to broad criticism and rejection in the aftermath of the Second

3 English: "Sharply delimited archaeological cultural provinces coincide at all times with very specific peoples and tribes" (translation by the authors).

World War. Scholars following the culture-historical approach were criticised for a number of things (Roberts and Vander Linden 2011, 3; Wotzka 1993): for classifying the archaeological and anthropological record into a mosaic of cultural disparate homogeneous entities; for equating these entities with people from the start; for randomly choosing parts of 'material culture' as identity markers without questioning their different meanings; for adopting an overall simplistic concept of identity; for taking the constructed cultural entities as actors instead of individuals or social groups themselves and thus for lacking an actor's perspective; and in consequence for fostering models of human societies that are too stiff, static and mechanistic. Based on this criticism, European anthropologists shifted their focus to 'social systems' which eventually resulted in 'social anthropology' (see below).

In archaeology, Childe turned the concept of 'archaeological culture' into a *terminus technicus,* dismissing its ethnic interpretation (Veit 2014, 353; Wotzka 1993). Some British archaeologists dropped even the now socially emptied concept later on. In germanophone archaeology it was still used, however, accompanied by a long-lasting departure from the social interpretation of artefacts and a turn to a rigorous empiricism instead. The latter led to an emphasis on methods, which has been a strength of germanophone archaeology until today. Apart from some exceptions, however, – the avoidance of social issues, and the resulting lack of better alternatives, continued to have their silent impact. Altogether, during the second half of the 20th century, the shift of social anthropology from the (material) culture to the social and simultaneously the avoidance of social interpretation in archaeology led to an alienation between the two disciplines in Europe.

Meanwhile, North American research history was less impacted by fascist ideologies. There, the German-American anthropologist F. Boas (1858-1942) criticised the culture-historical approach from a different perspective. He claimed that each society has its own fate and history and could only be understood on its own terms. Thus, he argued for an 'emic' perspective in anthropological research. Before all theoretical thinking, the 'empirical facts' of cultures – including material culture – as well as the intentions and motives of humans needed to be documented in order to understand their histories (Eriksen and Nielsen 2013, 49; Hahn 2014, 274). Boas' 'cultural area studies' and the emerging 'culture relativism approach' led to 'cultural anthropology'. Furthermore, it was also due to Boas that anthropology and archaeology became closely related disciplines in North American research. While European anthropologists were dealing with contemporary societies overseas and European archaeologists studied mainly the European past (including adjacent regions), North American anthropologists and archaeologists shared their field of research on the past and present of native societies. This led ultimately to the emergence of a new interdisciplinary sub-field in the 1960s: 'ethnoarchaeology' (see subchapter on 'The material turn').

Instead of further discussing the different concepts of culture that followed (see Lentz 2013; 2016; Moebius and Quadflieg 2011; Roberts and Vander Linden 2011, 5-10; Wotzka 1993), we would like to address three other lines of thought in the next sections. We think that they can bring back or redefine three aspects that were missing in especially the culture-historical approach and which have the

potential to tackle its shortcomings. They are centred around human action and social practice, movement and mobility, materials and things.

The practice turn: 'Social structures', 'actors' and 'agency'

The culture-historical approach had reduced the role of humans to that of carriers of culture. By focussing on large historical changes whole cultures rose to the position of actors, instead of individuals or groups. Furthermore, human action was conceptualised as being primarily the reproduction and execution of particular cultural traditions (Robb 2005, 2). During the 20th century, more balanced theories of action were proposed by several disciplines, like philosophy, sociology and anthropology. The latter included approaches of structure-functionalism, system-theory, ethnomethodology, pragmatism, phenomenology and symbolic interactionalism (Joas 1996, 11-99). It was mainly the criticism of structuralism that fuelled the discussion about the (dialectic) relation between 'actors' and 'social structure' and thus the 'agency' that led to the 'practice turn'. The latter gives primacy to practice in understanding human life (Rapport and Overing 2003*a*, 2-5; Robb 2005, 3-7).

Long before that, it was probably due to Boas and his call for emic approaches that the actor's perspective became of interest after all. However, culture relativism also saw humans mainly as 'culture carriers' (Lentz 2016, 4). It was rather the rise of social anthropology and its affiliation with sociology that led to a stronger focus on human action. The functionalist anthropologist B. Malinowksi (1884-1942) proposed that the function of different institutions of a society was to guarantee its existence and reproduction. Accordingly, he saw culture as a "functional ensemble of practices and instruments that people created to satisfy their primary and secondary needs" (Lentz 2016, 3). In contrast to his predecessors, who studied mainly ethnographic collections in museums, Malinowski spent the years of the First World War on the Trobriand Islands in the Western Pacific. There he developed 'participant observation' as his essential anthropological method. Even if he did make detailed descriptions on how the islanders were making and using things, human action was reduced to being a response to the environment in order to survive (Robb 2005, 2).

Broadly speaking, with Boas and Malinowski's research a gradual shift took place: from 'armchair anthropology' concerned with things in ethnographic museums, to 'anthropological fieldwork', the 'emic perspective' and 'participant observation' and thus the actors themselves. Despite this, the latter were still not really integrated in their – nevertheless daring – concepts of culture. It was the British structure-functionalist A. Radcliffe-Brown (1881-1955) who made the decisive step from 'cultures' to 'societies' and 'social actors'. Influenced by the French sociologist E. Durkheim (1858-1917) he saw culture in terms of 'enculturation', which ensured the continuous reproduction of societies' structures (Eriksen and Nielsen 2013, 38). He was interested in the organisation of social life itself and thus social action (Lentz 2016, 3). As early as 1940, he emphasised in his seminal speech to the Royal Anthropological Society in London that it was not cultures that were the actual actors in situations of 'cultural encounter' but individuals or social groups (Probst 2000, 158). And these actors were themselves part of social structures that

were about to change. Society, in his understanding, was the sum of the human actors' relationships.

Altogether, functionalism, structure-functionalism and the rise of social anthropology had clearly contributed to the interest in human action in terms of making and using things. The essays of the French sociologist M. Mauss (1872-1950) on techniques and their study inspired the French archaeologist and anthropologist A. Leroi-Gourhan (1911-1986) to coin the term '*chaîne opératoire* (operational sequence)'. This led to the emergence of the French technology school from the 1950s onwards (see Dietler and Herbich 1998, footnote 3). Thus, from a functionalist and processual-archaeological perspective, things like pottery vessels would be examined in terms of their use, identifying certain functions: cooking pots, storage pots, drinking vessels, ritual vessels *etc.* (see Stockhammer 2012, 8).

While functionalism and processual archaeology contributed to theories on making or using things, proper theories of action or practice originated mainly in the late 1970s and early 1980s as a response to earlier structural theories and their shortcomings (Hodder and Hutson 2003, 90; VandenBroek 2010, 482-483). The main points of criticism were that forces of structures were favoured over individual human action. What was not explained was how these social and cultural structures emerged in the first place and how they were sustained or changed.

Not all practice theories are equally relevant for studies on things, especially in archaeology. Obviously, there is a difference between archaeology and anthropology regarding the way in which action and practice and thus cultural forms can be approached. While anthropologists can take an actor's perspective by participant observation and inter-subjectivity, archaeologists are restricted to the observation of the results of human action – as far as they left traces in materials and were preserved over time.

For this reason, the practice theory of the French anthropologist, sociologist and philosopher P. Bourdieu (1930-2002) is of major importance to this volume. His theoretical thinking, presented in *e.g. 'Equisse d' une théorie de la pratique* (Outline of a theory of practice)' (1977) and '*La Distinction* (Distinction)' (1984 [1979]), is very much based on anthropological fieldwork and was elaborated in relation to things and space too (Hahn 2014, 276; Hodder and Hutson 2003, 90). Furthermore, his works have – amongst those of others – triggered the so-called practice turn (see Schatzki 2001, 10-23).

Bourdieu was able to explain what former paradigms had failed to: the generative relation between actors and social structures. With this explanation he equipped humans with agency and conceptualised them as individual actors – without, however, neglecting their social belongings that were framing their actions (see VandenBroek 2010, 483). In his 'theory of practice' the term '*habitus*' – first suggested by Mauss – comprises the core concept (Schlager 2005, 19-20). The *habitus* is understood as dispositions, as social and cultural competence that guides humans in their daily lives to act meaningfully within a social, cultural and material setting (Bourdieu 1977, 72-86; see also Barrett 2004, 102; Shanks 2004, 179-181). These collective dispositions are unconsciously internalised throughout their lives and thus are rather tendencies to act and not a set of rules or regulations. With their actions, humans sustain structures by which their actions are

structured in return. And since learning is as much a matter of mind as well as bodily movements, the *habitus* also becomes embodied in humans themselves but also in things forming a part of socially shared ways to act and thus social practice (Barrett 2004, 101). In other words: "[..] social structures produce culture, which in turn generates practices which, finally, reproduce social structures" (Rapport and Overing 2003*a*, 4).

The British sociologist A. Giddens has framed a similar thought in his 'structuration theory' in 'The constitution of society' (1984). He argued that the relation between structure and actor is not one of dualism but of duality: structure is both medium and outcome of action, it allows humans to act and constrains their actions. Accordingly, the relation between actor and structure is a mutual one. If there are no actors there will be no social structures (Giddens 1984, 1-28; Hodder and Hutson 2003, 94; Eriksen and Nielsen 2013, 159-161; Robb 2005, 4). Thus, with the practice turn, human action and social practice is given a dominant if not crucial role in the understanding of human lives and the making of cultural forms.

Bourdieu and his concepts of *habitus* have had a wide influence in post-processual and interpretative archaeology since the 1980s. Processual archaeology was criticised – not unlike structuralism – for overemphasising structures and systems. The *habitus*-concept was a much-welcomed alternative to the concepts of culture: regularities in archaeological structures and artefacts could be interpreted as results of social and cultural practice (*e.g.* Dietler and Herbich 1998; Knapp and Van Dommelen 2008; Robb 2012; Schreg *et al.* 2014; Stockhammer 2012; 2015). Things like pottery vessels are as much the result of socially shared production practices as they are integrated into practices of consumption. Similar to anthropological studies on 'lifestyles' (see below), "archaeologists began to search for a possible social meaning of styles in pottery decoration" too, as the archaeologist P. Stockhammer points out, referencing pottery as an example (Stockhammer 2012, 8). For reasons of space we cannot discuss semiotic approaches at length here. Instead we would like to follow another line of thought that was boosted by practice theories: the debate on 'agency'.

From the 1980s onwards, the discussion of actor and structure gradually shifted to the term agency (Dobres and Robb 2000, 3-17; VandenBroek 2010, 481-482). A basic definition of agency is given by the anthropologists N. Rapport and J. Overing: "Agents act, and agency is the capability, the power, to be the source and originators of acts: agents are the subject of action" (Rapport and Overing 2003*a*, 3). Over the last few decades, many different connotations of the term were proposed, from individual to collective, multiple and relational agencies (see Rapport and Overing 2003*a*, 5-9; Robb 2012, 496-504). While agency was discussed in anthropology mainly in relation to 'power', 'embodiment', 'personhood', 'creativity' and 'imagination', archaeological approaches have also focussed on things:

> *"Like the body, material things are a medium through which we create ourselves and understand other people, and hence an inescapable element of social reproduction. Artefacts are a key to social relations and frames of mind. Indeed, there has been considerable debate among archaeological theorists about whether things can*

> *be considered as agents in the same way people can. Among the many ways in which material things relate to agency, we might note particularly technology as a system of social knowledge and embodied action, the use of everyday things to communicate subtle political meanings such as the authority of the state, the contextual use of material things to redefine or contest inherited meanings, and the question of the extent to which the archaeological record itself might be an intentional creation.",* Robb 2005, 4.

The most recent developments regarding agency – as are already mentioned in this quote of the archaeologist J. Robb (see also Robb 2012, 502-506) – are centred around the question of non-human agents and 'relationality'. This topic will be addressed in the subchapter 'The material turn'.

In order to conclude: practice theories certainly brought humans back into social and cultural theories in a more active and self-determined role. Consequently, a new understanding was gained of how culture forms and social life is created in the first place and how it is maintained and transformed. Thus, the practice turn contributed to a dialectical or even relational understanding of individual actors, social structures or cultural forms. And yet, the relation between humans and things remained a unilateral one. Furthermore, discussions of human action and social practice neglected a second vital aspect: 'movement' and 'mobility'.

The mobility turn: From 'migration' to 'movement' and 'mobilities'

Mobility has been a longstanding key issue in archaeological as well as anthropological research (Leary 2014, 4; Salazar 2013, 552). Throughout the paradigmatic shifts, the topic was treated sometimes rather as an aside and sometimes as a more central subject. It had, however, rarely been a research topic in its own right. In the last decades of the 20th century, the world was changing. As much as scholars of the culture-historical approach were affected by the formation of their own nation states at the beginning of the 20th century, those of the 1980s and 1990s were influenced by their experience of a more and more entangled and globalised world, where people and goods were increasingly on the move. This finally led to the so-called 'mobility turn'.[4] First propagated by geographers and sociologists, it later attracted interest in other social sciences and humanities (Salazar 2013, 4). Before we discuss that, we will briefly point out two main topics in which mobility was previously addressed in both disciplines: that is, mobility or rather migration, as an explanation of cultural and social change and mobility as part of a subsistence strategy and way of life in predominantly mobile societies.[5]

In some anthropological theories of 'cultural change' and 'cultural contact' mobility was framed more vaguely through the diffusion of 'cultures' or 'cultural traits' in contexts of single events like 'displacement', 'conquest' and 'colonisation'

4 The journal 'Mobilities' was launched in 2006 by Taylor & Francis to address the search for, and the understanding of, present-day and historical mobilities.

5 To a lesser extent, mobility also played a role in anthropological studies on kinship and extralocal marriage as well as religious pilgrimage (Salazar 2013, 4).

(Salazar 2013, 4). In such research perspectives, it was first and foremost 'migration' and thus the more or less permanent change of residence beyond cultural boundaries that was relevant. Such boundary-crossing movements were seen as deviations from normative place-bound communities, cultural homogeneity and social integration (Rapport and Overing 2003*b*, 298; Salazar 2013, 4).

These thoughts were taken up by archaeologists too. By equating the constructed spatial and chronological blocks of distinct 'material cultures' with 'cultures' and 'peoples', changes over time were explained by replacements of cultures and thus migration (Hakenbeck 2008, 9, 12-13; Leary 2014, 4; Van Dommelen 2014, 478). Childe's 'Prehistoric migrations in Europe' (1950) certainly is one of the most influential archaeological publications representing this perspective. Scholars of the new or processual archaeology challenged not only the concepts of 'cultures' but also the simplistic ways in which migration was used to explain cultural and social change in the culture-historical approach. As cultural and social change was now rather explained by internal social dynamics, migration became unpopular as a research topic. Post-processual archaeology too was not much concerned with migration or other forms of mobility (Hakenbeck 2008, 9, 14, 16-18; Van Dommelen 2014, 478-479), as the focus of discussion was more on the construction of archaeological knowledge itself. Empirical studies dealt rather with individual, specific sites or landscapes and selected topics regarding past societies rather than grand narratives.

Besides this larger field of study unfolding around explanations of cultural change, mobility was also addressed within the frame of different economic strategies. This applies to studies of mobile or semi-mobile foraging or herding communities (Leary 2014, 4; Salazar 2013, 4). Such approaches focussed on movements as part of subsistence-based economies and thus everyday life. Archaeological research in this regard was mostly done by North American scholars, working closely with anthropologists and thus following ethnoarchaeological approaches (Sellet *et al.* 2006; Wendrich and Barnard 2008). In 'The archaeology of mobility. Old world and new world nomadism' H. Barnard and W. Wendrich proposed to distinguish between four different basic types of mobility pattern regarding the subsistence of mobile groups (Wendrich and Barnard 2008, 5, fig. 1,2): the movement of the entire group from resource to resource; segments of different groups that move to and from specific resource areas; segments of the group that gather resources for a base camp; the entire group that moves by following a distinct and fixed mobility pattern.

In contrast to the culture-historical approaches, mobility is no longer reduced to migrations of whole societies. Individuals, different groups, or segments of them are mobile in everyday life, and their movements follow different 'patterns' regarding time, direction, frequency and motivations *etc.* (Wendrich and Barnard 2008, tab. 1,3).

Another strand of research approached mobility through the movements of things, *e.g.* in studies on 'gift exchange systems' and 'trade networks' (Oka and Kusimba 2008). The most seminal works in anthropology were carried out by Mauss ('*Essai sur le don. Forme et raison de l'échange dans les sociétés archaïques*', 1923-

1924)[6] and Malinowski ('Argonauts of the Western Pacific', 1922) on Oceania. It was Malinowski, especially, who made a detailed study of the '*kula* exchange', an institution among the Trobriand Islanders in the Pacific. The Trobrianders travelled hundreds of miles by canoe over the open sea in order to exchange symbolic valuables between the islands of Melanesia including, amongst other things, red shell-disc necklaces circulated in the North in a clockwise direction and white shell-bracelets in the South in counter-clockwise direction. The practice was related to political leadership, domestic economics, kinship and rank (Eriksen and Nielsen 2013, 53; Salazar 2013, 4). These studies focussed on social and cultural reasons for gift exchanges and trade and how these strengthened social relations (Oka and Kusimba 2008, 343).

Social organisation and the things themselves were also at the centre of archaeological studies on 'trade networks' and 'exchange systems'. R. Oka and C. M. Kusimba (2008) have published a detailed study on how these topics were addressed in archaeology throughout the research history. In European archaeology, the style of things and their material's geological provenances were used to trace mobility. Regarding prehistory, C. Renfrew was one of the first to determine the sources of obsidian by means of geochemistry in order to address exchange systems in the Mesolithic and Neolithic periods of south-east Europe (Renfrew *et al.* 1965, 1966, cited after Oka and Kusimba 2008). This allowed him to differentiate "interaction areas into supply zones (where materials were directly procured) and contact zones (items indirectly procured through exchange), suggesting the complexity of early trade" (Renfrew 1967, cited after Oka and Kusimba 2008). Another branch of research focussed on the importation of precious 'luxury' or 'prestige' goods in long-distance exchanges that were thought to be controlled by elites (Oka and Kusimba 2008, 346). However, here too mobility served only as a blueprint against which models of social organisations were sketched out.

Research on pottery in this regard intersected both studies: that on exchanging things and that on residential mobility or sedentarism. Conducted mainly in the field of American and African archaeology, they focussed on the relationship between mobile and sedentary communities. Thus, issues of the production, distribution and consumption of pottery between different groups were addressed as well as the making and using of pottery in relation to residential mobility in general (*e.g.* Beck 2009; Gosselain 2015; Hegmon *et al.* 2000; Simms and Bright 1997).

It was only in the 1990s that social sciences and humanities started to address 'mobility' as a research topic in its own right. The end of the Cold War and the enhanced freedom to communicate, travel and trade led to the age of globalisation and cosmopolitanism (Salazar 2013, 4). Mobility has certainly increased immensely over the last decades and humans were probably never more mobile than now. Humans, goods, technologies and ideas, "all the world" in short, "seems to be on the move" (Sheller and Urry 2006, 207). In the social sciences new fields of research opened up, like the 'postcolonial', 'globalisation' and 'consumption studies' that dealt with the mobility of things. 'The social life of things. Commodities in cultural perspective' (1986), edited by the Indian-American anthropologist A.

6 Title in English: 'An essay on the gift: the form and reason of exchange in archaic societies'.

Appadurai, is widely seen as one of the most influential publications in this field. With multiple references to Mauss, Bourdieu and others, the contributions in the volume show how things are sold and traded in different social and cultural settings, how people attribute value to things and how things play a role in social relations. Most interestingly, things were approached as having their own social lives. This was especially elaborated upon by I. Kopytoff in his contribution on the 'biography of objects' (Kopytoff 1986). The metaphor of object biographies has inspired many anthropologists and archaeologists. Recently, the anthropologists H.P. Hahn and H. Weiss have suggested the term 'itineraries' to address the complex, entangled and nonlinear forms of the thing's mobility that were neglected before (Hahn and Weiss 2013). Another term, 'trajectories', was coined by the archaeologist A. Van Oyen (Van Oyen 2015, 8; see also Van Oyen in this volume).

In the interconnected world of globalisation, earlier taken-for-granted correspondences between peoples, places, and cultures were increasingly questioned. The idea of fixity and *stasis* as the roots of all life was no longer persuasive (Rapport and Overing 2003*b*, 298; Salazar 2016, 1). J. Clifford stated that anthropology should not so much aim at discovering the 'roots' of cultures but tracing the 'routes' that lead to different cultural forms (Clifford 1997; Salazar 2013, 4). In the same line of thought, concepts like *e.g.* 'deterritorialisation' (Appadurai 1990), 'creolisation' (Hannerz 1987; 1995), 'appropriation' (Hahn 2008; see Stockhammer 2012, 14-17), or 'flow' (Rockefeller 2011) were suggested and explored in order to address movement- and mobility-related processes and their effects (Rapport and Overing 2003*b*, 299-300).

Eventually, shortly after the millennium, it was suggested that a new paradigmatic shift had taken place – the 'mobility turn' (Cresswell 2006; Faist 2013; Hannam *et al.* 2006; Sheller and Urry 2006; see also Salazar 2013; 2016). The 'mobilities' paradigm aims at inquiring how humans, things, and ideas move around. Cultural and social phenomena are thus seen "through the lens of movement" (Salazar 2016, 2-3). The creation of a plural form of 'mobility' – 'mobilities' – emphasises that the concept encompasses the whole variability of mobile forms (Hannam *et al.* 2006, 2).

In archaeology, for a few years, new bioarchaeological and biogeoarchaeological methods have allowed for the first time an approach to the movements of humans and animals on the basis of their remains (Hakenbeck 2008, 9; Van Dommelen 2014, 480). As a result, more attention is also given to small-scale forms of mobility, not just migration (Hakenbeck 2008, 21). E. Lightfoot's edited issue in the Archaeological Review from Cambridge (ARC) 23 (2) (2008) entitled 'Movement, mobility and migration' can be seen as one of the first attempts in this direction. More recent attempts are represented in P. Merriman's 'Mobility, space and culture' (2012) as well as the edited volumes or thematic issues 'Mobility, transition and change in prehistory and classical antiquity' (Preston and Schörle 2013) and 'Moving on: Archaeological perspectives on mobility and migration' (Van Dommelen 2014).

In German archaeology, the edited volume on mobility and the transfer of culture published by W. Schier and E. Kaiser (2013) can be mentioned. However, J. Leary (2014) went a step further with his edited volume 'Past mobilities:

Archaeological approaches to movement and mobility' by taking movement as an essential part of human lived experience and thus everyday life. Adopting the mobility turn he argues that mobility not only underpins a large part of today's human practices in their material, social, political, cultural and economic worlds but also those of the past (Leary 2014, 16).

In general, such mobility approaches in anthropology and archaeology challenge the notion that identities are primarily yielded by sedentarism, which "locates bounded and authentic places or regions or nations," and that those should be taken as the basic units of social research (Sheller and Urry 2006, 209). Consequently, all static, spatially bounded models of 'cultures' were overturned. Cultural and social entities are now seen as negotiated through moving and acting human beings. And by such 'performances' "all places are tied into at least thin networks of connections that stretch beyond each such place and mean that nowhere can be an 'island'" (Hannam *et al.* 2006, 13; see also Eriksen 1993). Hence, there are no longer fixed cultural entities but shifting and morphing ones. Since social life seems to be full of 'multiple and extended connections', 'topologies of social networks' and their 'nodes' are the primary focus of research (Hannam *et al.* 2006, 12-13). This leads to fluid notions of unstable worlds whose web of connections, ties and relations is constantly in the making (Salazar 2016, 1).

In this respect, mobility approaches meet with theories of 'networks', 'entanglements' or 'meshworks' that have emerged and are still emerging against the same larger backdrop of post-modern thought. These metaphors all emphasise the mutuality of relations between humans as well as humans and things and therefore are relevant to the so-called 'material turn'. In mobility studies too, there is a growing interest in "the ways in which material 'stuff' makes up places", and how "such stuff is always in motion, being assembled and reassembled in changing configurations" (Hannam *et al.* 2006, 14). Hence, M. Sheller and J. Urry have asked: "Is there (or should there be) a new relation between 'materialities' and 'mobilities' in the social sciences?" (Sheller and Urry 2006, 212). These issues will be more closely discussed in the next subchapter.

The material turn: From 'material culture' to 'materiality' and the 'agency of things'

The last and latest major change in perspective that will be covered here is the so-called material turn. In all previous paradigms things had played a rather subordinate role in human-thing relations. Even in practice theories humans were thought to have power over inert and passive materials and things. Thus, 'action' and 'agency' were only attributed to humans, whereas the impact of materials, things and other nonhuman agencies was largely ignored or underestimated. Furthermore, most of the previous paradigms had adopted dualistic distinctions like those of humans and things, nature and culture, mind and matter. With the material turn such reduced views of unilateral human-thing (or human-nonhuman) relations and the underlying dualisms should be overturned. We think that the unfolding of several different theoretical strands has contributed to this change in perspective. They are all united by shared relational ontologies. Globalisation and consumption studies certainly had a crucial influence because they dealt with moving

things and thus the changing contexts of meaning and practice. This fostered the already mentioned metaphors of 'travelling objects', 'thing biographies', 'itineraries' and 'trajectories'. In these perspectives, the things themselves are the focus. They are liberated from their existence as passive tools as it is acknowledged that they had their own histories. Furthermore, under the influence of an increasingly interconnected world, the old concepts of homogenous, stable social, economic and cultural entities were no longer corresponding with the experience of everyday life. Thus, from the 1980s onwards, metaphors like 'networks', 'entanglements' and 'meshworks' were adopted to describe social life. Experiencing life in such an enmeshed world that relied on electronic devices and means of transports *etc*., the crucial role of things became more and more evident. Epistemologically, this led to recourses on theories of thing-perceptions that had already been proposed in the middle of the 20th century by phenomenological philosophers (see Thomas 2006) and cognitive psychologists.

The preoccupation with 'things' had been a common ground of archaeology and anthropology since the emergence of these disciplines. In his extensive contribution in 'The Oxford handbook of material culture studies' the archaeologist D. Hicks has traced the changing approaches to things throughout the disciplines' research histories (Hicks 2010). Another broad interdisciplinary overview of the topic is given in a handbook on material culture edited by S. Samida, M. K. H. Eggert and H. P. Hahn in 2014. To understand why and how a turn to materials could eventually take place, some key moments of research history shall be mentioned hereafter.

Social anthropology's main achievements are to be found rather in its main occupation with the human actors and their social structures. Hence, the genuine interest in things was mostly lost in European anthropology until thoughts developed in semiotics triggered the studies on 'lifestyles' (Hahn 2014, 273-274). In his seminal work 'Mythologies' (1957) the semiotician R. Barthes (1915-1980) studied the meaning of things in everyday life. He combined the properties and contexts of things with texts that were concerned with those things (Hahn 2014, 276). In this way, he was able to show how things related to each other because they were interwoven by humans in complex webs of meaning. His thoughts fitted perfectly with those of the anthropologist C. J. Geertz (1926-2006), who had triggered a new wave of interpretative anthropology by his seminal 'thick description' (1973). It was again Bourdieu who showed by his empirical research published in '*La distinction* (distinction)' (1984 [1979]) how, on these principles, the material and the social were mediated by social practice in everyday life, which led to different materially recognisable lifestyles. These, and other scholars, had a significant impact on European anthropology's regained interest in things and their meanings in social worlds in the second half of the 20th century (Hahn 2014, 276-277).

Meanwhile, in North American cultural anthropology, things continued to be epistemologically significant in the course of the Boasian *Kulturkreislehre* and the later cultural area studies, even after the Second World War (Hahn 2014, 275). As mentioned above, this different strand of research history lead to the emergence of ethnoarchaeology. The latter became an important subfield of the American New Archaeology in the 1960s. In the beginning, ethnoarchaeology was very much

based on the idea of analogies: contemporary societies were studied in order to inform archaeological explanations of the past (Hicks 2010, 51). These behavioural, normative studies had a strong focus on things, as they were seen as a means to adapt to the environment and to satisfy basic needs. Until today, ethnoarchaeology's concern is primarily the "investigation of the role of material culture and the built environment within living societies, and the processes which effect and affect their transformation to archaeological contexts" (Lane 2006, 404, see 403-424). It is also in this field that the most seminal studies on the making and using of pottery have been conducted, most of them concerning Africa and America (see *e.g.* Gosselain and Livingstone Smith 2013; Stark 2003).

Besides other general points of criticism regarding New or processual archaeology, post-processual archaeologists argued against ethnoarchaeology's positivism. Extensive debates over theory and practice resulted in a new, alternative approach that united anthropology and archaeology in an interdisciplinary manner – the so-called 'material culture studies' (Hicks 2010, 55). Material culture studies emerged at the University College of London (UCL) in the last decades (Geismar *et al.* 2014; Hicks 2010; see Hafner in this volume). The scholars united under that new discipline include archaeologists and anthropologists. Most influential was D. Miller's doctoral thesis entitled 'Material culture and mass consumption' (1987). He showed the creative potential in the relationship between people and goods, as humans use material objects to express their personal and social identities. With his theory of 'objectivation' he transcended the dualism between object and subject. In the following decades, the scholar of 'material culture studies' published many studies on human-thing relations in a wide range of research fields (Geismar *et al.* 2014, 310-314).

In recent years, the term 'material culture' has perhaps been outflanked by the term 'materiality'. The former gives rise to several issues: its close connection with the notion of 'culture' and thus the idea of essentialist, static, synchronic, and normative tendencies of the 'cultural entities'; material culture implies that there is also, inevitably, a non-material culture and thus refers to the cartesian distinction of mind and matter and that there is a clear distinction between the material and the non-material (Hicks 2010, 2-3; Knappett 2014, 4701). Today, it is debated whether the term 'materiality' solves these problems and whether it should be defined sharply or reluctantly (see DeMarais 2004; Ingold 2007; Miller 2005). The archaeologist C. Knappett has recently framed the difficulties (Knappett 2014, 4702): "[..] what we need is a concept that can cover four key areas: the dependant (material relations), co-dependant (social relations), independent (vital), and interdependent (plural) properties of things and objects." Of interest here is the phenomenological aspect of the term. It refers to the human perception of the material world and does not just take the latter for granted (Soentgen 2014, 226). The perception and experience of a thing seems to be dependent on its material properties or qualities but also on the perceiving and experiencing human being and its life-history. Thus, things can be discerned very differently by different people. 'Materiality' thus refers to the on-going dynamic of human-thing relations.

While some things can go unnoticed in the material world, others are perceived in a multitude of different modes (Knappett 2014, 4700). This is what phenomenologists like M. Heidegger (1889-1976) addressed in the first half of the 20th century. In his seminal presentation 'The thing (*Das Ding)*', 1950, Heidegger elaborated on the perceptions of things by using the example of a jar's 'jarryness'. "*Das Krughafte des Kruges west im Geschenk des Gusses*", is his assessment (Heidegger [1950] 2000, 173). Meaning: a jar is first and foremost a container with a void. Into the void-containing jar, one can pour liquids that are contained by the jar – only to be poured out eventually by grasping the jar's handle and tipping it. Even if we do not use the jar we know about its potential. In everyday life we have a thingy and thus a habitual relation to things because we know by experience that '*das Ding dingt*' (*i.e.* the thing is thinging) (Heidegger [1950] 2000, 170). But if the jar breaks into pieces, it becomes an 'object' at hand because the decision of whether it should be repaired or thrown away requires contemplation, examination and reflection upon it that surpasses pure habitual experience (see Knappett 2014, 4704). The perception of things is thus related to the context in which we relate to the thing. Furthermore, it is not just dependent on our senses but also on our experience with and attitude to things as well as the possibilities to act that they offer by their materiality. This thought was framed by the cognitive psychologist J. J. Gibson with the concept of 'affordance'. Things offer us the opportunity to use them in certain ways but this perception is not only individual but also culturally and socially learned (Gibson and Schmuckler 1989, 23). Affordances are dependent on particular situations in which encounters take place between a perceiving human being and a thing's features in a particular environment (Gibson 1979, 127-143; Knappett 2011, 43-52).

Hence, scholars following the material turn are examining the mutual influences in human-thing relations by drawing on the mentioned phenomenological and cognitive theories. The dynamics of these human-thing relations were elaborated in different ways by using metaphors like 'networks', 'meshworks' and 'entanglements' (Hodder 2012; 2014; Ingold 2007; 2011, 36-94; Knappett 2011; Latour 2005; 2010).

The so-called 'Actor-Network Theory' (short: ANT), proposed by B. Latour and others, addresses how relations and ties between things, people, places, technologies, knowledge, norms and values relate to each other and are established by communicative processes. But the theory also addresses how they are dissolved and transformed (Latour 1988; 1999; 2014). In such networks of relational materiality, things play a crucial part in structuring social relationships. Accordingly, nonhumans become agents too. Thus, both need to be considered equally in such symmetrical approaches, which were also adopted in archaeology (see Olsen 2012; Shanks 2007; Stockhammer 2015).

P.W. Stockhammer has conceptualised the term 'entanglement' to describe contexts of intercultural encounters. He distinguishes between a 'relational' and a 'material entanglement'. While the former emphasises the changing human-thing relations while appropriating 'new' things, the latter refers to material manipulations made on such things (Stockhammer 2012). Another theoretical approach including the term 'entanglement' was proposed by I. Hodder. He uses the term rather

to analyse the mutual dependencies between humans and things in more general terms. According to him, different things rely on each other (*e.g.* an axe's shaft is dependent on wood but is needed to fell the timber needed to construct a house), things rely on humans *(e.g.* a house needs regular care and repairing) and humans rely on things (*e.g.* humans need the shelter of houses, tents or caves) (Hodder 2012; 2014).

Since, for instance, a wooden house will disintegrate if not cared for and thus triggers humans to act, issues like 'agency of things' and 'material agency' were discussed, challenging former anthropocentric perspectives. The anthropologist T. Ingold has argued that instead of equipping presumable inert things with 'agency' one should restore them in the "generative fluxes of the world of materials in which they came into being and continue to subsist" (Ingold 2007, 12). He emphasises that things are 'alive' and 'active' because their materials or substances are caught up in the ever-transforming material current of the world – be it the metabolisms of organisms or the *genesis* of geological formations. Thus, properties of things are ever changing. Human action, like making a pot, is the engagement (see also Renfrew 2004) with those ever-transforming materials. Ingold further argues that what one can touch, experience and relate to is not 'materiality' but 'materials' (Ingold 2007, 7, 13). Because the world is rather one of the generative growth of temporarily enmeshed materials than of interconnected entities, he prefers the metaphor 'meshwork' (Ingold 2011, 63-89).

It seems, however, that today such metaphors of enmeshment have largely replaced notions of cultures and other confined entities, thus sometimes overemphasising dynamic over stability. Furthermore, these 'symmetrical approaches' have neglected the phases and situation of dissymmetry, of dependence and dependencies (Hodder 2014) as well as the 'otherness of things' compared to humans, as it is argued (Olsen 2012). These shortcomings might be addressed in the future. However, the archaeologist B. Olsen has stated that, especially the turn to things themselves in other social sciences and humanities – not least anthropology – "constitutes a rare *archaeological moment* [emphasis by the author]" (Olsen 2012, 20). It is not so much that archaeology turns now to things – it has always been about them – but, for the first time since the late 19th century, "intellectual currents are in favour of us" (*ibid.*). In our view, this opens up new pathways for a shared common ground and shared perspectives of archaeology and anthropology.

To sum up: even if the practice turn has liberated human actors from the heteronomy of cultural and social structures by acknowledging their agencies, the perspective stayed largely human-centred, adopting a unilateral notion of human-thing relations. It was in the course of the material turn that the material conditions of human life were fully acknowledged and more symmetrical perspectives were adopted in which humans, nonhumans and landscapes constituted each other in complex networks, meshworks or entanglements of relations. In their capacity to examine dynamics, those dialectic and relational approaches meet with those of the mobility turn. The latter contributed another component to the picture: that life is not only unfolding in an entangled social and material world but also on a temporal and spatial dimension in which humans, non-human organisms, things and materials are continually in motion. Their mobility is vital for the reproduc-

tion of social and cultural forms but also for their transformation. Consequently, the duality of movement and *stasis* is crucial to understanding the phases of stability and change.

The content of this volume

With 'mobility' referring to the generative principle of movement and *stasis*, with 'pottery' as proxy of the material and thus things, and with 'production' referring to action and practice it becomes evident why the three turns are of great importance to this volume. The making of utilitarian pottery – unfolding in various engagements between and mobilities of materials, pots, potters and pottery knowledge – touches upon these three fields. Thus, the contribution in this volume offers to debate fundamental key questions regarding different former and current perspectives on human-thing relations. Juxtaposing these different perspectives aims not at valuing one over the other. In our view, it rather offers the chance to understand how changing perspectives lead to changing insights.

The book is organised in three sections. The first part contains introductory texts, which explore the relationship between anthropology and archaeology and their different takes on 'culture', 'mobility' and 'things' throughout their research histories' paradigmatic shifts. While this text has set the framework for the edited volume, the contribution of A. Hafner reviews aspects of the origins and common roots of 'Prehistoric archaeology, anthropology and material culture studies' in more depth (p. 39-51). A. Van Oyen examines in more detail how 'Material culture and mobility' was addressed in the 'history of archaeological thought' by alluding to examples from her research in the field of Roman archaeology (p. 53-65). She concludes that, thanks to the material turn, the mobility of humans and things could be addressed in a new way.

The different perspectives and approaches described in the texts of the first section are reflected in the contributions in the other parts of the book. The second part unites empirical archaeological case studies that address mobility and ties through the variability of pottery within and between settlements and regions. Since the workshop was organised within the scope of the research project 'Mobilities, entanglements and transformations in Neolithic societies on the Swiss Plateau (3900-3500 BC)' (Hafner *et al.* 2016) most contributions study the pottery of the 4th millennium BC in central Europe. Taking a predominantly object-centred perspective, the contributions reveal how current research in the field is still dominated by concepts of 'archaeological cultures', 'households' and thus notions of stability and homogeneity.

In his contribution on 'The Munzingen culture in the southern Upper Rhine Plain (3950-3600 BC)' L. Jammet-Reynal gives an example of how Neolithic pottery served as a chronological tool in central European Archaeology (p. 69-88). He reveals how two typo-chronologically separated groups of the so-called 'Munzingen' pottery are actually two different practices of making and using pottery. Their difference lies not least in their deferring stylistic ties to neighbouring pottery traditions.

Working in the same time frame, U. Seidel dissects the method behind the typo-chronological system that has dominated studies on the Neolithic 'Michelsberg' pottery for many decades (p. 89-114). By shifting the perspective from 'typo-chronology to inter- and intra-site variety' she shows how the 'Michelsberg' pottery of South Germany (4300-3600 BC) cannot be perceived as an indication of a homogeneous cultural or even social entity any longer. Instead, she reveals a complex picture of multidirectional ties based on pottery features, which might indicate intertwined economic, social and cultural practices reaching beyond settlements and regions.

In her article 'Social dynamics and mobility: Discussing 'households' in Linear Pottery Culture research (6 ML BC)' (p. 115-140) I. Hohle unmasks yet another presupposition of stability, homogeneity and congruence that underlay many notions of past societies: the 'one house – one household – one family – one kinship' equation. By examining the pottery of the LBK settlement of Schkeuditz-Altscherbitz in north-west Saxony (DE), she demonstrates that the settlement structure, social organisation and thus pottery practices were entangled beyond the formerly alleged spatial and social boundaries of the 'one house represents one family'-model.

R. Stapfer examines the phenomena of migrations and triggered mixtures in pottery styles in her contribution on 'Special pottery in 'Cortaillod' settlements of Neolithic western Switzerland (3900-3500 BC)' (p. 141-167). Benefiting from precisely dendro-dated Neolithic wetland sites, she gives an example of how these topics could be approached by means of archaeological and archaeometric pottery analyses. Thereby she explores especially the phenomenon of NMB pottery in 'Cortaillod' settlements. Her contribution thus challenges notions of homogenous cultural entities from an empirical perspective.

A similar concern is addressed by E. Gross. She undertakes a retrospective upon the history of Neolithic research in her essay 'Cultural and chronological attribution of pottery on the move: From rigid time-space schemata towards flexible microarchaeological 'messworks'' (p. 169-186). She reveals the conceptual relationship between 'Neolithic cultures' and set up time-space schemata. By providing four empirical examples she unmasks several pitfalls and shortcomings of this former research practice. As an alternative approach, she suggests the adoption of F. Fahlander's microarchaeological perspective. Rather than trying to fit pottery into clearly defined entities – like the allegedly homogeneous cultures – archaeologists should accept their ambiguity ('messwork'), emerging from multiple factors that led to the preserved remains of the past.

The contributions in the third part argue from more actor-centred or symmetrical human-thing perspectives. Inspired by material culture studies and the material turn some of them explore the potential of new archaeological and / or anthropological approaches.

I. Köhler presents an ethnographic case study on 'movement in making' pottery in today's Côte d'Ivoire (p. 189-211). She explores the entanglements of materials, female potters and pots in the process of making and selling pottery by describing the used materials and techniques in the villages of Sangopari. Her paper also focuses on the decisions in and reasons for pottery making. While it can

be anthropologically observed how the potters and pots are mobile while making and selling pottery, not all of these practices become visible in the materiality of the pots themselves. Furthermore, in a temporal perspective, she can show how pottery making is transforming, despite being an overall perpetuated practice for generations.

An actor-perspective is also taken by N. Melko in her article 'Form follows fingers: Roman pottery, the producer's perspective and the mobility of ideas' (p. 213-228). In her empirical example, Roman wheel-thrown pottery from the *vicus* Kempraten in present day Switzerland, she understands pottery fragments as a mirror for past people's value systems in crafts. To elaborate her approach, she made anthropological observations in a present-day pottery workshop. Hence, she developed a methodology to describe the mutuality between potters and pots in the process of making: while value systems influenced the body technique of the potters in the course of apprenticeship, the acquired body memory is then reflected in the finished vessels' materiality in return. This can be seen as a first methodological step to understanding the transformative impact of potters' and pots' mobilities.

D. Albero takes a further actor-centred perspective in his work on pots and potters from the Balearic Islands during the Bronze Age and the Early Iron Age (p. 229-256). Combining Bourdieu's theory of practice with archaeological and archaeometrical analyses of pottery sherds, he argues that different 'communities of practice' existed on the Balearic Islands during this time. He suggests that "these shared practices – once internalised by the individuals and giving place to a certain technological *habitus* – promoted the social cohesion of the islander groups" (p. 250). This makes it very likely that those pottery production practices were linked with shared identities of potters too.

In her text 'Making things, being mobile' (p. 257-291) C. Heitz also draws on Bourdieu's theory of practice and combines it with T. Ingold's thoughts on the 'making' of things. By acknowledging the mutuality of human-thing relations, she proposes to approach pottery vessels as intertwined histories of humans and materials. She argues that a pot's features reveal three itineraries: one of its geological materials, one of the potter through the chosen techniques and designs that reveal his cultural and social belonging and one of the pot itself by the place where the pot was used and found. Considering that materials, pots and potters can be on the move, she differentiates between locally made and used 'local vessels', travelled 'translocal vessels' and 'inbetween vessels' that show creative material, stylistic and technical appropriations, resulting out of encounters with 'otherness'.

In his anthropological contribution 'Pots on the move become different: Emplacement and mobility of pottery, specific properties of pots and their contexts of use' (p. 293-314) H. P. Hahn uses mainly examples from today's Northern Togo. There, within one settlement, households can differ considerably regarding the sets of pottery they use. Pottery of different styles, made in different places and by different ethnic groups can and do co-exist. He points out that the transcultural material mobility of pots should be considered as a key to cultural exchange. The meanings and practices in which these travelling pots become relevant can change from one place to the other. Furthermore, he emphasises that "although things car-

ry traces of their mobility within them, people evaluate these objects differently, for example by bluffing or negating the mobile object itineraries" (p. 296). Finally, he shows how mobile things can connect different places and societies. But by creative appropriations differences between local cultures are maintained.

While some contributions see pottery vessels as an indicator of different social or cultural groups, others see them as the reason and results of social relations and practices. Still others focus on the relationship between humans and things and the dynamics of this mutual relationship in the creative process of making. In any case, turning to human action and social practice, materials and materiality or movement and mobility offers the chance to understand cultural and social reproduction as well as transformations. Consequently, former basic assumptions of stability, *stasis*, and homogeneity are challenged. United in their attempts to think beyond culture-historical approaches, we hope that the multitude of perspectives offered in this volume will show the research potential of humans and things in past and present societies.

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Prehistoric archaeology, anthropology and material culture studies

Aspects of their origins and common roots

Albert Hafner

> *"Une hache, c'est un homme. Interrogeons donc les haches."*[1], a statement made by Adrien de Longpérier in a welcome address at the opening of the second session of the Congrès International d'Anthropologie et d'Archéologie Préhistoriques, on Saturday 17th August 1867 at 2.30 pm in Paris.

Abstract

Pottery, then as now, formed an important part of many societies' material culture. The study of ceramic vessels is mainly carried out by archaeologists and anthropologists. The two disciplines undoubtedly have a special relationship based on their shared interest in the cultural, social and economic meaning of man-made objects. While prehistoric archaeology evolved from early collections of ancient artefacts, anthropology originated from the collections of overseas ethnographica. In both cases, the aim was to document and understand disappeared or disappearing cultures. Although both disciplines have subsequently developed in different directions, their paths have repeatedly crossed throughout research history, leading to the formation, for instance, of 'cultural anthropology', 'ethnoarchaeology' and 'material culture studies'. After 'objects' had epistemologically fallen out of fashion amongst many humanities and social sciences in the post-modern era, the recent 'material turn' has again shifted the focus onto material culture. The latter development might offer an opportunity for a rapprochement between anthropology and archaeology, as this volume shows. This contribution therefore aims to examine some of the convergences and divergences that occurred between the two disciplines in the past. The main focus here will be put on prehistoric archaeology.

Keywords: *prehistoric archaeology, anthropology, material culture studies, research history*

1 English: "An axe represents a man. Let us therefore question the axes" (translation by the author).

Introduction

At this time of specialisation and fragmentation of scientific disciplines into an ever-growing number of smaller niches, it is easy to forget that prehistoric archaeology and anthropology initially shared many contents and research questions and that their development was influenced by protagonists from both sides. The early days of both fields of study were shaped by the gathering of material evidence of past and – as they were seen at the time – disappearing cultures. Many trend-setting impulses in early prehistoric research came from the field of anthropology which, due to European colonial expansion, made available seemingly archaic objects from far-flung regions and promised to provide the key to many questions raised by local prehistory. One of the best examples of this phenomenon was the interpretation put forward in 1854 by the Zurich scholar F. Keller (1800-1881; Keller 1854) for intrinsically unspectacular archaeological features that were being discovered in the Swiss lakes at the time (Fig. 1). His suggestion that these were Celtic dwellings that had been built above water (today we know that they dated from the Neolithic period and the Bronze Age) was undoubtedly inspired by ethnographic drawings of pile dwellings in the '*Village de Kouaouï au hâvre de Dorey* (village of Kouaouï in the Bay of Dorey)' in tropical Papua New Guinea. Similar depictions of settlements erected on piles in a bay were first published by the French explorer J.-S.-C. Dumont d'Urville (1790-1842) in the 1830s, in his book '*Voyage de la corvette l'Astrolabe*, 1826-1829.' The German translation was published in 1836 by J. Brodtmann's printing works in Schaffhausen in Switzerland, just a few kilometres from Zurich.

The German culture-historical school of ethnology, represented initially by B. Ankermann (1859-1943) and F. Graebner (1877-1934) and later by W. Schmidt (1868-1954) and the Vienna '*Kulturkreis* (culture circle) school', was closest to prehistoric archaeology from a methodological point of view (Ankermann 1905; Graebner 1911; Schmidt 1912-1955). This is shown by their penchant for diffusionist models of explanation and the use of distribution maps in order to illustrate cultural circles and strata. The fundamental methodological idea of cultural historical ethnology and archaeology was rooted in the concept of '*Anthropogeographie* (anthropogeography)' put forward by the German geographer F. Ratzel (1844-1904; Ratzel 1882-1891). The culture-historical current of prehistoric archaeology represented by O. Montelius (1843-1921, Sweden), G. Kossinna (1858-1931, Germany) and V. G. Childe (1892-1957, Australia / Great Britain) also viewed innovation as based on the diffusion of cultural features whose distribution was the foundation upon which archaeological cultures and peoples could be defined. Researchers like B. Malinowski (1884-1942), A. Radcliffe-Brown (1881-1955), M. Mead (1901-1978) and others then began to focus their ethnological studies on social themes including kinship, gender roles and sexual behaviour as well as systems of power and organisational forms of segmentary societies. This led to ethnology being transformed whereby in Europe it began to define itself as a social science ('social anthropology') and in the United States it saw itself as a cultural science ('cultural anthropology'). Since the 1990s, researchers have once again sought to bring anthropology and archaeology closer in the context of 'material culture studies'.

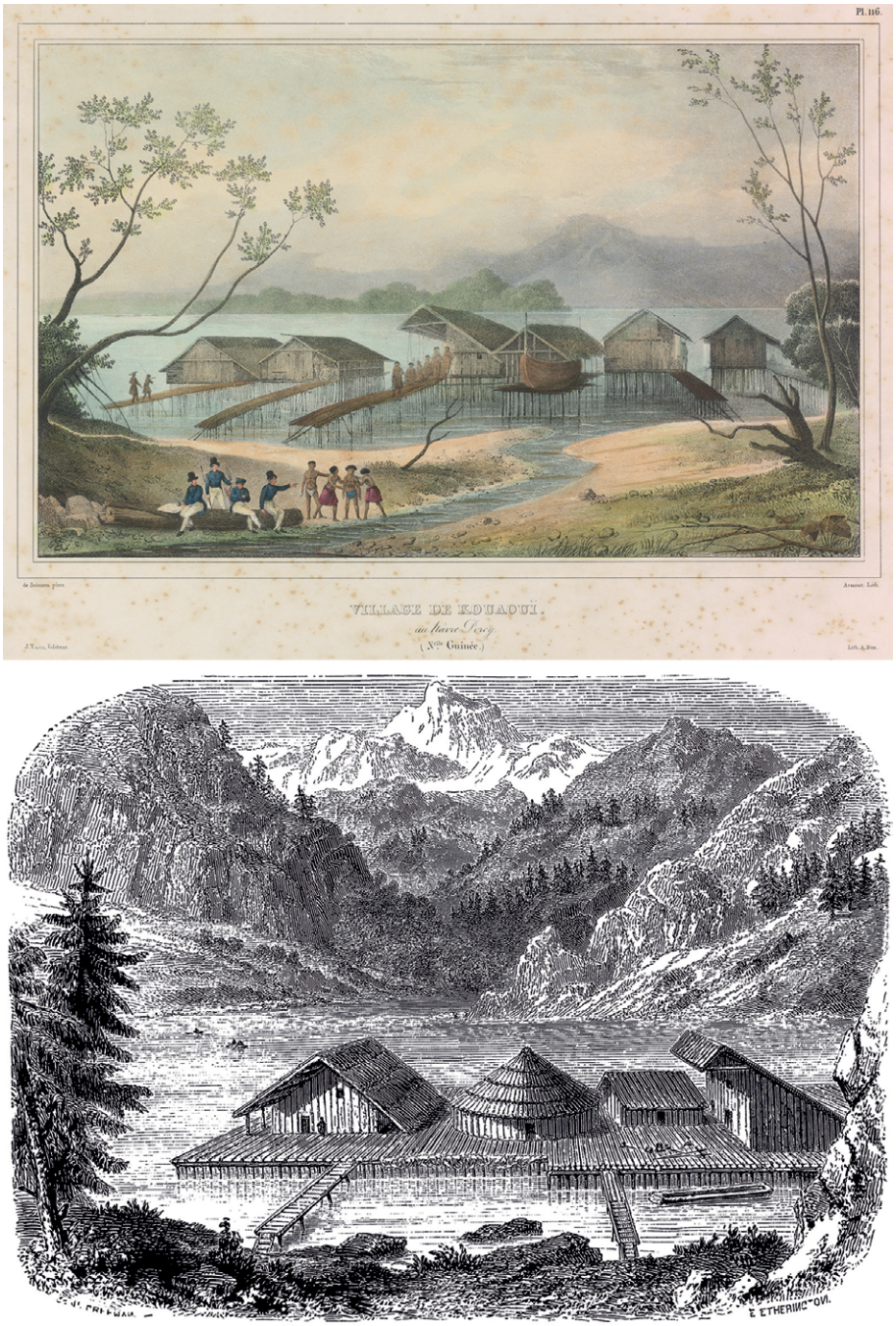

Figure 1. Above: Arnout, Jean Baptiste, "Village de Kouaouï au hâvre de Dorey, Nouvelle Guinee" (The village of Kouaouï in the Bay of Dorey, New Guinea), Pl. no. 116 of 'Voyage de la corvette l'Astrolabe. Atlas historique.' (figure: National Library of Australia. Permission from copyright owner dating 2010.09.23). Below: Reconstruction of a prehistoric pile dwelling settlement in an Alpine setting (inspired by a reconstruction from Keller 1854). Engraving: E. Etherington, date unknown.

Materiality and prehistoric cultures

According to historical tradition it was the Late Roman Empress Helena, the mother of Constantine, who, opening tombs in search of relics, found the True Cross in Jerusalem in AD 325 (Borgehammar 1991; Heussler 2006). Whilst it is a little far-fetched to make Helena the first-ever archaeologist, her search for material representations of spiritual archetypes does, indeed, show that materiality plays an outstanding role even in a spiritualised religious context. The revival of the knowledge and ideas of Antiquity during the Renaissance period in the 15th and 16th centuries called scholars' attention to the material evidence of the past. Excavations carried out in the ruins of ancient villas in and around Rome brought to light architectural components, sculptures and the profession of the antiquarian. But even this would not merit the label of archaeological research. The first excavations of prehistoric burials were probably mounted by N. M. T. von Rostock (died in 1525) on behalf of Henry V, Duke of Mecklenburg, also known as Henry the Peaceful (1479-1552; Kühn 1976). In the 16th and 17th centuries collections of extraordinary natural and cultural objects evolved into princely or bourgeois cabinets of curiosities. The collections of the Italian Este and Gonzaga families became leading examples and the Habsburg cabinets of curiosities were famous counterparts north of the Alps. These collections made encyclopaedic claims. They were intended to act as a mirror of the cosmos in miniature, thus fulfilling the requirements of universal knowledge. Unusual exotic objects were displayed in one place, thus demonstrating to the amazed visitors the relationship between man-made artefacts and objects created by divine nature (Raffler 2007; Samida 2002). In 1759 the British Museum in London was the first public museum to open anywhere in the world. A few years prior to its opening, the physician Sir H. Sloane (1660-1753) had bequeathed more than 70,000 objects to the British nation (MacGregor 1994). However, it was not until the 19th century that museums began to collect archaeological objects in a targeted manner. In 1865, for instance, the Swiss entrepreneur F. Schwab (1803-1896) donated his famous collection of prehistoric pile-dwelling and 'La Tène' period finds to the city authorities of Bienne, who subsequently used this legacy to open the Schwab Museum in 1871-1873, one of the first museums in Switzerland (Hafner 2012; Hafner *et al.* 2013). Almost simultaneously (in 1864) the Swiss Federal Government acquired the physician V. Gross's equally famous collection of finds from prehistoric lake-dwelling settlements on Lake Bienne. These were put on display in the '*Bundeshaus* (parliament building)' in Bern and ultimately formed the material foundation for the Swiss National Museum in Zurich, which was founded in 1891 (Kaeser 2010*a;* Méroz 2010; Zimmermann 1987).

Out of the range of archaeological sciences, prehistoric archaeology most consistently focuses on the materiality of things. Whilst almost all other archaeological sciences have at least rudimentary written sources to fall back on, this is not the case with prehistoric archaeology. The study of non-literate societies is based solely on the body of material archaeological evidence consisting of artefacts and features as well as ecofacts. Because of this strong focus on material evidence and the interpretation of finds and contexts, prehistoric archaeological research plays a special role within the humanities and social sciences and usually encapsulates insight

from the natural sciences and historical cultural sciences in its studies. Nowadays, prehistoric archaeological reports and studies rely almost entirely on the analysis of the decay of unstable radioactive isotopes from organic materials (radiocarbon dating), the mathematical and statistical analysis of tree rings (dendrochronology) and on geochemical analyses of soil samples from stratigraphic sequences or material analyses using X-ray fluorescence, pulsed laser ablation and thin sections, to name but a few.

However, it must also be noted that up to the mid-20th century and beyond, prehistoric archaeological research primarily viewed the material evidence of past societies, and pottery in particular, from the perspective of technology and culture-history. The first distribution maps were based on mapping pottery shapes and decorations, which were interpreted, be it overtly or covertly, as reflecting ethnic groups (Beltz 1914; Lissauer 1904; Voss 1901). In 1936 Childe (1892-1957) stated that "All the groups of simple food-producers recognised by archaeology are distinguished from one another by very marked differences. Archaeologists divide them into a bewildering variety of 'cultures'" (Childe 1936, 1951 edition, 73). This in reference to his well-known statement that "We find certain types of remains – pots, implements, ornaments, burial rites and house forms – constantly recurring together. Such a complex of associated traits we shall call a 'cultural group' or just a 'culture'. We assume that such a complex is the material expression of what today we would call 'a people'" (Childe 1929). Essentially, Childe's approach was based on G. Kossinna's (1858-1931) famous definition of archaeological cultures, which he had coined as early as 1911: "Sharply defined archaeological culture areas correspond at all times to the areas of particular peoples and tribes" (Kossinna 1911; later more specifically: "Clearly defined, sharply distinctive, bounded archaeological provinces correspond unquestionably to the territories of particular peoples and tribes", Kossinna 1926). In his 1911 publication, Kossinna for the first time described what he had already introduced in an 1895 lecture as his '*Siedlungsarchäologische Methode* (settlement archaeology method)'. Due to their focus on defining specific cultures and ethnic groups based on their material remains, Childe and Kossinna can be seen as typical proponents of the culture-historical school of thought within prehistoric archaeology.

Anthropology and prehistoric archaeology: Common roots in early science

In Germany, archaeologists and anthropologists were strongly influenced by the writings of cultural historian G. F. Klemm (1802-1867). His '*Handbuch der germanischen Alterthumskunde* (Handbook of Germanic archaeology)', published in 1836, contained numerous images of prehistoric finds and his ten-volume work entitled '*Allgemeine Culturgeschichte der Menschheit* (General cultural history of mankind)' (1843-1852) was a comprehensive ethnographical description of the customs, traditions and material worlds of all non-European societies known at the time. He also had his own ethnographical collection, which comprised more than 15,000 objects, which in 1869 found a permanent home in Leipzig in the first ethnographical museum in Germany. Klemm was one of the first scientists to state that language, the manufacture of tools and the use of fire are essential traits

that separate humans from animals. At the same time, however, he also posited a theory of inequality of the races, which he saw as the driving force of world history (Eigenwill 2016; Hock 2006).

The first scientific societies of physicians and naturalists had been established in Europe in the first half of the 19th century, including the Swiss Society of Natural Sciences, later renamed the '*Akademie der Naturwissenschaften Schweiz SCNAT* (Swiss Academy of Sciences)', founded in 1815 and thus one of the earliest associations. Against this background, the first meeting of anthropologists took place in Göttingen in 1861 which called for the foundation of a society with an associated journal. The call was answered in 1866 with a journal entitled '*Archiv für Anthropologie. Zeitschrift für Naturgeschichte und Urgeschichte des Menschen* (Anthropological Archive. Journal of Natural History and Prehistory of Mankind)' edited until 1882 by A. Ecker (1816-1887) and L. Lindenschmit the Elder (1809-1893) (Ecker 1866, 1-6; Fatouretchi 2009, 22). Ecker was a physician and taught at Freiburg im Breisgau, but he also had a keen interest in prehistoric archaeology and carried out his own excavations. He left behind a comprehensive collection of more than one thousand human skulls as well as archaeological finds and ethnographical material which would subsequently become the foundation of several university collections and museums. The trained artist and archaeologist Lindenschmit was co-founder of the '*Römisch-Germanisches Zentralmuseum* (Romano-Germanic Central Museum, RGZM)' in Mainz in 1852, head of excavations at the Middle Neolithic cemetery at Monsheim, Hinkelstein (Rheinland-Pfalz, DE) in 1866 and in 1872 became the first full-time prehistorian in Germany.

Initiated by R. Virchow (1821-1902), the first anthropological society in the German-speaking world was founded in Berlin in 1869. Virchow was a medical and political polymath and is seen as both the father of modern pathology and one of the most important proponents of modern medicine. Like Ecker, Virchow was also interested in archaeology and mounted his own excavations. Other founders of the '*Berliner Gesellschaft für Anthropologie, Ethnologie und Urgeschichte* (Berlin Society for Anthropology, Ethnology and Prehistory)' were the zoologist, anatomist and ethnologist R. Hartmann (1831-1893) and the physician A. Bastian (1826-1905). Since his extended travels as a ship's surgeon Bastian had become a passionate collector of ethnographical and archaeological objects and from 1886 he served as director of the '*Königliches Museum für Völkerkunde* (Royal Museum of Ethnology)' in Berlin. He is considered to be the founder of ethnology as an academic subject in Germany (Fischer *et al.* 2007).

The 'Anthropological archive' became the official journal of the German Society for Anthropology, Ethnology and Prehistory from 1870 onwards. Besides Ecker, Lindenschmit and Virchow, other editors included Swiss scholars such as W. His (1831-1904, Basel), L. Rütimeyer (1825-1895, Basel), É. Désor (1811-1882, Neuchâtel) and C. Vogt (1817-1895, Geneva). Most of its editors initially studied medicine and can be classified as natural scientists with multiple interests. Désor, Vogt and Virchow were politically active and had links to the revolutionary intellectuals of the '*Vormärz* (Age of Metternich)' and the March Revolution of 1848. Virchow was forced to flee Berlin and was exiled in Würzburg (Bavaria, DE) for five years from 1848 and later went on to serve as a member of the German

'*Reichstag* (Parliament)' from 1880 to 1893. Vogt's family had fled from Giessen in Germany to Bern in Switzerland in 1834, where his father, P. Vogt (1789-1861), became professor of medicine and principal of the newly founded university and director of the university hospital (*Inselspital*). C. Vogt served for many years, first as a member of the Geneva City Council and later on the National Council and on the Council of States. He was also the first principal of the University of Geneva. Désor, who also originated from Hesse, participated in the '*Hambacher Fest* (Hambach Festival)' in 1832 and eventually emigrated via France to Bern where he was taken in by P. Vogt. Like C. Vogt, Désor took an active part in Swiss politics at all levels, serving as a city councillor, a member of the Grand Council, the National Council and the Council of States for Neuchâtel between 1862 and 1878. In 1865 he published a book entitled '*Palafittes ou constructions lacustres du lac de Neuchâtel* (Pile Dwellings or Lake-Dwelling Constructions on Lake Neuchâtel)' and in 1874 he co-wrote '*Le bel âge du Bronze lacustre en Suisse* (The Lake-Dwelling Bronze Age in Switzerland)' with L. Favre. The friendship between Désor and Vogt dated back to their time as employees of the Neuchâtel geologist L. Agassiz (1807-1873). They had been members of his glacial research team in the 'Bernese Oberland' and had together spent the summer months of 1840-1845 bivouacked below a boulder on the medial moraine of the Unteraar Glacier in an extremely crude research station at about 2400 m a.s.l. which became well known as the '*Hôtel de Neuchâtelois*' (Kaeser 2004; 2007; various entries in the Historisches Lexikon der Schweiz [2]).

The call for an international anthropological society made in Göttingen in 1861 would be answered after 1865, though not in Germany but as a result of a concerted action by a French-Swiss-Italian network. According to official tradition, the '*Congrès International d'Anthropologie et d'Archéologie Préhistoriques* (International Congress of Prehistoric Anthropology and Archaeology)' under the leadership of Italian geologist G. Capellini (1833-1922) came into being at a meeting of the Italian Society of Natural Science in La Spezia (Kaeser 2010*b*; Sommer 2009). The transcript of the founding agreement dated 1st January 1866 shows that the decision was to hold the first '*Congrès Paléoethnologique* (Palaeoethnological Congress)' in conjunction with the conference of the Swiss Society of Natural Science in Neuchâtel in Switzerland that same year. Désor was declared chair and the second congress was to coincide with the 1867 World Fair in Paris. Although none of the Swiss agents were actually present at the meeting, Switzerland was chosen to host the prestigious event. The French geologist and prehistorian G. de Mortillet (1821-1898) was probably at work in the background, because Capellini stated that the founding of the congress had been initiated by de Mortillet who was a member of the Italian Society of Natural Science (CIAPP 1867, 1-3). But how did this come about? Having exposed himself politically during the social-revolutionary revolts in Paris in 1848, he was forced to leave France from 1849 to 1863. Initially he chose to go into exile in Chambéry (Savoie, in the Kingdom of Sardinia) but over the period between 1850 and 1853 he moved his residence to Geneva, which was intellectually more interesting. Thanks to the support of C. Vogt, de Mortillet was tasked with reorganising the archaeology and natural history collections of the city.

2 http://www.hls-dhs-dss.ch [June 2017].

In 1856 de Mortillet began to work as a railway engineer in northern Italy. He lived in Peschiera del Garda, where in 1850 Bronze Age pile dwellings had come to light. He attended a conference of the Swiss Society of Natural Science in Lugano in 1860, where he would have heard about the pile dwellings that had been discovered in Switzerland in 1854. In 1863 de Mortillet and Désor carried out excavations at the Isolino Virginia in Lake Varese, uncovering the first Neolithic site ever found in Italy (Junghans 1987; Lorre and Cicolani 2009; Marzatico 2004, 84). Désor, Vogt and de Mortillet were all members of the committee of the second '*Congrès International d'Anthropologie et d'Archéologie Préhistorique* (International Congress of Prehistoric Anthropology and Archaeology)', which took place in Paris in 1867 and was the first such congress to be attended by numerous German scientists, including such well-known figures as Virchow and Ecker. Virchow would attend every conference until his death in 1902; other attendees whose names are still well known today included A. Bastian, O. Fraas, F. Lisch, A. Lissauer and H. Schaafhausen. J. Mestorf was one of only a few female scholars to take part.

This trip back into the history of science highlights on one hand the close international links between the up-and-coming natural sciences and the anthropologically-oriented research, particularly in the decade between 1850 and 1860. On the other hand, it clearly shows that the pioneers of today's prehistoric archaeology all came from naturalist circles and most of them were medically trained. The fundamental geological and biological research carried out by C. Lyell ('Principles of geology', 1830-1833) and C. Darwin ('The origin of species', 1859) in the mid-19th century had opened up pathways to completely new insight. The central theme studied by the anthropologically and natural scientifically-minded scientists including Ecker, Virchow, Désor, Vogt and de Mortillet was the age and development history of humankind in all its physical and cultural aspects (Gramsch 2006).

Material turn and material culture studies

In 1967 the American philosopher R. Rorty published a programmatic anthology entitled 'The linguistic turn', which today is considered the precursor to all 'cultural turns' in the humanities (Bachmann-Medick 2010; Rorty 1967). Almost at the same time there was renewed interest in artefacts and materiality, promoted by theory movements including structuralism as represented by C. Lévi-Strauss (1908-2009) and the 'interpretative turn' as put forward by C. Geertz (1926-2006); however, an actual 'material turn' did not occur until the 1980s (Bräunlein 2012; 'material culture turn' according to Hicks 2010). Two centres became essential for the evolution of material culture studies in the 1980s: the Department of Archaeology Cambridge and the Department of Anthropology at University College London (UCL). I. Hodder (Cambridge), for instance, developed the ideas and notions of 'contextual archaeology' (Hodder 1987) and D. Miller (UCL) 'investigated the relationship between society and material culture' by means of ethnographical studies on capitalist mass production (Miller 1987).

The 'Journal of material culture' was founded more than 20 years ago by archaeologists and anthropologists associated with UCL, including Miller, C. Tilley and M. Rowlands (Hicks 2010). "The Journal of Material Culture transcends tra-

ditional disciplinary and cultural boundaries drawing on a wide range of disciplines including anthropology, archaeology, design studies, history, human geography, museology and ethnography." [3] By its own account the journal aims "to explore the relationship between artefacts and social relations".[4] Just a few years later a UCL team led by Tilley published the first 'Handbook of material culture' (Tilley *et al.* 2006). It was introduced as follows: "The Handbook charts an interdisciplinary field of studies that makes a unique and fundamental contribution to an understanding of what it means to be human. It will be of interest to all who work in the social and historical sciences, from anthropologists and archaeologists to human geographers to scholars working in heritage, design and cultural studies"[5]. One of the aims of the handbook, several editions of which have since been published, was "to contribute to a new relationship between sociocultural and archaeological anthropology" (Tilley *et al.* 2006, 4). In 2010 D. Hicks and M. C. Beaudry followed with a completely new set of authors and published the 'Oxford handbook of material culture studies' (Hicks and Beaudry 2010). Here, too, the authors aimed "to explore, to gather together, and to celebrate a diversity of approaches to 'material culture studies' in anthropology, archaeology, and the related fields of cultural geography and science and technology studies" (*ibid.,* 2).

The handbooks mentioned and the 'Journal of material culture' aspire to highlight the relationships between artefacts and social relations by putting forward interdisciplinary studies. Anthropology and archaeology together are named as the target disciplines, though the actual contents often diverge considerably from this claim. Whilst papers relating to prehistoric archaeology and particularly the Neolithic were, in fact, included in the early years of the 'Journal of material culture' (1996-1999), they have been almost completely absent since 2000. The 'Handbook of material culture' (2006) confirms this development since it contains anthropological contributions only. Whilst the 'Oxford handbook of material culture studies' (2010) once again includes archaeological / prehistoric themes, they are still clearly in the minority. The interest in material culture on the part of anthropologists is beyond dispute, as can be seen not least in the number of papers submitted to the 'Journal of material culture', four editions of which are published every year. However, the convergence of anthropology and archaeology, as it was initially hoped for, perhaps materialised to a lesser degree than had been expected. Is it possible that the interests, methods and approaches of prehistoric archaeology on one hand and anthropology with its cultural scientific focus on the other are too divergent? Probably not. The latest paradigmatic shift, the material turn, has at least opened up a pathway for a new shared ontological basis, that of mutual relationships between humans and objects. The fact that a convergence between both disciplines is indeed possible is also shown by this publication, and also by articles like 'Ceramics (as containers)' in the 'Oxford handbook of material culture studies' (Knappett *et al.* 2010).

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3 http://mcu.sagepub.com [April 2017].

4 *ibid.*

5 https://uk.sagepub.com/en-gb/eur/journal/journal-material-culture [April 2017].

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Material culture and mobility: A brief history of archaeological thought

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Abstract

Mobility has a long history in archaeological thought, and its role has veered from historical mechanism explaining material culture patterning, over a research topic in its own right, to conceptual metaphor. This broad-brush overview does not claim to be an extensive treatment of the topic, but draws out the changing model of human-thing relations that underlies these different archaeological takes on mobility. It argues that paying attention to the shifting perspectives on material culture is crucial in understanding the role that mobility can play in archaeological narratives. Finally, the article proposes that recent refinements of the 'material turn' may open up important new avenues for studying the movement in time and space of objects, knowledge and people.

Keywords: *material culture, mobility, diffusionism, post-processualism, material turn*

Diffusionism and the culture-historical model

The archetypical study of mobility by prominent exponents of anthropology such as F. Boas centred on diffusionism, which was culture-historical archaeology's model of how things *and* people moved (Cabana and Clark 2011; Hahn 2008, 191-192). The 'pots equal people' metaphor stands for the culture-historical process of inference whereby stylistic similarities in material culture were taken to match a particular culture, often understood on an ethnic basis (Anthony 1990). Publications in a culture-historical vein will typically contain a block chronology charting idiosyncratic cultural sequences per geographical area, distinguished both in space and in time by sharp breaks (Trigger 2008, 217-223). This model of change in the form of sharp breaks was the inevitable result of the equation between culture and material culture: by allowing material culture to define human culture at its most fundamental level, culture-historical archaeology barred all mechanisms for change from within. Cultures were essentially static and bounded. Conceptual recourse for explaining change could only be had to external influence and, more specifically, to the diffusion of traits, both material and ethnic, from

another culture. The synchronous transposition of the bounded chronologies consisted of geographically delimited (and often differently coloured!) culture areas with big, unidirectional arrows between them. Not surprisingly, those maps looked very much like the maps of nation states and provinces that school children had to colour-code.

Diffusionist approaches all reacted against evolutionist explanations of change, but differed in the extent to which their explanation relied on actual human migration as opposed to a more generic (material) cultural influence. In Roman archaeology, for instance, the infamous and much-critiqued 'Romanisation' paradigm can be labelled 'diffusionist' only to a modest degree. In its earlier guise (Haverfield 1915), it equated the appearance of Roman-style objects in the western provinces not with the incursion of Italian people, but with the local adoption of a Roman 'civilisation', understood as a deep-rooted mentality rather than an ethnic identifier (Van Oyen 2017). In this narrative, travelling objects were implicitly modelled as imbued with so powerful a 'Roman' aura as to be able to induce 'Roman culture' at a distance, without the mediation of actual 'Roman' (*i.e.* Italian) migrants. Nevertheless, the historical framework was such that the conquest and migration of people from the Roman heartland were accepted as an uncontested backdrop to the mobility of things. This shows in particular in studies on production, which long considered 'truly' Roman-style artefacts as the product of Italian, migrant, craftsmen (*q.v.* Van Oyen 2015, 64; see below).

This is not the place to flog dead horses such as 19th century culture-history or the Romanisation debate, but it is worth pointing out the major flaws of diffusionism for the study of mobility. First, of course, is culture-history's reductive equation between culture and material culture. Granted, prototypical typologies of culture-history such as O. Montelius' scheme of Scandinavian prehistory only purported to include a selection of particularly characteristic objects – not a complete repertoire of material culture (Sørensen 1997, 187). But even the persistence (or invention) of contemporary stereotypical 'national' material culture such as Scottish kilts (Trevor-Roper 1984) or French baguettes does not imply an unfaltering cultural essence. In the UK, for instance, the baguette (especially in its sourdough or home-baked varieties) is arguably more of a middle-class alternative to the standard toast than a representation, let alone absorption, of French culture. Not even the distribution of the most iconic objects implies the spread of related values, identities, or 'mentalities'.

Secondly, and directly related to the first point, neither cultures nor their supposedly related material culture can be assumed to always be bounded, homogenous, and unaffected by their expansion or relocation. The notion of such boundaries was grafted on the experience of modern European nation-states (as exported to the colonies, with well-known disastrous consequences), whose frontiers could be represented by a sharp line and whose territory could be coloured uniformly (Trigger 2008, 211-219 on culture-history's nationalist genealogy). But any differences that may exist between any two modern countries (*e.g.* telephone country codes; currencies; the width of train tracks) are a product and not a precondition of their prior definition as nation states. Culture-historical archaeology's focus on an ideal 'type' object thought to capture the essence of a culture has spurred an analyt-

ical focus on homogeneity similar to the interpretive emphasis on *stasis*. Over and above all materialisations of a certain type, an almost platonic archetype is taken to exist (implications and critique in Van Oyen 2015, 63, 66). The analytical upshot is that any artefact variability that does not denote a typological break (however identified) is historically irrelevant. In publications, for instance, it suffices to draw just one ideal archetype for every type.

Finally, even though the culture-historical model comes with a straightforward model of mobility, it only deals with one particular and relatively rare kind of mobility: the mass migration or cultural diaspora in which an entire culture changes or expands its territory; with the long-distance movement of objects as its archaeological corollary. Even the less migration-focused variants of diffusionism, as found for example in the Romanisation debate, remain mute on other kinds of mobility. Culture-history does not have the conceptual tools to deal with cases such as the itinerant craftsman, the trader, or the spouse who moves in with her family-in-law.

The post-processual model: Mobility muddied

No serious overview of archaeological theory can leap straight from culture-historical archaeology to post-processualism without passing by the New Archaeology of the 1960s. For reasons of space, however, I will only remark that New Archaeology steered away from cultural interaction and migration as the sole mechanism of historical change. Nowhere is this clearer than in the debate between L. Binford and F. Bordes on the Mousterian in South France. From his description of distinct tool types, Bordes had deduced the coming and going of different groups ('cultures') of Neanderthals (Bordes 1953; Trigger 2008, 255). The Binfords countered that the different proportions of specific tools in assemblages reflected toolkits responding, not to cultural entities, but to distinct functional tasks (Binford and Binford 1966; Trigger 2008, 403). This debate illustrates the move away from migration, and the introduction of adaptation as a mechanism for explaining change in material culture patterning. In addition to replacing migration as an explanatory strategy, the notion of adaptation to external environmental conditions or their results – *e.g.* climate, population stress, *etc.* – also became forwarded itself as a cause of migration (such as the 'out of Africa' movements, see Stringer 2003 for a recent version).

With adaptation, change still needed to be explained by reference to an external trigger (albeit no longer migration or diffusion of cultural influence). From the 1980s onwards, post-processual archaeology radically redrew this balance by emphasizing the processes of internal societal change causing variations in material culture patterning. Variation was the keyword both analytically and interpretively, in direct opposition to the homogeneity of cultures and their representive types in culture-history. Analytically, each artefact became meaningful in and of itself, and not just as an illustration of a 'type'. It mattered precisely where it was found, with what other objects, whether it had use wear, *etc.* – as summed up by the notion of 'context' (Hodder and Hutsen 2003).

The variability inherent in context continued onto the interpretive level. For post-processualism, context is all, even in the case of iconic 'types' like the French baguette. A baguette accompanied by brie cheese and wine does not represent the same values, meanings, or cultural associations as a baguette filled with fries. And

even the 'same' identical baguette could have different *meanings* in different contexts. The idea that cultures are homogeneous, bounded entities was thus disproven: even if you and I both happen to be eating a baguette, or to be using the same pot, the way we do it, and the meaning it has, can be very different for both of us. Post-processualism typically turned to a textual model to decipher this variable meaning, seeing meaning as produced in a semantic field of relative differences between artefacts (like letters and words in an alphabet or text), and directed at communication – about identity, class, gender, status, *etc.*) (see contributions in Buchli 1995; Hodder 1982 and 1989).

Where did this leave the study of mobility? With post-processual archaeology, the link between travelling objects and travelling people is less straightforward: objects can be traded, exchanged, desired, imported, *etc.* without people or cultural knowledge moving with them. Conversely, human mobility becomes rather difficult to approach from the perspective of material culture alone and, increasingly, recourse is made to scientific methods, in particular isotope analysis (*e.g.* Eckardt 2014, 55-59; Eckardt *et al.* 2010). The emphasis on context shifted attention from the 'type' object to the 'special' object; the odd one out in its context which, through its marked difference to the other objects in that context, would have a heightened potential for signification (*e.g.* Eckardt 2014, 35-45). It is then tempting to link these 'odd ones out' to incomers, but idiosyncrasies in material culture do not only represent ethnic identity, but also, alternatively or at the same time, other kinds of differences, such as status, gender, *etc.*

The movement of objects no longer directly speaks for the movement of people, and neither does it imply the circulation of any associated cultural knowledge, practices, or meaning. Objects can move but the associated knowledge of how to use or produce them may not. They can be reinterpreted or 'appropriated' (Hahn 2008) locally and their social and economic value may change along the way, as they move out through different contexts. Different parties in exchange can attribute different meanings to the same trade object: analysis of how for instance the same pot was used in domestic contexts in one area, but as a grave good in another, points to different 'regimes of value'. Colonial contexts abound with examples of encounters or clashes between such regimes of value (Dietler 2010; Gosden 2004).

'Object biographies' follow the movement of artefacts in time as they pass through different stages of production, exchange, use, discard, *etc.*, and as their meaning changes according to these different stages. In its original guise, as introduced by A. Appadurai's (1986) 'social life of things' and Kopytoff's (1986) 'cultural biographies', object biographies were concerned with how objects moved in and out of shifting value systems and in particular back and forth between the statuses of gift and commodity, previously thought to be mutually exclusive (Miyazaki 2010 for a summary). But as the concept gained prominence, biographies have been used to refer to shifts in social values, cultural meanings, personal affect, or functional use, as much as economic register (Foster 2006). In one stage, a pot can be a functional container used for cooking; in the next one, it can be something with emotional value given as a grave good. Once broken, a pot may become waste, or a useful building material, or something tying a community together (*e.g.* Chapman 2000). As is clear from the very terminology, object biog-

raphies are explicitly grafted on human lives (Hoskins 1998), and this one-way dependency is continued conceptually, as objects are entirely dependent on shifting human meanings and contexts for shaping their biographies. Analytically, biographies tend to focus on single objects, in many cases the 'special' or 'odd one out' and, often, on museum objects with records of origin and subsequent transactions (Gosden and Marshall 1999). Nevertheless, it is possible to trace object biographies of object classes ('types') and assemblages as well, although this often requires combining physically distinct objects in a patchwork biography (*e.g.* Van Oyen 2016*a*, 72-91).

'Networks' in turn feature as the spatial metaphor for such object flows. Both visually and conceptually, the culture-historical maps of homogeneously coloured areas with big, unidirectional arrows between them have been replaced by complex mazes of multi-directional links, seemingly without stable 'launching platforms'. Analytically, networks are often traced on the basis of shared attributes, *e.g.* the same shape of pot, the same clay or raw materials (examples abound, *e.g.* Sindbaek 2007; contributions in Brughmans *et al.* 2016 and Knappett 2013). The distance between such attributes plotted by networks can be understood either geographically – the same traits attested in distinct places – or relationally – as long as a parameter can be used for measuring this distance (*e.g.* relative similarity of different assemblages on the basis of shared pot shape). But in order to speak to the mobility of cultural knowledge – not just of objects – networks need to be infused with a notion of practice. To avoid taking networks for granted as automatic flows, and to highlight instead the work needed to maintain such flows and the associated objects and knowledge, it has been proposed to shift to 'work-nets' instead (Van Oyen 2016*b*).

The importance of considering practice against the background of a post-processual take on mobility is exemplified by a case study of the production of so-called 'pre-*sigillata*' pottery in South Gaul, dated to the late first century BC (Van Oyen 2013 for extended discussion). These vessels' shapes and red exterior colour clearly referred to Italian production of '*terra sigillata*' pottery – one of Roman archaeology's most emblematic types of ceramic tableware, which is widespread and highly recognisable (Fig. 1; Van Oyen 2016*a*) – but they were produced differently to Italian pottery. Within a culture-historical tradition, these 'pre-*sigillata*' pots are taken to be poor copies of the ideal 'type' of Italian *terra sigillata* pottery: they hint at the archetype but can only approximate it. The research question regarding mobility in such a framework would be 'were Italians involved in production', and the answer would have to be 'no (or only to a certain extent), because these are not proper *terra sigillata* pots'. Instead of positing Italian *sigillata* as an ideal standard, a type-object, the post-processual model urges for the analysis of variability in the local production practices of pre-*sigillata* pottery. This shows that production practices were not entirely the same as, or different from, Italian production techniques: some stages of the '*chaîne opératoire* (operational sequence)' were similar, others maintained a similarity with pre-existing local ceramic traditions, still others diverged from both of these technological styles. It is likely that some migrant potters were involved, but whether or not they were ethnically Italian is no longer the primary research question. Instead, the variability in pre-*sigillata* production

practices opens up insights into the complex negotiation of identity, knowledge, consumption and markets in a colonial context. In this case, objects, people, and knowledge were mobile, but neither of these spheres of mobility overlapped.

In sum, the post-processual model of the relation between humans and things does not say much about the 'classic' concerns of mobility; the large-scale migrations that were the focus of culture-historical archaeology. It becomes more difficult to deduce the movement of people from the movement of objects (Van Dommelen 2014). But other avenues for research are opened up: the movement of things through time and space becomes the entry point for issues of identity formation, knowledge transmission and regimes of value. Analytically, the post-processual take on mobility proves especially adept at dealing with single, often contextually 'odd' objects, and their redefinitions through biographies (in time) or across networks (in space). Fundamentally, however, this approach has crafted its own conundrum: it relies entirely on human signification for the successive redefinition or reappropriation of objects; and yet this human signification ('mentality') can no longer be directly deduced archaeologically from objects as was the case in culture-history.

Figure 1. Terra sigillata bowl (form Drag. 37) with moulded decoration produced at Lezoux (F), second century AD (figure: R. Delage).

Mobility after the 'material turn'

Objects cannot move themselves of course. But they do bring an important aspect to their own movements in time and space: a physical continuity, over and above the successive redefinitions of their meaning. This had been underestimated in post-processualism, whose networks and biographies seem to be constituted by separate stages related only by the whims of human agency and hermeneutics.

The recent 'material turn' has shown that the sheer physical presence of objects directly affects human action, perception, and meaning (Hicks 2010; Knappett 2005). Things do not only communicate, they also relate to humans and shape human life in a less expressive way. First, people are embodied: they act through and with their bodies and not as dis-embodied minds, and this shapes perception. Embodiment extends to things: for instance, some people cannot see but for contact lenses, which mediate vision (Ihde 1990). T. Ingold (Ingold 2000, 339-348) describes how weaving a basket is not the mere execution of an idea that one has in one's mind (the design of the basket) on passive matter. Instead, the material has its role to play and shapes what the eventual basket will look like: some twigs are flexible, others are more rigid, so the basket-maker constantly has to feel, adjust, and follow the possibilities set by the material (*cf.* Malafouris 2008 on using the potter's wheel). Secondly, objects do not merely express pre-existing identities and meanings, but also help create these. D. Miller's (Miller 2005, 7-10) concept of objectification denotes how people come to understand who they are and what their position in relation to others is through producing and using things. So, for instance, an archaeologist self-identifies as such by knowing how to use a trowel, or by knowing the difference between, say, a WHS trowel and a Marshalltown trowel. Thirdly, objects not only facilitate perception and self-understanding, but also shape people's actions in a more direct, causal way. J. J. Gibson's (Gibson 1979) concept of affordances, for instance, points to the resources offered, or afforded, by landscapes to people with different skills, habits, *etc.* To a skilled hunter, for instance, a forest affords survival – a hunter is able to identify and use the resources for survival. An urban dweller, instead, will at most be able to use the same forest for a weekend stroll. The notion of affordances was subsequently taken up in design theory (Norman 1998): successful designs are such that their intended audience can identify their function and use them accordingly, almost without thinking (see also Knappett 2005).

None of these strands in the material turn explicitly addresses mobility as a research question. And all share the focus on variability, context and practice with the post-processual model of human-thing relations. But they differ from the latter in shifting emphasis from meaning to action. The question is no longer (merely) 'what does this pot mean or represent?' but also 'what does this pot do, what kinds of actions does it allow?' This perspective allows for two important advances in the study of things on the move: a) adding directionality by recognizing the underlying continuity of the objects exchanged, traded, or moved; and b) not just considering the odd ones out.

First, as discussed above, both networks and biographical approaches traced how things were redefined as they moved through time and space: people in different knowledge traditions and different contexts would attribute different mean-

ings to the same thing. This opened up interesting new insights in each stage of redefinition, but it did not say much about how one stage linked to the next – which is the key to mobility, both of people and of things. By moving away from a focus on meaning, and by drawing attention to the practical demands that things make on humans, recent material culture theory can get at precisely these links between different stages in an artefact's biography – how one local context relates to the next – and therefore add a sense of directionality (Van Oyen 2016*a*, 131-132). Secondly, thinking about practical demands, rather than semantic signification, frees up conceptual space for the 'normal', mundane things that had become something of a neutral backdrop to expressions of meaning in a post-processual framework. The material turn allows modelling the movement in time and space not just of a single, well-known artefact, but also of objects *en masse*, underdetermined and inconspicuous in their omnipresence. As such, it provides the tools not just to avoid culture-history's template of mobility grafted on type-objects but, arguably, for the first time, to return to the 'type' and tackle its problems head-on (Van Oyen 2015).

These conceptual tools push the notions of networks and biographies further still. Aside from artefact biographies following individual objects and focusing on local contexts of redefinition and meaning-making, 'trajectories' follow classes of objects and describe what makes their movements in time and space hang together (Van Oyen 2016*a*, 131-135). For example, the Roman '*terra sigillata*' pottery mentioned briefly above was highly standardised, both in form and technology (see Fig. 1). It made for a straightforwardly defined type with corresponding cultural associations in the culture-historical paradigm (Van Oyen 2016*a*, 16-17). Under post-processual influence, however, its local redefinition and the variable meanings it acquired as it travelled across the western Roman provinces have been emphasised (Van Oyen 2017). The material turn returns to the 'typiness' of *terra sigillata* pottery, but instead of positing this as a universal principle of material culture's relation to culture, it redresses this as a historically specific definition, arrived at under certain conditions, and in turn fostering a particular kind of object mobility in time and space (Van Oyen 2015; 2016*a*, chapters 4 and 6). By pinning down shared parameters (*e.g.* shininess; shape), standardisation made any two *terra sigillata* pots comparable. Comparability enabled competition, which fostered a particular model of distribution and exchange. Standardisation also made it easy to stack *terra sigillata* pots, which greatly facilitated transport in bulk over long distances, and resulted in a distribution pattern with little or no fall-off with distance (Fig. 2). Sketching the trajectory of *terra sigillata* pottery in further detail exceeds the scope of this contribution (see Van Oyen 2016*a*), but the key point for the study of mobility is that the practical affordances of these pots shaped a specific trajectory of production and distribution. Their affordances made these pots mobile 'in a certain way': travelling easily and far, and in sets, meaning that they were rarely 'the odd one out' – a consequence that shaped their potential for communication.

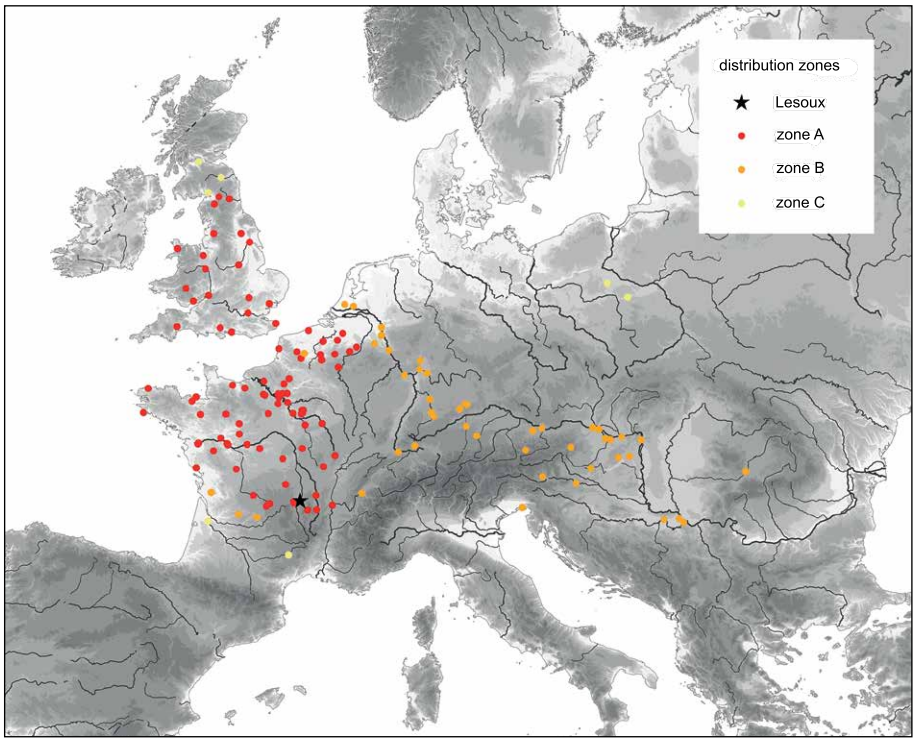

Figure 2. Distribution map of terra sigillata pottery produced at Lezoux, second century AD. The density of central Gaulish pots descends through zones A to C; but note the extent of zone A (figure: A. van Oyen; data source: Delage 1998).

Networks, too, are being complemented with a twin concept: 'entanglements'. In the post-processual model, things get redefined in different contexts, and the relation between humans and objects can change radically between these contexts. The notion of entanglement, instead, shows that things can 'entangle' humans, and can have consequences that go beyond their immediate local context. For example, I. Hodder (Hodder 2012, 196-199) has argued that the use of grinding stones in the Neolithic 'entangled' people and things in all sorts of new ways: it facilitated the retrieval of nutrients from plants, which in turn led to an intensified use of plants; it changed the techniques for food preparation, which in turn helped establish bread as the diet norm; and it necessitated the procurement of heavy stones, which in turn made it rather cumbersome to move around and reduced mobility. In a similar way, J. Robb (Robb 2013) has argued that the Neolithic consisted of a series of new objects and associated practices that were easy to take up, but difficult to get out of: once one adopted a new practice such as farming, one had to keep up with it, and it drew the adopter into all sorts of new dependencies. As a consequence of these cumulative dependencies, it was hard to turn back the clock on the Neolithic.

Mobility: On moving and being moved

Things move and, although people do not necessarily move with them as the culture-historical paradigm posited, they are moved by them. People do not remain unaffected by moving things: they can reinterpret them semantically – this is where the post-processual toolbox comes in – but they are also affected by them. Things fold people into particular trajectories of exchange, power relations and expression and draw them into entanglements of maintenance, reciprocity, or debt.

But things move and are moved in a variety of ways. And the resulting different trajectories or entanglements in turn move people in different ways – they create different possibilities for action. One of the challenges for an archaeology of mobility is to chart different 'kinds' and 'degrees' of mobility, not just of people (*e.g.* large-scale diaspora; itinerant craftsmen; military relocations) nor of things (*e.g.* souvenirs; long-distance trade), but of particular sets of human-thing relations. *Terra sigillata* pots, for example, were particular kinds of things (*e.g.* standardised) that created certain kinds of people (*e.g.* competing craftsmen), and this mutually defining human-thing relation created a specific pattern of mobility (*e.g.* long-distance trade, in sets) (Van Oyen 2016*a*, 109-112 and 123-126 on other kinds of mobility patterns).

Finally, this overview has shown that in the history of archaeology, mobility has been both a topic of study and a fundamental part of archaeological epistemology (as the historical mechanism taken to underlie material culture patterning). In view of such a rich but complex history of research, one is obliged to qualify the study of mobility. First, what do we study the mobility of? Who or what is moving and who or what does the moving? Are we interested in pots travelling, practices moving, or people relocating? Secondly, why do we study mobility? Is it a topic of historical interest in itself, does it allow us to explain patterns in the data, or is it a conceptual tool for getting at new questions and insights about the past? Finally, what is the underlying model of human-thing relations that we bring to bear on our study of mobility? This article has argued that perhaps this last point is the most crucial specification, as it fundamentally alters the questions we can ask about past mobilities.

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PART TWO

Object-centred perspectives: From 'cultures' and chronology to relations and mobility

The Munzingen culture in the southern Upper Rhine Plain (3950-3600 BC)

Loïc Jammet-Reynal

Abstract

The 'Munzingen' (short: MZ) was introduced by J. Lüning as a local group of the 'Michelsberg culture' (short: MK), subdivided into two chronological stages, MZ A and MZ B (Lüning 1967). From this pottery style, two clearly unconnected sequences can currently be outlined, north and south of the Colmar-Kaiserstuhl parallel of latitude. Meanwhile, the field data have been extensively updated and advances in excavation techniques have greatly improved our knowledge of the Upper Rhine Neolithic. The former stages, MZ A and MZ B, now seem to be two contemporaneous regional groups, occurring in non-overlapping areas rather than two chronological stages. In the North, the MZ B-style is a local evolution of the 'Michelsberg' pottery while, conversely, in the South, the MZ A-style arises out of a cultural background only lightly connected with the 'Michelsberg'. Moreover, in the far south of the Upper Rhine valley, relations with the 'Cortaillod' pottery of the Swiss Plateau have been repeatedly highlighted. Some new overviews of the Upper Rhine sequence have thus been undertaken and published in local journals but have often remained unnoticed. Thus, the objective of this paper is to provide a short up-to-date survey of the Late Neolithic sequence of the south of the Upper Rhine Valley, as well as possible relations to other pottery styles in neighbouring regions, especially the Swiss Plateau. Taking a spatially and temporally broad overview, the culture-historical approach allows us to trace influences between neighbouring stylistic groups and the resulting long-term transformations that lead to new regional pottery styles – all ultimately referable to the mobility and encounters of people.

Keywords: *Late Neolithic, Upper Rhine Valley, pottery, chronology, ties to neighbouring regions*

Geographical and chronological frame

The Upper Rhine Plain comprises a large valley of tectonic origin splitting in two the Vosges Mountains and the Black Forest. The valley is more than 250 km long and 30 km wide, extending from Basel to Frankfurt. Partly filled with sediments of alpine origin, it is covered by the alluvial plain of the Rhine and its tributaries. The landscape is flat, with the exception of the volcanic Kaiserstuhl hills, located in the South near the city of Freiburg. This article is about its southern half, from Basel to downstream Strasbourg (Fig. 1).

The Rhine never acted as a cultural boundary during Prehistory. From the Early Neolithic onwards ('Linear Pottery culture', 5300-4950 BC), the main cultural border split the valley into a northern and a southern province. The boundary between the two regions starts at the Colmar-Freiburg parallel of latitude and runs through the Kaiserstuhl. This boundary was still active in the time of the Late Neolithic[1], and even during the Iron Age and the Roman era. Nowadays, the same parallel of latitude acts as a linguistic division between various Alemannic spoken dialects. Therefore, in this article, the distinction will be made between a north and a south area of the southern half of the Upper Rhine Valley.

In the Upper Rhine Valley, the Neolithic sequence begins around 5300 BC with the 'Linear Pottery culture' ('*Linearbandkeramik*' short: LBK), of eastern origin (Fig. 2). The LBK ceramics are covered with distinctive decorations (see Hohle in this volume), having no background in the indigenous pottery styles such as 'Limbourg' or 'La Hoguette'. Two regions, the Upper and the Lower Alsace, can be distinguished through pottery decoration and through funerary practices (Jeunesse 1995; Lefranc 2007). The Lower Alsace in the North was thus settled by an LBK regional group related to the Neckar Valley. In the Upper Alsace in the South (between Mulhouse urban area to the south of Baden), they developed an unconnected LBK regional group, linked with the Schaffhausen-Hegau area upstream and also with the Paris Basin.

Once the 'Linear Pottery culture' came to its end, by 4950 BC, the 'Danubian culture cycle' continued and various archaeological cultures specific to central Europe kept the tradition going: the next millennium, which corresponded with the Middle Neolithic, can be divided into supra regional occurring cultures like 'Hinkelstein', 'Grossgartach', 'Rössen' and 'Bischheim' (formerly 'Rössen III' or 'groupe de Menneville'). At the end of the 5th millennium BC, the 'Epi-Rössen horizon' finally took place (4400-4000 BC). Each of the previously enumerated cultures and chronological stages are characterised by specific ceramic decorations (Denaire 2009; Jeunesse *et al.* 2004). This way of subdividing the Neolithic sequence has become a standard practice since the very first studies of the local Neolithic, undertaken by R. Forrer (1866-1947; see Gallay 1977, 29-30).

In the first half of the 4th millennium BC (3950-3600 BC), the decorations disappeared and the pottery became undecorated ('*horizon des céramiques lisses*'). Depending on the chronologies, this period is referred to as the Late Neolithic. At that time, in the Rhine valley, the 'Munzingen culture' emerged after a 'Michelsberg' parenthesis. The 'Munzingen culture' occurred at the same time as

1 French: *Néolithique récent* or *Néolithique moyen II*, German: *Jungneolithikum,* 3950-3600 BC.

the 'Burgundy Middle Neolithic' ('*Néolithique Moyen Bourguignon*' short: NMB) in the Jura Mountains, and the 'Cortaillod' or the 'Pfyn cultures' on the Swiss Plateau. The 'Munzingen' originality resides in a plentiful ceramics repertory, including numerous varieties of undecorated forms belonging to a broad set of functional categories (bottles, jugs, tumblers, plates, dishes, storing vessels, clay discs and spoons).

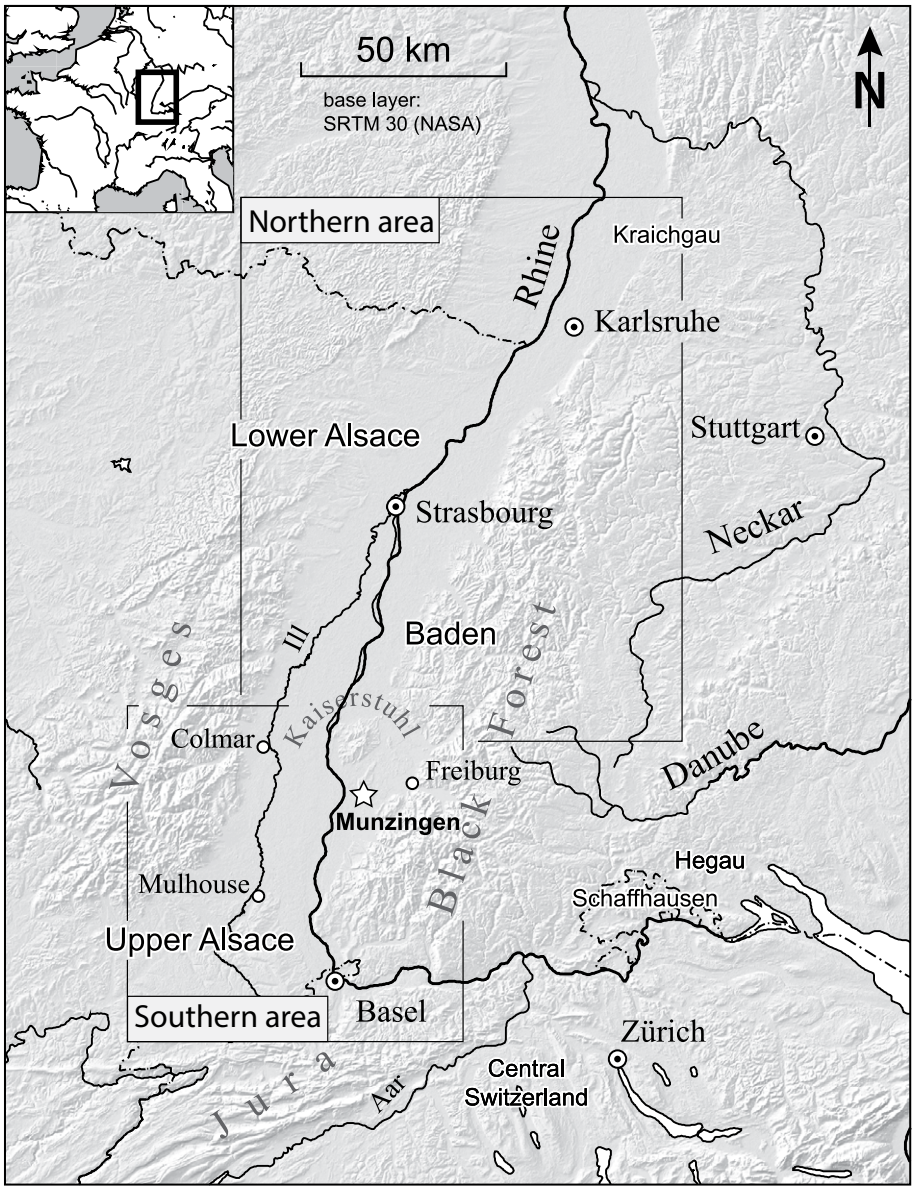

Figure 1. Physical map of the southern half of the Upper Rhine Plain, divided into two areas (figure: L. Jammet-Reynal).

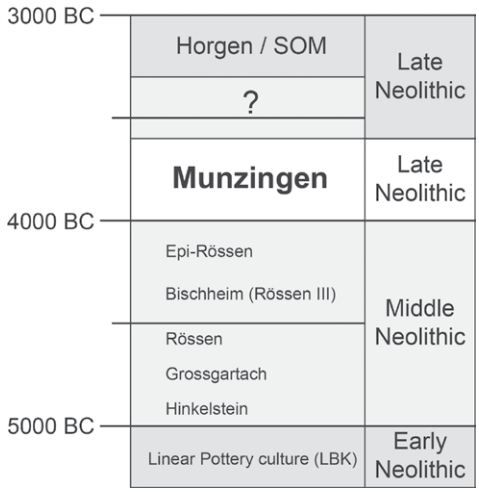

Figure 2. Chronological frame: the 'Munzingen' arose in the first half of the 4th millennium BC, shortly after the 'Danubian culture cycle' (LBK to Epi-Rössen in the Early- and Middle Neolithic) and was followed by the 'Horgen / Seine-Oise-Marne' (figure: L. Jammet-Reynal).

After some centuries of intermission, for which no data has been recorded, the 'Horgen' and the 'Seine-Oise-Marne cultures' (short: SOM) settled in the Upper Rhine Valley by the end of the 4th millennium BC, later followed by the 'Corded Ware' and 'Bell Beaker cultures'.

All recognised Neolithic sites in the Upper Rhine Valley are graveyards and dwelling places on flat dry land, while hilltop sites are rare. Most of the time, only cut features are preserved (pits, ditches, wells, post holes) and 'Munzingen' dwelling sites are mostly composed of storage pits. As the relationships between cut features is the only available stratigraphic information, the nature of the material requires us to deal with '*ensembles* (assemblages)' gathering sets of artefacts found in the filling of the same find.

History and present state of research

The 'Michelsberg' was one of the first 'Neolithic cultures' identified in central Europe (Reinecke 1908; Schumacher 1900). In its 19th century acceptation, the notion of 'Michelsberg' was made up of several undecorated pottery styles that were already understood as unrelated to the 'Linear Pottery' or the 'Bell Beaker'-styles. It was nearly synonymous with '*Pfahlbaukeramik* (pile-dwelling pottery)'. The systematic description of the 'Michelsberg culture' published by J. Lüning in the 1960s (Lüning 1967) remains an unavoidable starting point for any research on the Late Neolithic in central Europe (see Seidel in this volume).

The 'Pfyn culture', occurring at Lake Constance area and on the Swiss Plateau, was one of those cultures producing undecorated pottery styles and was therefore for a long time thought to be a regional group of the 'Michelsberg culture' (Scollar 1959), before finally becoming a culture in itself (Driehaus 1960; Winiger 1971).

The 'Munzingen', appearing in the Upper Rhine Valley, was formerly understood as a 'Michelsberg local group' too, before the current view of it as a separate culture. At the beginning of the 1950s, its eponymous site was excavated on the top of the limestone hill of the Munzingen-Tuniberg (Baden-Württemberg, DE) in the Kaiserstuhl area. The undecorated pottery of this site was first attributed to the 'Michelsberg culture' (Fig. 3; Maier 1958). After publication of the far-reach-

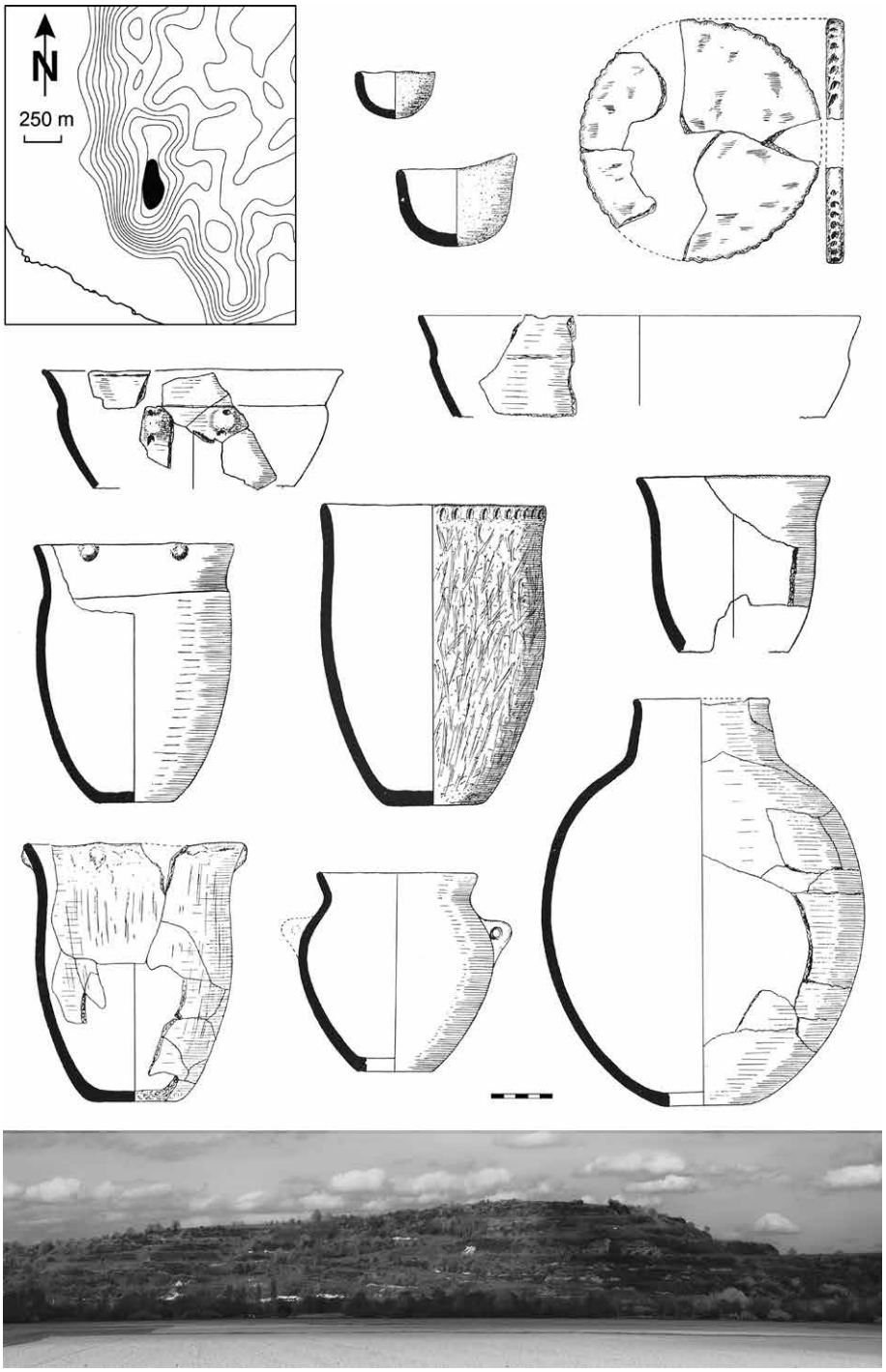

Figure 3. Munzingen-Tuniberg hilltop site (Breisgau-Hochschwarzwald, DE): selection of pottery vessels (figure: L. Jammet-Reynal; drawings: Maier 1958).

ing work of Lüning on the 'Michelsberg culture' (Lüning 1967), itemizing five chronological stages (MK I – V) that still appear well founded nowadays, the 'Munzingen' was designated as a local group of the 'Michelsberg', set apart from Lüning's '*Hauptgruppe* (main group)'. A second division of the 'Munzingen' into two stylistic subgroups, MZ A and MZ B, was also advanced. The two stylistic subgroups were first understood as successive chronological stages. A demonstration was carried out, by performing a seriation of the finds from the eponymous site. The seriation seemed to be confirmed by the stratigraphy of a flint mine from the far south of Baden, on the German side of the Upper Rhine: Efringen-Kirchen-Kleinkems (Baden-Württemberg, DE). Finally, the 'Munzingen group' was paired with the late stages of the 'Michelsberg culture', according to the equation MZ A equals MK III, and MZ B equals MK IV (Lüning 1967, Beilage 4).

Since the 1970s, numerous rescue excavations were conducted on the French side of the Upper Rhine Plain. The many field operations led to the renewing of the records and modified the previous understandings. The most important surprise produced by the fieldwork came from the Mulhouse urban area, where a large site has been excavated since the beginning of the 1980s. Called the 'Rocade Ouest', the site is located on the edges of the city of Mulhouse and two neighboring towns: Didenheim and Morschwiller-le-Bas (Schweitzer 1987). Here, the field investigations have uncovered assemblages belonging to the 'Munzingen A'-style only, without any 'Michelsberg' stylistic component. The latter of those pottery styles is, moreover, unknown in the Mulhouse urban area. The 'Munzingen' and the 'Michelsberg' pottery styles are sometimes found in the same regions, but the 'Munzingen' pottery style also appears in the far south of the Upper Rhine Plain, outside the boundaries of the 'Michelsberg'.

This new situation led C. Jeunesse to rethink the 'Munzingen' as a culture in its own right instead of a 'Michelsberg local group' (Jeunesse 1989). Nowadays, a stylistic distinction between the two 'Munzingen sub-groups', MZ A and MZ B, is still reliable. As discussed below, the two styles of MZ A and B are now understood as regional groups rather than chronological stages.

The southern half of the Upper Rhine Valley between 4300 and 3600 BC

Before going back to the 'Munzingen culture', its historical background must first be introduced. The north and the south areas of the southern half of the Upper Rhine Valley will be outlined one by one. Each area did indeed follow its own cultural evolution, resulting in the two regional groups.

'Munzingen B'-style formation from 'Michelsberg' in Lower Alsace (northern area)

The northern area is affected by strong influences from the Paris Basin. Shortly after the end of the 'Rössen' tradition, in a broad sense, the southern 'Epi-Rössen Bruebach-Oberbergen' group has been recognised, as discussed below. After this short parenthesis, and due to external influences from the Paris Basin, perhaps linked with the movement of people from this region, the 'Bischheim occidental

du Rhin supérieur'[2] (short: BORS; Fig. 4: D) appeared around 4300 BC (Jeunesse *et al.* 2004; Lefranc *et al.* 2012). Some of the BORS distinctive features are the decorations, thickened rims and rims decorated on the inner side with '*pastilles au repoussé* (a row of pricked lenticular clay pellets)'. Shapes remain in most cases simple and unsegmented. To the south, this pottery style reached the Kaiserstuhl.

Around 4100 BC, the early 'Michelsberg culture', whose origin can be traced back to the Paris Basin, settled in Lower Alsace (stage MK II), (Fig. 4: C; Jeunesse 1998). This new culture could have brought some new inhabitants to the Upper Rhine. Some pottery types with no previous background first appear in the Upper Rhine with the 'Michelsberg': large bottles, clay discs, tulip beakers, clay spoons. The local evolution was not interrupted by this new culture and the continuity was maintained, as witnessed by some assemblages: during a short transition period, some 'classical Michelsberg bottles' are, moreover, decorated following the local BORS tradition (Meunier *et al.* 2003), as if the newcomers and the native people had mixed together. This pottery tradition occurred in the Lower Alsace only and is not attested south of the Colmar-Kaiserstuhl parallel of latitude.

During the middle and late stages of 'Michelsberg' evolution (MK III and MK IV), around 3950-3800 BC, a new stylistic component appeared: the 'Munzingen'-style (Fig. 4: B). Within the assemblages from the Kaiserstuhl area and from Lower Alsace, pottery types belonging to both the 'Michelsberg' and the 'Munzingen' are found together (Jeunesse 1989). The former includes roundbottomed forms (segmented bowls, clay discs, clay spoons, tulip beakers), while the latter distinguishes itself by flat-bottom jars. 'Munzingen large storage jars' are often covered with a thick slipware. The outer side of these storage jars has been given a crude aspect, seemingly on purpose. Assemblages where the two traditions co-occur are referred to as 'Munzingen B'.

In contrast with the 'Michelsberg' in broad sense, occurring from the Paris Basin to the Czech Republic, this 'Munzingen B'-style is only found in the Upper Rhine watershed (Upper Rhine Plain, Neckar Valley, Wetterau district north of Frankfurt) (Albert and Schröter 1977; Höhn 2002; Seidel 2004; 2008). This 'Munzingen B'-style arose and developed in the Upper Rhine Valley within the area formerly occupied by the 'Michelsberg culture'. Therefore, the 'Munzingen B' pottery owes many of its formal features to the 'Michelsberg' tradition. However, the local tradition was not extinguished. The BORS decorations just disappeared, but formal features like *e.g.* flat bottoms of local tradition are still noticed.

The 'Munzingen B'-style is thus not specific to the southern Upper Rhine Valley. It extends northwards and eastwards. In this more extensive geographical area, the chronology of the 'Munzingen' is uneven (Jammet-Reynal and Seidel 2014, 220). The above-mentioned transition, beginning during the MK III stage (around 3900 BC), is only effective in the Kaiserstuhl area and in Lower Alsace. Farther north, in the Kraichgau district near Karlsruhe, the transition happened a century later (stage MK IV). Even later was the transition in the Neckar Valley and the Wetterau district (stage MK V, 3700-3600 BC; Höhn 2002, 153; Seidel 2008, 324). At the current state of research, the 'Munzingen' formal style seems to first

2 Formerly called 'groupe d'Entzheim' or '*Strassburger Gruppe* (Strasburg Group)'.

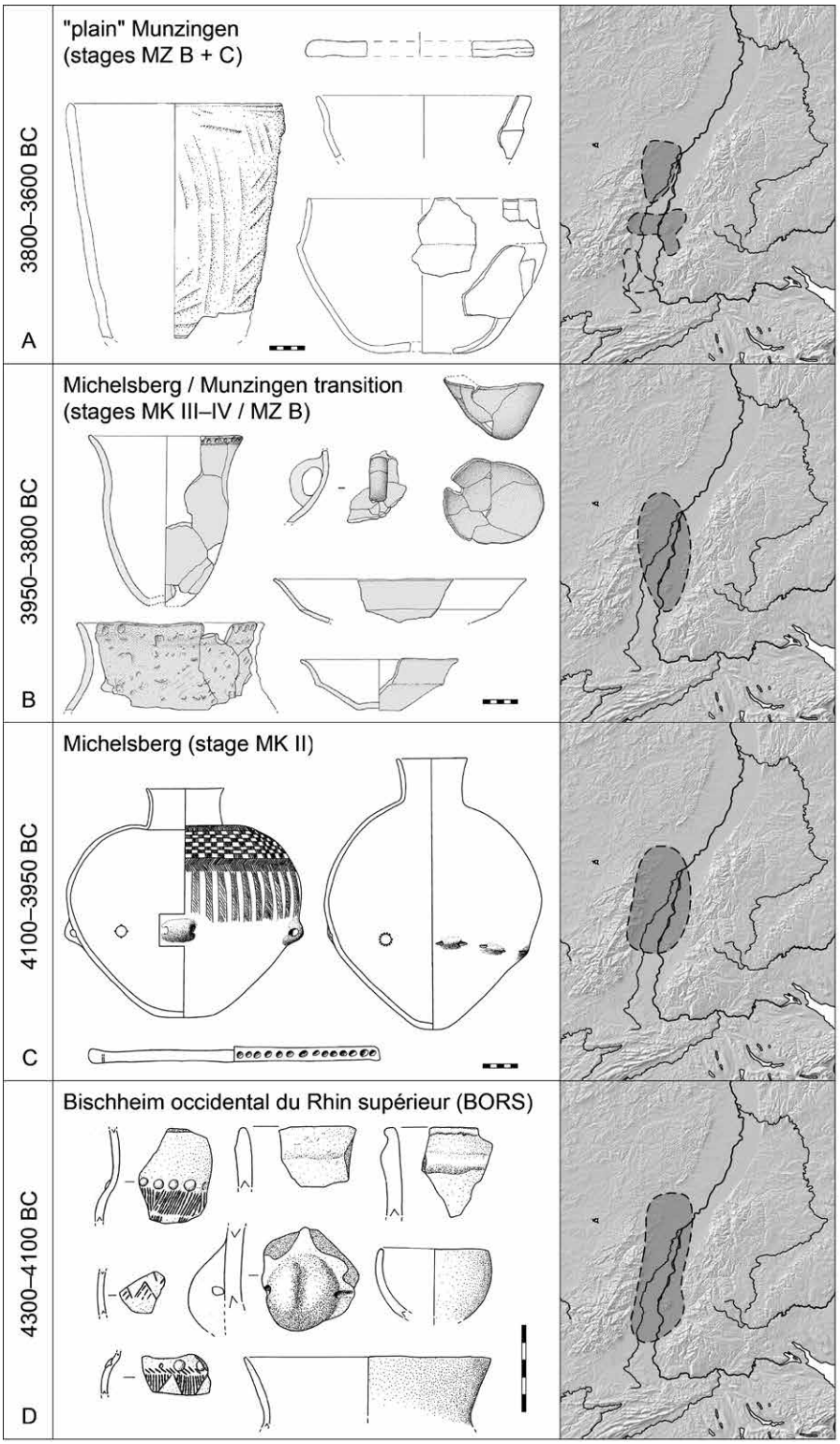

Figure 4. The chronological sequence of the Lower Alsace / north area between 4300-3600 BC (figures: (A – B) L. Jammet-Reynal; (C) Meunier et al. 2003; (D) Jeunesse et al. 2004).

appear between the Kaiserstuhl area and the Lower Alsace, before spreading out northwards and eastwards to neighbouring regions.

The transition from 'Michelsberg' to 'Munzingen' was slow and smooth but was, however, fully effected from 3700 BC onwards. Since then, the 'Munzingen' asserted its identity and originality through a specific pottery repertory, emancipated from any 'Michelsberg' heritage. The best examples are the assemblages from Geispolsheim (Bas-Rhin, FR) and the pit 921 from Schwindratzheim (Bas-Rhin, FR) (Fig. 4: A), both located in Lower Alsace (Denaire *et al.* 2014; Lefranc *et al.* 2011). Large storage jars covered with slipware, with a flat bottom and a distinctive truncated cone shape, are specific to this stage. These jars make it possible to evoke the 'Pfyn culture', very closely, stylistically. This final stage unique to Lower Alsace is now referred to as MZ C (Lefranc *et al.* 2011).

Munzingen A in Upper Alsace (southern area) and its relations to adjacent regions

The cultural sequence of the far south of the Upper Rhine Valley is not as clear. At the moment, it seems mainly influenced by the Swiss Plateau. During the 'Epi-Rössen horizon' (4300-4000 BC), the southern area was occupied by the 'Bruebach-Oberbergen group'[3] (Fig. 5: D), whose originality resides in its unmistakable '*Kugelbecher* (globular beakers)', covered with decorations that mix stamped incisions and spatula strips (Gleser 1995; Jeunesse 1990). In central Switzerland, 'Bruebach-Oberbergen decorated beakers' are sometimes found in 'Egolzwil' settlements. Now understood as imports into those far locations, these beakers are prime material for an accurate synchronisation of both chronologies (Doppler 2007).

By contrast to the Lower Alsace, where the 'Bruebach-Oberbergen group' was followed by the BORS, in Upper Alsace (southern area) the BORS is attested in one settlement only, the site of Ensisheim (Haut-Rhin, FR), located north of Mulhouse (Lefranc and Jeunesse 2001). Apart from this site, BORS vessels are unknown in the far south. It is hence assumed that a late stage of the 'Bruebach-Oberbergen group' was able to hold on in the Mulhouse urban area around 4100 BC. This late stage, specific to the far south, can be distinguished by stamped incisions made with a three to four toothed comb (Lefranc and Jeunesse 2001, 72-73) and would have occurred at the same time as the BORS in Lower Alsace.

Around 4000 BC, the situation becomes even more confused in the southern area. Finds are rare, allowing many conflicting readings (Fig. 5: C). On the French side of the Upper Rhine Valley, a pottery vessel found in a grave from Eschentzwiller (Haut-Rhin, FR) in Upper Alsace south of Mulhouse, can be compared to 'Hornstaad' pottery from the banks of Lake Constance (Wolf 1979; Matuschik 2011). North of Mulhouse, in Ungersheim (Haut-Rhin, FR), a small but organised graveyard has recently been excavated (Lefranc *et al.* 2009). The buried individuals were stretched out, lying on their backs. The artefacts are very few and uncharacteristic, but three radiocarbon dates clearly indicate that the graveyard was active during the same poorly documented period of time (4060-

3 Formerly called the 'Wauwil group'.

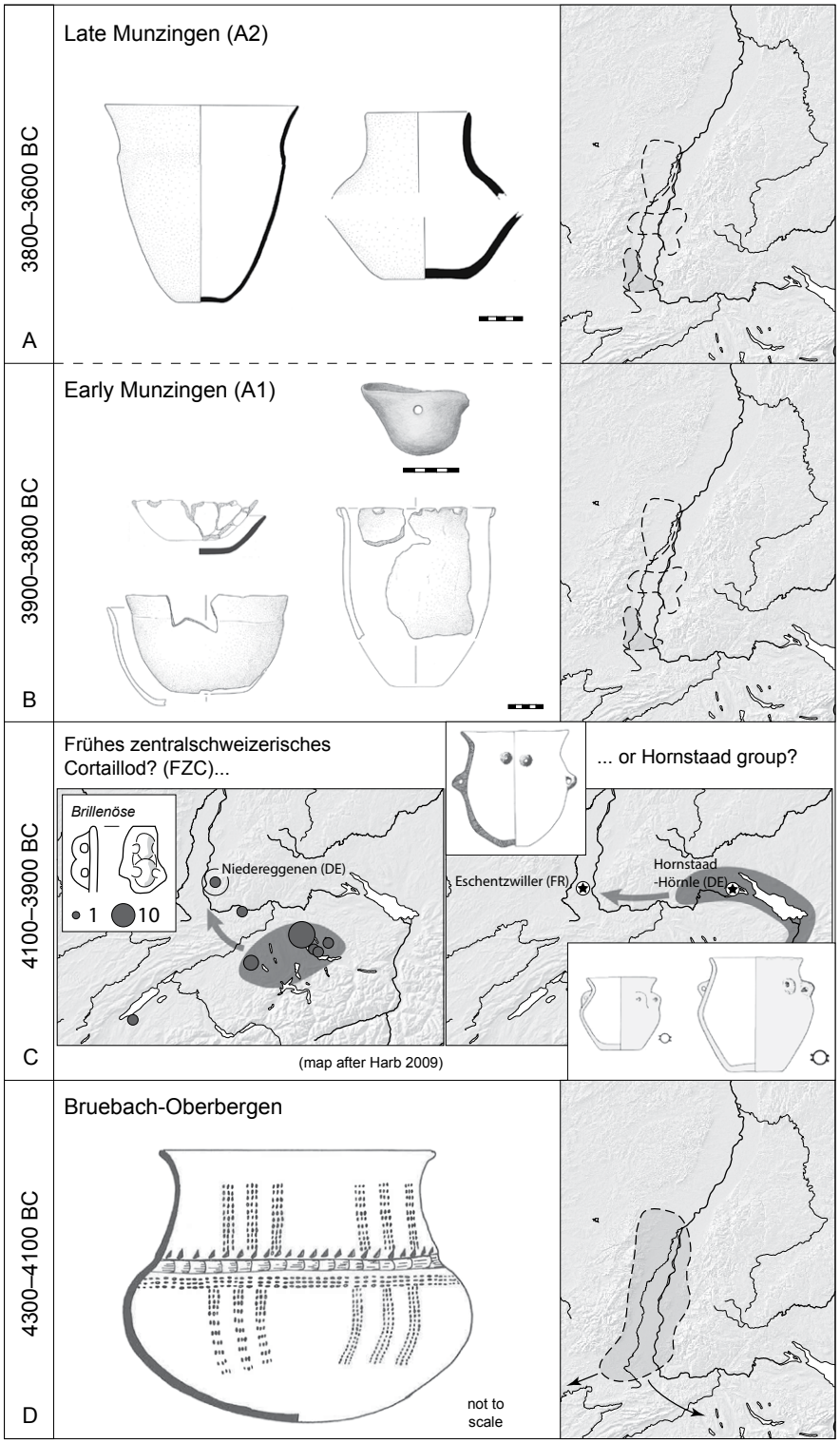

Figure 5. The chronological sequence of the southern area between 4300-3600 BC (figure: (A) Lefranc et al. 2011; (B) Lefranc et al. 2011 and Jammet-Reynal et al. 2015; (C) Wolf 1979 and Matuschik 2011; (D) Jeunesse 1990).

3940 cal BC, 2 sigma). Once again, the funerary practices can be paired with the 'Hornstaad group', especially with the organised clusters of stretched out inhumations of the Schaffhausen district in Switzerland (Höneisen and Peyer 1994).

A completely different source of external influences can be deduced from a find from the German side of the Upper Rhine. Among the pottery uncovered on the hilltop site of the 'Hagschutz' near the village of Niedereggenen (Baden-Württemberg, DE) (Kimmig 1948-1950), a '*Brillenöse* (*i.e.* a lug that looks like a pair of glasses)' is worth being mentioned (Kimmig 1948-1950). These lugs are a key definition element of the 'Early Cortaillod of the Central Swiss Plateau' ('*Frühes zentralschweizerisches Cortaillod'* short: FZC), the earliest stage of the 'Cortaillod culture', dated back to about 4000 BC. This stage, FZC, is defined after the layers 4A – C of Zürich-Kleiner Hafner (CH) lake-dwelling site, and took place in central Switzerland, from Lucerne to Zurich (Harb 2009; Stöckli 1995). In short, around 4000 BC in the far south, the sparse facts do not allow us to find out where the external influences mainly come from. It is even less achievable to give a comprehensive description of a cultural group peculiar to this area.

After this unclear parenthesis, 'Munzingen A' pottery vessels appear around 3900 BC in the close proximity of the city of Mulhouse. 'Munzingen A' seems to have developed up to 3600 BC, within a chronological frame that is still poorly understood. The stylistic changes appear to have been slower here than in Lower Alsace. A local chronology has been advanced, although it is deduced more from the 'Cortaillod' stylistic evolution rather than from direct observations (Lefranc *et al.* 2011).

The 'Cortaillod culture' has in fact a strong influence on the far south of the Upper Rhine, allowing some adjustments to the relative chronologies. The impact of this culture from the south of the Jura Mountains can be perceived through jars carrying unperforated buttons on the rim, plates with conical walls, and also through '*Hirschgeweihbecher* (antler cups)' imported from the Swiss Plateau and purposely laid in 'Munzingen' graves (Fig. 5: B). The most striking example is grave 10 of Illfurth-Naegelberg (Haut-Rhin, FR) (Fig. 6), excavated in 2012 (Jammet-Reynal *et al.* 2015). In this grave, an adult individual of undetermined gender was lying on his side with both legs folded, in an abandoned storage pit, on the top of an intermediate fill level. This funerary ritual is typical in the Upper Rhine Plain, where single or plural inhumations in folded position in abandoned pits were the norm at that time. The grave from Illfurth cannot be compared to the 'Cortaillod' funerary practices, because almost nothing is known about them. Nevertheless, the provided artefacts belong to the 'Cortaillod culture' (antler cups, rock-crystal raw material from the Alps, large sawn bird bone). The grave could thus witness the unusual case of an individual native of the 'Cortaillod' area buried abroad.

The late stages of the 'Munzingen' from the far south of the Upper Rhine Plain are barely known. Some assemblages dated to around 3700 BC by the radiocarbon method reveal pottery vessels showing an unsegmented, reduced-to-essentials shape (Fig. 5: A). Named MZ A2, this stage was recently introduced (Lefranc *et al.* 2011). It is still speculative, inferred from comparisons with the Swiss lake-dwellings finds.

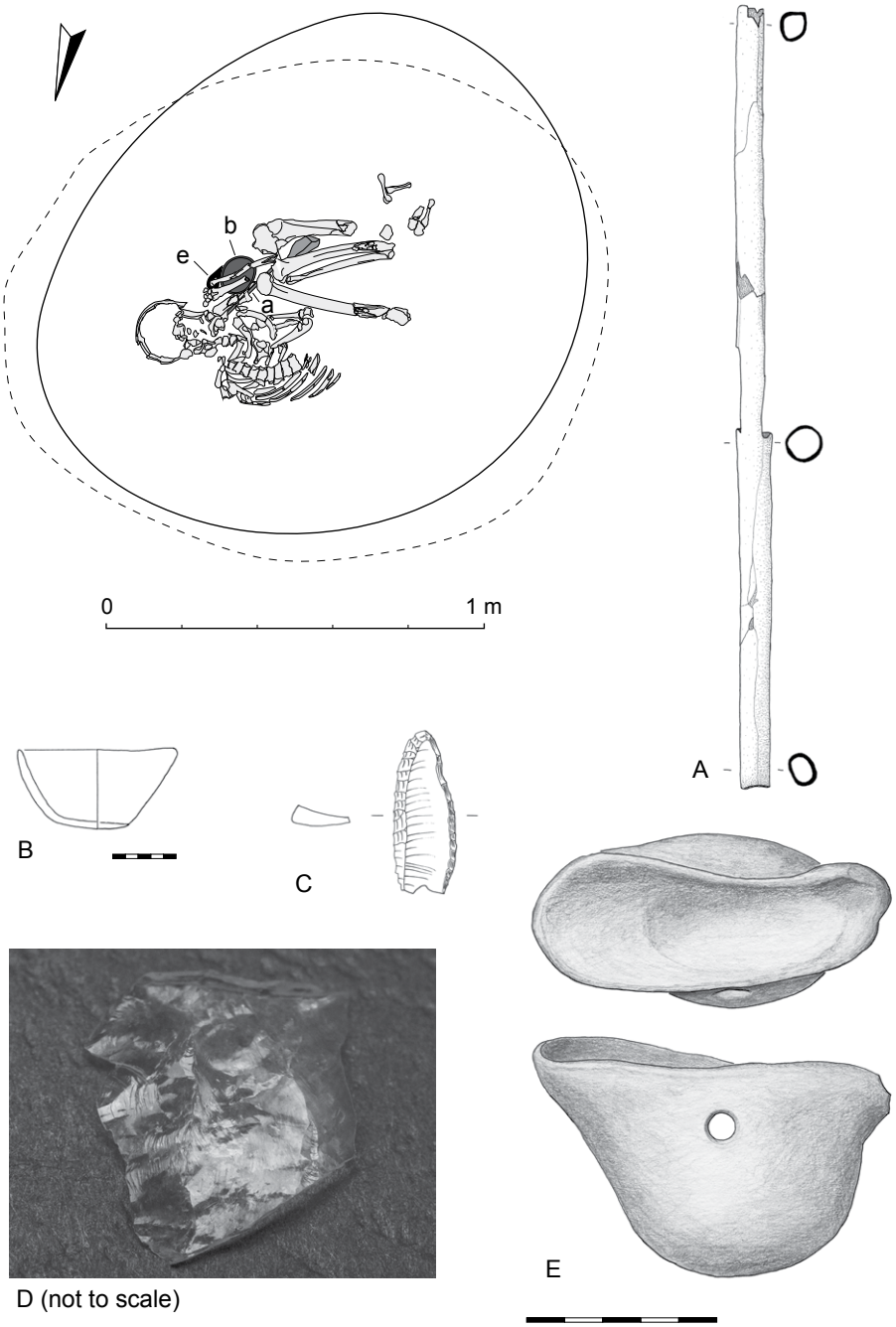

Figure 6. Grave 10 from Illfurth-Naegelberg (Upper Alsace), located in an abandoned storage pit and provided with 'Cortaillod' artefacts: (A) large sawn bird bone; (B) pottery; (C) flint; (D) rock-crystal from the Alps (length: 14 mm); (E) antler cup (Jammet-Reynal et al. 2015).

The impact of the 'Cortaillod culture' on the far south of the Upper Rhine has been repeatedly highlighted. Reversely, traces of 'Munzingen A' can easily be found in the pottery of the village of Egolzwil 5 (Canton of Lucerne, CH), located in the Wauwil bog in central Switzerland (Wyss 1976). 'Munzingen' influences are here materialised by jars with flat bottoms and segmented necks. Even if the Egolzwil 5 village is still poorly dated by absolute chronology, its activity is supposed to have taken place around 3700 BC. The vessels could then belong to a late stage of the 'Cortaillod culture'. It is, however, difficult to say much more, since the late stages of the 'Cortaillod' have been mainly characterised in western Switzerland.

Continuity to the Late Neolithic

Almost nothing is known about the end of the Late Neolithic pottery styles of the Upper Rhine Valley, rather randomly positioned around 3600 BC by analogy with the end of the 'Michelsberg' cycle. During the following millennium, the records remain sparse in the southern half of the Upper Rhine Plain. Some finds can, however, let us envisage a spatial division of the southern half of the plain quite similar to the above-described border (Jeunesse and Schneider 1988). The Lower Alsace appears to have been settled by a local group of the 'Seine-Oise-Marne culture' (short: SOM), centred on the Paris Basin. The affinity of this area to the Paris Basin, noted for the previous centuries, seems to continue. In contrast to this, the Upper Alsace, from the Mulhouse urban area to the Kaiserstuhl, seems to orientate more to the south. There, with the 'Horgen', a different but not completely un-

Figure 7. Late Neolithic ('Horgen culture', around 3000 BC) vessels and stone axe from Morschwiller-le-Bas 'Ungeheuer Hoelzle' (Upper Alsace, Mulhouse urban area) (figure: L. Jammet-Reynal).

related culture seems to have evolved, whose core area was the eastern half of the Swiss Plateau. Regarding the 'Horgen culture', a new fieldwork revelation must be mentioned: in 2013, a domestic occupation provided with 'Horgen' pottery has been discovered close to the West Ring Road of Mulhouse, in Morschwiller-le-Bas (Haut-Rhin, FR) (Fig. 7; Vergnaud and Renard 2014). It is not surprising that a culture from the Swiss Plateau settled in a territory previously occupied by the 'Munzingen A group', a close relative of the 'Cortaillod culture'.

'Munzingen A' and 'Munzingen B'-styles: Not chronological stages but regional groups with relations to different regions

The chronological setting of the 'Munzingen culture' is now clear (Fig. 8). The 'Munzingen' were in existence at the same time as the 'Cortaillod' (in western Switzerland), the 'Pfyn' (in eastern Switzerland), the 'Middle and Late Michelsberg' (from the Paris Basin to the State of Hesse), and the later stages of the 'Burgundy Middle Neolithic' of the French Jura. From a strictly chronological standpoint, the 'Munzingen' keeps a reliable division of the Upper Rhine Neolithic sequence.

In spite of its chronological soundness, the 'Munzingen' on the whole cannot be considered as a later and clearly localised evolution of the 'Michelsberg' anymore, since it occurs in places not previously occupied by the 'Michelsberg culture', almost as far as Basel. In addition, a spatial expansion towards central Switzerland is likely. The subdivision into two ceramics styles, MZ A and MZ B, remains well founded, but these must not be seen as two successive chronological stages. The two styles are in fact regional groups happening at the same time, occurring in distinct areas (Fig. 9). The southern group (MZ A) maintains a close acquaintance with the 'Cortaillod culture'. 'Munzingen' and 'Cortaillod' pottery vessels have

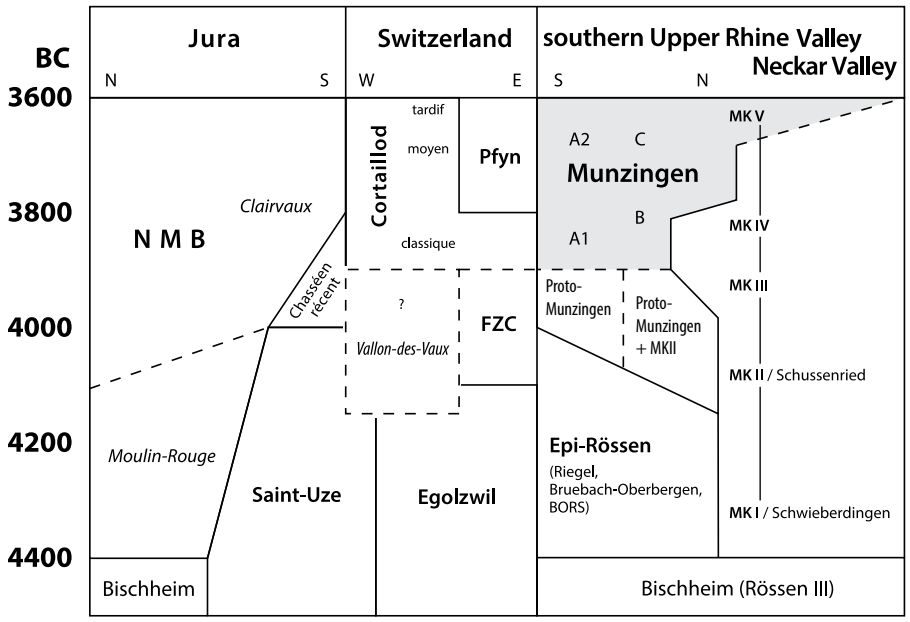

Figure 8. Chronological setting of the 'Munzingen' (figure: L. Jammet-Reynal).

many formal features in common, such as jars provided with unperforated buttons on the rim. The similarities could be owed to a shared historical background: both the 'Cortaillod' and the MZ A originated in the 'Early Cortaillod of the central Swiss Plateau', the presence of which is confirmed by some occasional finds from the far south of the Upper Rhine. The 'Michelsberg culture' played instead a minor role in the birth of the MZ A pottery style.

From a broader point of view, the just-mentioned stylistic similarities between the far south of the Upper Rhine and the Swiss Plateau took place at a time when the circulation of material goods was sustained. The exploitation of the quarries at Plancher-les-Mines (Haute-Saône, FR), reaching its greatest activity during the

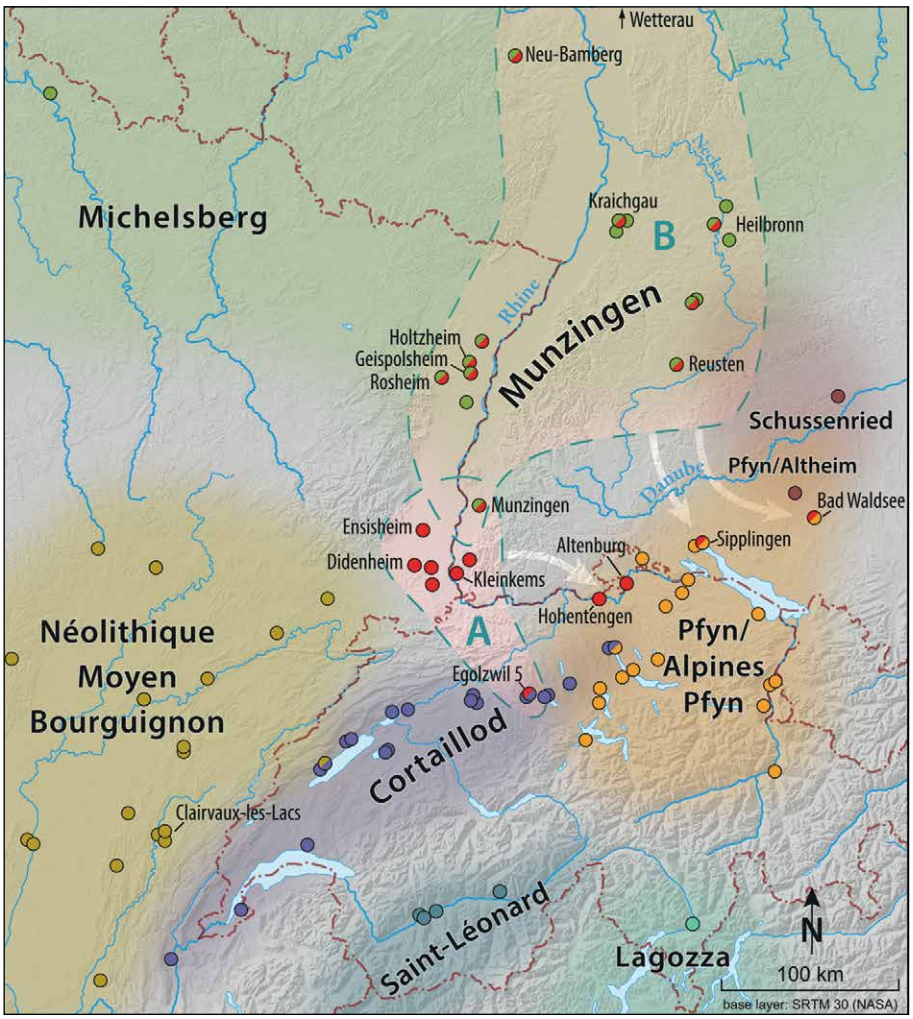

Figure 9. Maximal spatial extent of cultures (3950-3600 BC): the MZ A style appears in the far south of the Upper Rhine, outside the former boundaries of the 'Michelsberg'. North of the Kaiserstuhl hills, the 'Michelsberg culture' was slowly replaced by the MZ B style from 3800 BC onwards. A quite similar situation happened in the Neckar Valley, where the following succession is found: early 'Schussenried' / 'Michelsberg' / 'Munzingen'. At Zurich, the 'Pfyn' took the place of the 'Cortaillod' around 3800 BC (figure: L. Jammet-Reynal).

first half of the 4th millennium BC, is a good example (Pétrequin *et al.* 2012). From these quarries, located no farther than a few days walk from Mulhouse, stone-adze rough-outs were obtained, and took the path of average distance circulations. Many blades made of this raw material are found in the Swiss lake-dwellings sites together with pottery of the 'Cortaillod'-style.

Contrary to the 'Munzingen A'-style, the 'Munzingen B'-style is a local evolution of the 'Michelsberg'. As seen from the fieldwork, a 'Michelsberg component' is mixed with a local component, inherited from the 'Bischheim occidental du Rhin supérieur' (BORS). They both co-occur in the same assemblages, sometimes even on the same vessel. Unsurprisingly, the spatial distribution of all of these historically related ceramic styles (BORS, 'Michelsberg', MZ B) is almost identical in the Upper Rhine. The vessels belonging to the latest stage of the northern group (MZ C) share many stylistic features with those of the 'Pfyn culture'. Also, in that case, a genetic explanation can be put forward. The 'Pfyn culture' indeed originated in an historical background similar to that of the 'Munzingen B'-style ('Michelsberg' and 'Epi-Rössen'). The assertion is only true in the 'Pfyn core area', from the Schaffhausen district to Lake Constance. In this core area, influenced by the Neckar Valley, the 'Michelsberg' stylistic component was strong until around 3800 BC, especially in the bog villages at Thayngen-Weier (Canton of Schaffhausen, CH) (Winiger 1971).

Conclusion

Over the centuries covered by this paper, the cultural landscape of the southern half of the Upper Rhine Plain was all but uniform. Two regions can be distinguished, each characterised by a proper sequence. Many pottery styles follow each other within the same-bordered territories, from the 'Linear Pottery culture' in Early Neolithic until the beginning of the Late Neolithic. The border between the two regions tended to fluctuate, but ran almost always through the Kaiserstuhl hills. Around 3800 BC, each part was settled by a different regional group of the 'Munzingen culture': the MZ A in the South, and the MZ B in the North. As a matter of fact, the emergence of the two 'Munzingen' pottery styles does not seem to match a renewing of the peopling. In the South, MZ A perpetuates the local tradition. In the North, MZ B can be seen as a revival of the local styles after a 'Michelsberg' parenthesis, a foreign style that could have been brought by people coming from the West.

Current advances in studies owe more to the growth of the development-led archaeology than to new research methods applied to pottery items. Results clearly suggest a quite long-lasting peopling of the area, even if they are rather exclusively built on the key methodological foundations of prehistoric archaeology (stratigraphy, typology, spatial analysis). This seemingly conventional but wider perspective allows the deducing of the historical meaning of the local pottery styles, in the first place identified some decades ago on the basis of common formal features. We anticipate that new broad studies on the pottery items would bring interesting results, by taking into account theses new issues. Furthermore, the bird's-eye view on cultural phenomena taken in this paper shows the big research potential for future studies that could address questions of mobility and relationships between communities that are behind such dynamic changes in pottery styles.

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From typo-chronology to inter- and intra-site variety

The 'Michelsberg' pottery of South Germany (4300-3600 BC)

Ute Seidel

Abstract

The classification for the Neolithic 'Michelsberg' (short: MK) ceramics devised by the archaeologist J. Lüning in 1967, and later modifications of it, are taken as a starting point for an examination of features that characterise MK ceramics, apart from typo-chronological information. This will be done by analysing styles from Baden-Württemberg in South Germany. Taking the complex of MK ceramics as a mirror of social activities, themes are the continuum in technique and profile within one vessel type of MK ceramics, the inter and intra site variety of profiles and the variety within the distribution area of the MK. This seems to indicate that the production of at least some of the MK ceramics was little centralised and specialised – e.g. in relation to the partly contemporaneous 'Epi-Rössen' ceramics in this region. The shifting percentages of the respective pot types in the repertoire through time, as well as the changing proportions of ceramic profiles, could be traced back to a probable change of economical behaviour and a change of function of special ceramic shapes like the 'Tulpenbecher (tulip beakers)'. The attempts at interpretation aim to point out aspects to be examined further in the future, rather than to fix conditions that could have led to these characteristics, as specialised studies are rare until now.

Keywords: *Late Neolithic, Michelsberg ceramics, variety, continuum, social function*

Introduction

The 'Michelsberg culture' (short: MK)[1] was named after the so-called Michelsberg near Bruchsal-Untergrombach, Landkreis Karlsruhe, situated in the north of Baden-Württemberg (DE) (Fig. 1). The 'Michelsberg' represents the highest elevation of the Kraichgau region, giving a wide view over the Rhine Valley to France and dominating the valley of the affluent River Grombach, which allows access from the Rhine Valley up to the hilly landscape of the Kraichgau. In 1884, C. A. von Cohausen found sherds of Neolithic origin, which he compared, correctly, with ceramics of the then recently discovered sites at lakesides in the prealpine regions. Only a few years later, the first excavations were undertaken – by A. Bonnet and K. Schuhmacher – and the first '*Erdwerk* (enclosure)' of the 'Michelsberg' type was documented. These enclosures have segmented ditches and are assumed to be a defining feature of the 'Michelsberg culture', as contemporaneous neighbours did not build such constructions (Matuschik 1991). Today, three more enclosures of the 'Michelsberg' type are known above the adjacent valley of the Saalbach in the same region: Bruchsal Scheelkopf / Auberg, Bruchsal-Heidelheim Altenberg and Bruchsal Aue (Lüning 1967, 228-229, 233-236; Regner-Kamlah 2010; Reiter 2005; Steppan 2003). They are situated in close vicinity of each other; between the enclosures of Scheelkopf and Aue lies a distance of only 800 m. All enclosures occupy topographically important places and most probably they were not contemporaneously in use. This is also the case for the MK enclosures known along the Neckar Valley (Regner-Kamlah and Seidel in press; Seidel 2008, 181, 345-347, 388; Seidel 2012).

The 'Michelsberg culture' is part of the central European Late Neolithic[2] in the terminology of south-west Germany. Based on absolute dates and comparisons with neighbouring groups, it is estimated to have lasted between 4400 / 4300-3600 / 3650 cal BC (*e.g.* Höhn 2002, 190-194; Lanting and van der Plicht 2000), covering a large area of central Europe (Fig. 2).

Typology of 'Michelsberg' ceramics (classical version)

The repertoire of pots of the 'Michelsberg culture' was systematically described by J. Lüning in 1967. His classification still serves as a basis for communication about MK ceramics – although slight alterations for the typology of the stages and improvements in absolute dating have been made, especially by B. Höhn 2002 and I. Matuschik 2011.

The spatial distribution of the 'Michelsberg culture' was defined by the presence of ceramic characteristics (Lüning 1967, 12-18), such as the making of the sherd itself, tulip forms, basin shaped and carenated bowls, subcutaneous perforated lugs, or baking discs.

Lüning's work is estimated as one of the most stringent classifications for Neolithic ceramics and was therefore repeatedly applied to other Neolithic complexes as well. The following paragraphs try to give an insight in archaeological

1 German: *Michelsberger Kultur* or *MK.*
2 German: *Jungneolithikum*.

Figure 1. On the 'Michelsberg' near Bruchsal-Untergrombach, Baden-Württemberg (DE), highest elevation of the Kraichgau, the eponym enclosure covered ca. 8.5 ha. Today's chapel has a pilgrimage of St. Michael. In the background, in ca. 1 km distance, three further enclosures of the MK type are known above the Saalbach (figure: Landesamt für Denkmalpflege im Regierungspräsidium Stuttgart, Aerial photography L6916-040-01_849G-02, Otto Braasch).

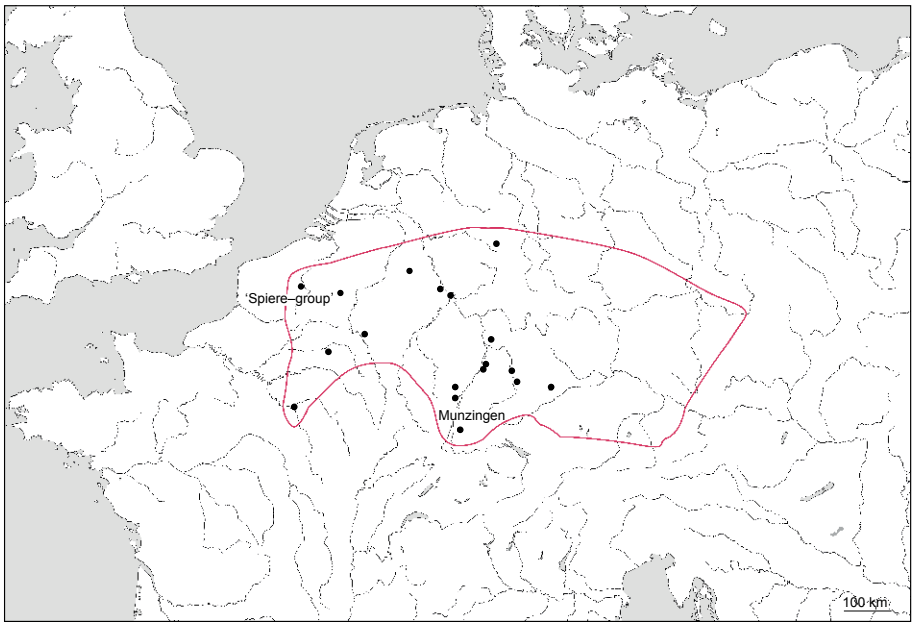


Figure 2. Approximate area of distribution of the 'Michelsberg culture' in central Europe, enclosed by a red line. The dots mark some important sites (after: Jeunesse 2010, Abb. 1).

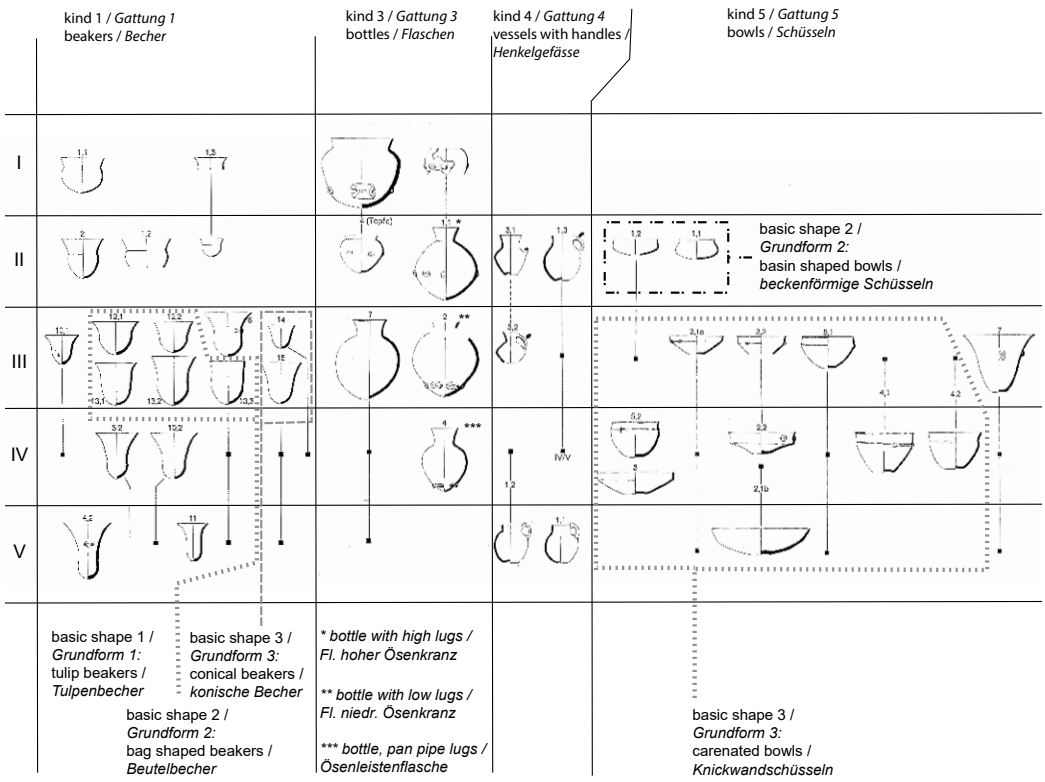


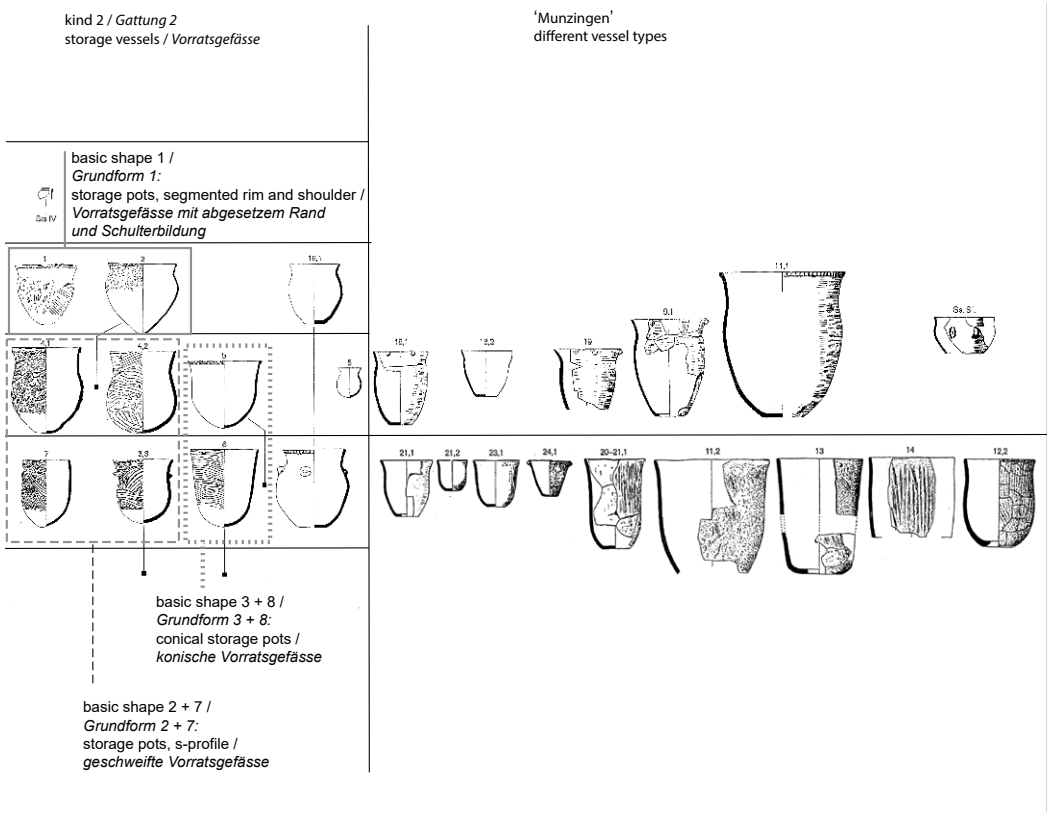
Figure 3. (see also opposite page) Systematic classification of MK ceramics, made by J. Lüning 1967; selected detail of Lüning 1967, Beilage 5 (figure: S. Krisch, C. Heitz).

classification – non-archaeologists may jump over to the section: the typology of 'Michelsberg' ceramics (essayistic mode).

In a first step, Lüning divided the repertoire of pots present on the basis of proportion and assumed function in '*Gattungen*', '*Grundformen*', '*Typen*' and '*Varianten*', *i.e.* 'kinds', 'basic shapes', 'types' and 'variations'. Then he established a '*Stufengliederung*', *i.e.* a 'step wise structure' with a division into five stylistic stages, MK I – MK V, displaying a typo-chronological evolution of the respective shapes (see Fig. 3).

Kinds and basic shapes

For his classification, Lüning (1967, 19-69) distinguished '*Gattungen*', following a probable function. Thus he defined '*Gattung 1*': '*Becher* (beaker)'; '*Gattung 2*': '*Vorratsgefäße* (storage pots)'; '*Gattung 3*': '*Flaschen* (bottles)'; '*Gattung 4*': '*Henkelgefäße* (pots with handles)'; '*Gattung 5*': '*Schüsseln* (bowls)'; '*Gattung 6*': '*Töpfe* (cooking pots)'; '*Gattung 7*': '*Schälchen und Näpfe* (small bowls)'; '*Gattung 8*': '*Schöpfer* (scoops)'; '*Gattung 9*': '*Tonscheiben* (clay discs / baking discs)'.



The '*Gattungen*' were divided in '*Grundformen*', by certain features of profile and secondary features like handles. For '*Gattung 1*: *Becher* (beakers)', *e.g.*, '*Grundformen 1-9*' were defined. '*Grundform 1*' being '*Tulpenbecher* (tulip beaker)'; '*Grundform 2*': '*Beutelbecher* (bag shaped beaker)'; '*Grundform 3*': '*konische Becher* (conical beaker)', *etc.* – Or *e.g.* for '*Gattung 3*': '*Flaschen* (bottles)' the '*Grundformen 1-6*' were defined, '*Grundform 1*' being 'Ösenkranzflaschen (bottles with lugs)'; '*Grundform 2*': 'Ösenleistenflaschen (bottles with pan pipe lugs)', '*Grundform 3*': '*Flaschen mit Schulterösen* (bottle with shoulder lugs)' *etc.*

Types and variations

The '*Grundformen*' were then subdivided in '*Typen* (types)' – and the types can show '*Varianten* (variations)'. Thus the '*Grundform 1*': 'tulip beaker' is divided in type 1-11. '*Grundform 1*': tulip beakers (Tb) type 1 can show three variations: Tb 1,1; Tb 1,2 or Tb 1,3. Tulip beakers type 4 can show two variations, type Tb 4,1 and Tb 4,2. For other tulip beaker types, like type 2, no variation was defined. For '*Gattung 3*': '*Flasche* (bottle)', '*Grundform 1*': 'Ösenkranzflaschen (bottles with lugs)', *e.g.*, includes type 1 with high lugs – having three variations: a well segmented variation 1 indicating "a uniform standard of pottery throughout an ex-

tended region"[3], a less segmented variation 2, and a crude ('*plumpe*') variation 3. Type 2 of the 'Ösenkranzflaschen' is defined by low lugs. A 'Ösenleistenflasche (bottle with pan pipe lugs)' is '*Grundform 2*' which has two types (type 3 and 4), representing large and small bottles, *etc*.

Chronological system

Lüning pointed out the stylistic evolution of MK pottery as schematically divided into five stages, MK I – MK V, signifying a typo-chronological evolution (Fig. 3) (Lüning 1967, 80-91 and Beilage 5). In establishing relations to the neighbouring ceramic groups by 'contact finds', for groups of 'Epi-Rössen' tradition as well as for prealpine groups (Lüning 1971), the stages MK I – MK IV became a point of reference for the Late Neolithic of South Germany and areas beyond.

Despite the extended and elaborated system of MK shapes – in the end only a few ceramic shapes stand as defining 'fossils' for the typo-chronological definition of the MK: the very numerous bowls, the relatively rare bottles, and tulip beakers decreasing in number over time. '*Beckenförmige Schüsseln* (basin shaped bowls)' are present during MK I and MK II, *i.e.* during the early MK. They are replaced by '*Knickwandschüsseln* (carenated bowls)' from MK III onwards. The carenated bowls alter slightly in profile, as they tend to be less carenated and more globular towards the end of the MK (Seidel 2008, 274-279).

Also characteristic but less numerous are bottles. In Lüning's classification, bottles 1,1 'Ösenflasche mit hochsitzendem Ösenkranz (bottle with high placed lugs)' characterise MK II, *i.e.* the 'early MK', MK I and MK II, following Höhn (2002, 177). Bottles 1,2 'Ösenflasche mit niedrigem Ösenkranz (bottle with low placed lugs)' define MK III in the Lüning system 1967; the appearance of bottles 2 'Ösenleistenflaschen (bottles with pan pipe lugs)' mark the beginning – and duration – of stage MK IV. Refinements in more recent works touch mainly the chronological significance of these bottle types (see below).

Of special importance for the MK typo-chronology are tulip beakers. Being part of the ceramic repertoire from the beginning until the end of the MK, they show a continual change in profile, having a general development from open and low, to tall and slender; at the same time the bend between neck and body wanders downwards – giving more weight to the tulipiforme neck. This is the case especially for tulip beakers type 1 to 4. Tulip beakers type 1, open and with a short neck, characterise stage MK I; type 2 characterises MK II; type 3 characterises MK III. Type 3, having the bend in the middle between body and neck marks the middle of the typo-chronological evolution. But, as though Lüning himself wanted to display a fuzzy situation between the formal evolution of the tulip beakers and his typo-chronological stages, stage MK IV is characterised by type 4,1 – but MK V not by type 5, but by type 4,2. Type 5 beakers are flat bottomed. This 'non relation' of 'tulip beaker type number' and 'MK stage number' was not discussed by Lüning. But it reflects irregularities during the second half of the development

3 German: "[..] einen in einem weiten Verbreitungsgebiet einheitlichen Stand der Töpferei" (Lüning 1967, 40).

of MK ceramics, which came to light by recent investigations. For Lüning's tulip beakers type 5-11 no strict relation between chronology and type number was set.

Last but not least is to remark that the division in 'types' and 'variations' was based by Lüning not on absolute measurements, but rather on a subjective impression. In fact, one example for a tulip beaker variation can be in proportion and absolute measurements closer to another type of tulip beaker rather than to a 'variation' within its own type (*e.g.* see Seidel 2008, 413-418).

Later refinements of the classical typology

Based on a now wider material base, Höhn undertook in 2002 seriations[4] for MK shapes by taking absolute measurements, although she defined 'types' for her description of the results in the end (Fig. 4). One of the most important results are her observations for Lüning's stage MK IV and MK V. In her seriations, bottles with pan pipe lugs – defining Lüning's stage MK IV – are restricted to a relatively limited horizon; called by her 'phase 4a', as she interpreted it as an early horizon of MK IV (Höhn 2002, 171-173, 175, Abb. 169). On the other hand, flat bottomed pots already appear regularly together with features characteristic for MK IV (4a) – and increase continually in number until the end of MK ceramics evolution (phase 4b and 4c). As the late MK ceramics repertoire is not characterised by the appearance of new shapes – like carenated bowls for MK III or bottles with pan pipe lugs for MK IV – but rather by the development to less segmented profiles, Höhn did not separate a 'phase 5' for MK V in her seriations, but spoke of a continuum 'phase 4a, 4b, 4c' for Lüning's MK IV and MK V.

The division between MK III and MK IV is not easy to make typologically, especially for small ensembles. Stage MK IV is quasi-exclusively defined by the appearance of bottle type 2 with pan pipe lugs. These bottles are not very frequent. The other shapes in the repertoire of MK IV were present since MK III, as carenated bowls, tulip beakers, cooking and storage pots – and an individual pot can, but does not necessarily, show stylistic tendencies to the 'older' or 'younger'.

Therefore it is even more important to consider the contribution made by Matuschik in 2011. He evaluated dendrodates of prealpine wetland sites from layers containing MK ceramics and demonstrated that for contexts with bottles with low lugs, characterizing MK III, dendrodates between 3919-3834 BC are available, whereas contexts with bottles with pan pipe lugs, defining MK IV, are fixed between 3869-3817 BC (Matuschik 2011, 271-273). This leaves only about 100 years for stage MK III – instead of the formerly estimated 300 years (Höhn 2002, 190-192; Seidel 2012). In addition, the timely overlap of the two bottle types increases the problem of dividing MK III and MK IV by typological means and confirms observations that both bottle types can be found together (Knoche 2013). The ceramic ensembles of these two stages were therefore sometimes named MK III / IV (see Seidel 2008, 331, 388, Beilage 2; Seidel 2012); it was even proposed

4 Seriation is a statistical method for relative dating in archaeology by which finds are placed in chronological order based on their presence and absence, similarities or differences of their features.

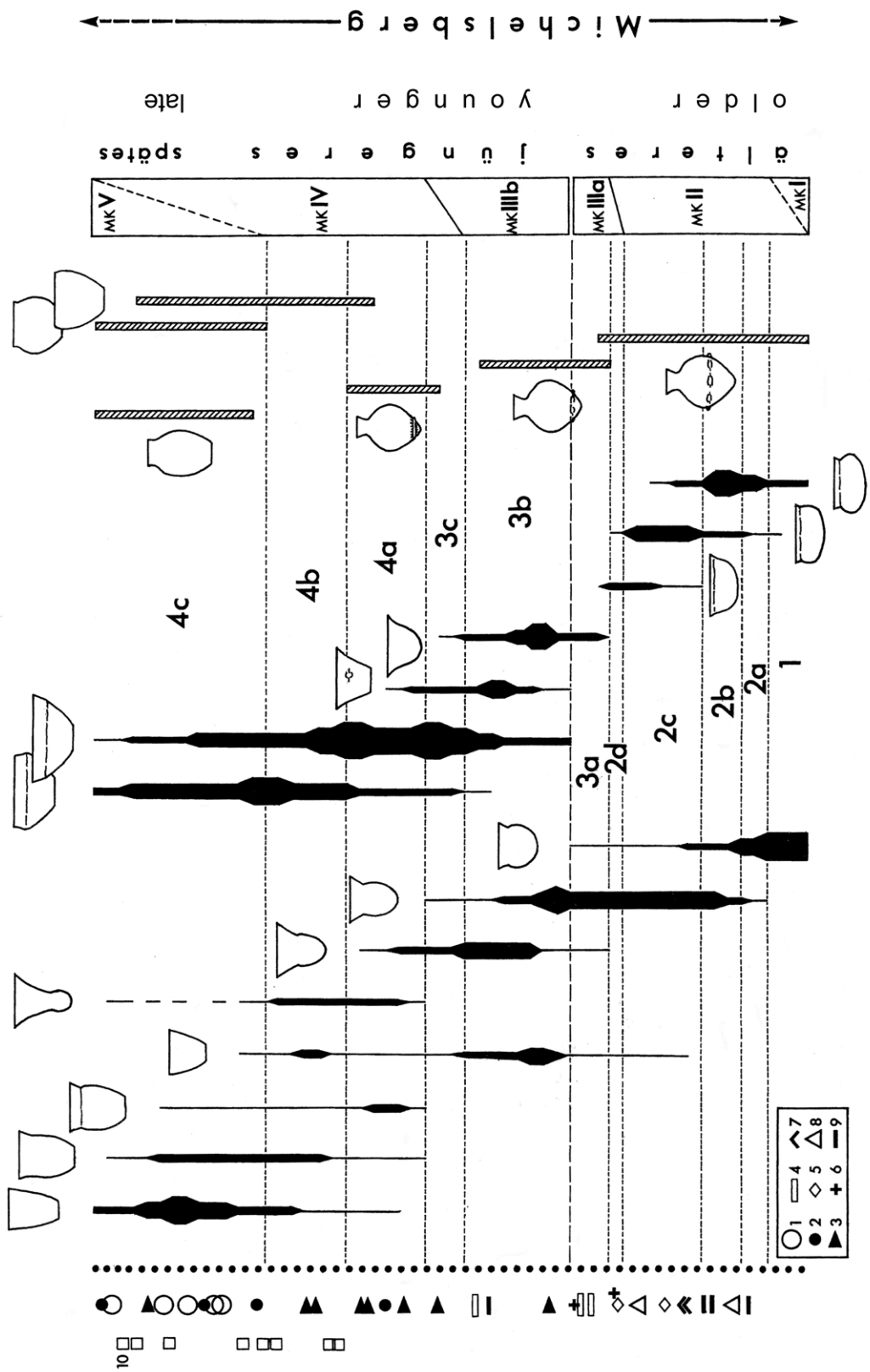


Figure 4. Synopse seriation (after: Höhn 2002).

to delete 'MK III' completely (Knoche 2013), but this would eliminate the possibility of distinguishing ensembles, which is still possible.

In Höhn's seriations flat bottomed pots begin to appear already with MK IV (4a) shapes, like bottles with pan pipe lugs, carenated bowls and tulip beakers 4,1; flat bottomed pots characterise phases 4b and 4c, represented by sites at the Upper Rhine and the Neckar up to Hesse (Höhn 2002, 177, 180). This stands in contrast to Lüning's interpretation according to which flat bottomed pots should be limited to the upper Rhine region, representing a regional group, the 'Munzingen' (short: MZ), here (Lüning 1967, Beilage 5). The 'Munzingen group', which gets its name from the, until then nearly the only known, 'Munzingen' ensemble from the site of Munzinger Berg near Freiburg (DE) (Kimmig 1947; Maier and Schmid 1958), was dated by Lüning as contemporary with MK III (Munzingen A) and MK IV (Munzingen B). Earlier finds, from Riegel and Strasbourg-Cronenbourg (FR), were seen as 'contact finds' between MK and the 'Entzheim / Strasbourg' ceramics; but he remarked that no 'Munzingen' material contemporary to MK V was known at his time (Lüning 1967, 95-97).

In 1989, based on new 'Munzingen' finds from Didenheim and Geispolsheim in Alsace (FR), C. Jeunesse claimed a 'Munzingen culture' as a genuine 'culture' of the Upper Rhine region, which he divided in 'Munzingen A' (Didenheim) and 'Munzingen B' (Geispolsheim). In his concept, 'Munzingen A' begins during MK II, marked by flat bottomed pots in 'Entzheim' contexts in Lower Alsace, and he cites Riegel and Strasbourg-Cronenbourg, 'Munzingen B' as being contemporary with MK IV and MK V (Jeunesse 1989; Jeunesse *et al.* 2002 / 2003, 208-211, fig. 167). Later, a typo-chronological development of 'Munzingen A' to 'Munzingen B' and a 'Munzingen C' was proposed (Lefranc *et al.* 2011). A beginning of 'Munzingen A' as early as MK II was rejected by B. Dieckmann, who evaluated the storage pot from the site of Riegel as being technically 'Entzheim'; and he also quoted MK III ensembles as being present in the region (Dieckmann 1991, 204).

Doubts about the chronological significance of the divisions 'Munzingen A' and 'Munzingen B' were outlined by Seidel (2008, 321-323, Fig. 5); for the two ceramic styles found on the 'Munzinger Berg' no absolute-chronological data can be cited that could confirm a chronological development. The stylistic differences could as well represent two different ceramic traditions at the site. Moreover, it was questioned why 'Munzingen A' should have developed in Lower Alsace, as segmented 'Munzingen A' pots are a characteristic of Upper Alsace. Höhn (2002, 144-146) made the point that flat bottomed storage pots are not restricted to a local group 'Munzingen' of the Upper Rhine, but they can be found with MK shapes, like tulip beakers and carenated bowls, in a wide area from the Upper Rhine to Hesse, characterizing her stylistic phases 4b and 4c. This was confirmed by the material of Heilbronn-Klingenberg in the Neckar region (Seidel 2008). On the basis of 5281 diagnostic ceramic entities out of 288 pits and two ditches, as well as 94 radiometric dates (Seidel 2008; Seidel *et al.* 2016), no chronological separation between ceramics of MK V-style and ceramics of 'Munzingen'-style can be shown. Pits containing ensembles with single pots of MK IV-style can not be separated as earlier ensembles.

Although ceramics of MK-style and ceramics of 'Munzingen B'-style were used together in the Neckar region, there are local features of 'Munzingen' ceramics of the Upper Rhine region, beginning with the smaller size of the Rhine pots (see Jammet-Reynal in this volume); as well as the Upper Rhine ensembles have associations with MK II and 'Entzheim / Strasbourg' shapes: there can be found the '*Michelsberg ancien du Rhin supérieur*', the 'ancient Michelsberg of the Upper Rhine Valley' as called by Jeunesse *et al.* (2002 / 2003, 186-188, 266 Liste H), which shows merging elements like a lug *below* the ornamented zone of an 'Entzheim globular amphora' of Geispolsheim 'Bruechel' (Jeunesse *et al.* 2002 / 2003, 221, fig. 162,7).

Referring to the absolute dating of the 'Michelsberg culture', no absolute date for stage MK I is available – as no 'closed find' exists in southwest Germany (the pit of Iggelheim remains without datable material). In Baden-Württemberg, conventional radiometric datings were established for MK II contexts at the sites of Hetzenberg and Ilsfeld (Seidel 2008, 37, 104). More recently, AMS-datings were published for the sites of Scheelkopf (MK V) and Aue (MK II – MK IV) (Steppan 2003, 38-52); for Aue and Michelsberg (MK IV) additional AMS-datings obtained as part of a project of the German Research Foundation (DFG) and the Archaeological Heritage Departement of Baden-Württemberg[5] are not yet published (Regner-Kamlah and Seidel in press). They show datings between the 43th – 40th *c.* cal BC for MK II and between 40th – 39th *c.* cal BC for MK III / IV.

For MK V / Munzingen in South Germany and Alsace, the widest set of absolute data are 94 AMS-dates for the site of Klingenberg. They range between 3815-3630 cal BC (95% probability), the activities at the site were most probably restricted to about 150-50 years (Seidel 2008; Seidel *et al.* 2016). These datings for MK V / Munzingen fit with dendrodates, which can be connected with

<table>
<tr><td>Lüning 1967</td><td>Höhn 2002</td><td>Jeunesse 1989; Jeunesse et al. 2002/2003</td><td>Seidel 2008</td><td>Matuschik 2011</td><td>Kolb 2003</td></tr>
<tr><td>MK I</td><td>MK 1–2a</td><td></td><td></td><td></td><td></td></tr>
<tr><td>MK II</td><td>MK 2b–3a</td><td>(Munzingen A)</td><td></td><td></td><td></td></tr>
<tr><td>MK III / Munzingen A</td><td>MK 3b–3c</td><td>Munzingen A</td><td rowspan="2">MK III / IV</td><td>MK III 3919–3834 BC</td><td></td></tr>
<tr><td>MK IV / Munzingen B</td><td rowspan="2">MK 4a– 4c</td><td>Munzingen B</td><td>MK IV 3869–3817 BC</td><td></td></tr>
<tr><td>MK V</td><td>Munzingen B / C</td><td colspan="2">MK V / Munzingen B</td><td>3717–3680 BC Zürich-KanSan 7
3722–3727 BC Thayngen-Weier II
3689 BC Sipplingen 9</td></tr>
</table>

Figure 5. Overview of different chronological concepts discussed in the text (figure: U. Seidel).

5 German: *Landesamt für Denkmalpflege Baden-Württemberg.*

layers with comparable MK ceramics. For the 'Pfyn-Altheim group' of Upper Suabia, cutting dates of wood between 3745 / 3744-3650 BC are known for the sites of Reute, Ödenahlen, Olzreutersee, Steegersee, Alleshausen-Riedwiesen and Schreckensee (Schlichtherle 1995, 86; Billamboz 1998, 383, Tab. I). For 'Pfyn', the years around 38th / 37th c. BC are not well documented by absolute dates, but a dendrodate of 3689 BC from the Sipplingen-Osthafen layer 9 at Lake Constance is available, representing a 'mittleres Pfyn (Middle Pfyn)' with a 'Munzingen' pot 12,1 (Kolb 2003, 33-37). The same typo-chronological unit is also represented by dendrodates of Zürich-Seefeld layer 7 of 3717-3680 BC. Less sure are the dates for Thayngen-Weier II of 3722-3725 BC (Kolb 2003, 41-43).

The typology of Michelsberg ceramics (essayistic mode)

In the light of the lectures and discussions presented by the participants of the workshop 'Mobilities and pottery production' on the 5th - 6th of June 2015 at the University of Bern, some thoughts about MK ceramics shall be presented in a more 'essayistic mode'.

Methodologically, it should be noted that Lüning took all pots that were present in a – territorially – defined area. The definition of a 'territory' was not so much in his focus, he discussed the range of MK types present at one site that would allow him to claim it for the MK.[6] Among the reference sites are Miel (MK I), Mayen (MK I, II), Urmitz (MK I, II), Obereisesheim-Hetzenberg (MK II), Wiesbaden (MK III), Endingen (MK III), Untergrombach-Michelsberg (II – V), Ludwigsburg (MK V), Bodman (MK V / MZ), Thayngen-Weier (MK V / MZ), 'Munzinger Berg' (MZ) or Wallendorf and Prag (MK V).

In general, Michelsberg ceramics are assumed to be characteristically round bottomed. A look at Lüning's 'Beilage 5' suggests that this assumption is right (see Fig. 3). Most of the displayed ceramic examples are round bottomed, such as tulip beakers, bag shaped beakers, basin shaped bowls, bottles, storage and cooking pots. Lüning does not explicitly name a round bottom as characteristic, he refers to the making and handling (Lüning 1967, 12-15). But, the fact that he thought a round bottom to be characteristic for the MK, finds a certain confirmation in his separation of an MK '*Hauptgruppe* (main group)' and '*Regionalgruppen* (regional groups)', like the '*Bodenseegruppe*' at Lake Constance and the '*Munzinger Gruppe*' with flat bottomed storage and cooking pots (Lüning 1967, 80-100). On the other hand, at the eponym site of the Michelsberg itself, flat bottomed storage and cooking pots are present. Lüning displayed them on his tables (Lüning 1967, Taf. 67E, 70C, 73C, 75-77, 79A) – but didn't discuss them in his text.

Looking closer at Lüning's system, a high percentage of the ceramic is not round bottomed. In other words, the basis Lüning used for its systematic description of the MK repertoire contains a high portion of flat bottomed shapes, which are present in almost every 'basic shape' and every 'kind'. In the case of 'kind 1: beaker' the basic shapes 1-4 describe round bottomed beakers; but 'basic shapes 5-9' describe exclusively flat bottomed beakers (Lüning 1967, 28-32). For 'kind 2: storage pots'

6 Quote in German: "*Bei den aufgenommenen Beständen wurde großer Wert darauf gelegt, die gesamte Formenbreite jeder Fundstelle zu erfassen*" (Lüning 1967, 10).

(Lüning 1967, 32-38) and 'kind 6: cooking pots' (Lüning 1967, 54-55), nearly every basic shape has a flat bottomed type or variation at its side. The presence or absence of a bottom, be it round or flat, does not even seem to be have been crucial for Lüning for the definition of a type, only for its variation.

For 'kind 3 bottles' only 'basic shapes 1 and 2' describe round bottomed bottles; 'basic shapes 3 and 4' describe round as well as flat bottomed bottles; 'basic shapes 5 and 6' only flat bottomed bottles. For 'basic shape 4: bottle with lugs on the shoulder' and 'basic shape 5: simple bottle' with flat bottoms (Lüning 1967, 42-43) it can even be questioned how far this shape represents a genuine MK shape. Matuschik (2011, 214-215, Abb. 145, 146) approached this question by collecting comparable bottles, which were in use by different 'cultures'.

The entire 'kind 4: pots with handles' is flat bottomed. The jug and jar shapes are traditionally linked with the 'Lengyel tradition' and can be prominently found in 'Epi-Rössen' contexts, like the famous 'Schussenried' jars. Once again it can be questioned how far pots with handles should be seen as a genuine MK shape. A distribution map of jars was produced by L. Jammet-Reynal, showing their concentration in the areas of the Upper Danube, west of Lake Constance and Lake Geneva, with the MK regions of the Neckar and Upper Rhine on the periphery (Jammet-Reynal 2012, 165, fig. 4,35).

There being no genuine MK shape can also be assumed for conical bowls with flat bottoms, the 'kind 5: bowls, type 7: conical bowls', in Lüning's system. The shape seems – like jars – to be 'borrowed' from the 'Epi-Rössen' repertoire. Here, conical bowls are as frequent as carenated bowls are for MK ceramics. The 'Epi-Rössen' conical bowls represent technically a group on its own, by profile and chalk temper, a fine dense texture like fine ware, but with 0.9 cm thick sherds like coarse ware (Seidel 2004, 187-188). The 'Schussenried' conical bowls are never decorated, although decoration is a characteristic of the 'Epi-Rössen' repertoire. They may show handling and a band with '*Fingertupfenleiste*', *i.e.* finger-imprints at the rim. In contrast, MK conical bowls are made in the 'hollow sounding' MK technique, with a slightly flared rim – they never have a band with finger-imprints at the rim, but are often decorated (Lüning 1967, 53.), although decoration is not characteristic of the MK. Decorated conical bowls appear in the MK repertoire from the end of stylistic phase 2c onwards, *i.e.* MK II (Seidel 2008, 132). Interestingly, they are restricted to the Upper Rhine, between north of the Kaiserstuhl and Kraichgau (Gleser 1995, 54; Lüning 1967, 18). The features of conical bowls of 'Lutzengüetle' type and their close relation to MK bowls were discussed by Matuschik (2011, 244-252 and Abb. 169). As decoration is not at all a MK feature, the MK conical bowls seem to display a somewhat 'cross-recross' ceramic idea, restricted to a certain region.

'Kind 9: clay discs' were for a long time claimed as a defining feature of the MK, at least by German investigators. But they are clearly part of the ceramic repertoire of 'Chasséen', NMB ('Burgundy Middle Neolithic'), 'Late Entzheim', 'Schussenried', 'Pfyn-Altheim' *etc.* They can be found over wide parts of France, Germany and Switzerland (Jammet-Reynal 2012, 147, fig. 4,28). The clay discs are very uniform in manufacture, being roughly tempered with grog or stone, and all show the oxidizing impact of secondary heating – a reason why they were inter-

preted as 'backing plates'. Probably one has to look for a functional reason for their widespread presence and their identical manufacture.

Probably a similar reason, *i.e.* a specific function, can be claimed for carenated bowls. The appearance of carenated bowls, 'basic shape 2', in the repertoire of the MK defines the beginning of MK III, *i.e.* the late MK in general (Lüning 1967, 49-52, 86).

Carenated bowls are assumed to substitute the basin shaped bowls in the MK repertoire. Both shapes show a concentration in the Upper Danube, Neckar and Bruchsal areas, but basin shaped bowls with short rims also appear in the Mayen-Koblenz area and beyond in the Paris Basin (Jammet-Reynal 2012, 153, fig. 4,31), whereas the carenated bowls of MK type, interestingly flat bottomed (Lüning 1967, Beilage 5), are concentrated in the South: west of Lake Constance and at the Upper Rhine. Lüning (1967, 102) already stressed that they are rare in the middle Rhine region. This reflects on one hand the expansion of the MK to the south. But the carenated bowl also has relations to a Mediterranean tradition (Jammet-Reynal 2012, 159, 167, fig. 4,36), even if the MK bowls differ from the deep and round bottomed carenated bowls of the 'Cortaillod' and the shouldered bowls of the NMB. The variety of carenated bowls of France, Switzerland and Germany was shown by Jammet-Reynal (2012, fig. 3,11). The idea of a carenated bowl can be found in variations from Bulgaria (Kodzadermen-Gumelnita-Karanovo VI) to France, Switzerland and Germany ('Chasséen'; late NMB; 'Cortaillod' and 'Horgen') (Jeunesse *et al.* 1998), and appeared around 4000 BC in Great Britain (Whittle *et al.* 2011, 756-762).

The carenated bowls of the MK are carefully made, show fine temper and surface finishing. They are very regular in profile and robust, although they have large diameters. Even small sherds have a high recognition factor. The shape, easy to handle, has recently still been in use for making cheese (pers. observation Heimatmuseum Grindelwald, Canton of Bern, CH). Concerning the basin shaped bowls of the MK, it was proved that they contained dairy (Blume and Rottländer 1980); non heated dairy was detected in carenated, conical and hemispherical bowls of the NMB (Mirabaud and Régert 2015, 495, pl. 14). The appearance of bowls in Britain from 4000 BC onwards is related to the introduction of the Neolithic way of life (Whittle *et al.* 2011, 833-847, fig. 14,177.179). This suggests that special pot shapes are not so much a matter of cultural aesthetic but are defined by a functional value – which leads to the wide theme of culturally defined ways of life.

As already touched on above, a closer look at MK ceramics reveals that the 'Michelsberg culture' was not a homogeneous entity, but regional differences in the presence and absence of various pot types can be observed. At the periphery of its distribution area MK ceramics can be found together with ceramics of other traditions in varying but high percentages (*e.g.* Gallay 1977; Lüning 1997). Within the 'officially defined' distribution area, pots with handles, like jars and cups are not present north of the river Main (Höhn 2002, 154), tulip beakers are almost absent at the Upper Rhine (Höhn 2002, 165, 175, 225) and a special decoration can be found at the northern Upper Rhine (Lüning 1967, 17, Taf. 24E, 25,2.3, 34C). A decorated pot like the one in Lüning 1967, Taf. 25,2 was found during the 2015

excavation at Bonn-Venusberg (oral comm. S. Scharl, June 2015), and decorated conical bowls are restricted to the Upper Rhine between Kraichgau and Kaiserstuhl (Gleser 1995, 54), *etc*.

The spectrum of the shapes differs not only between regions but also between the sites of one region. The ceramics of the site of Hetzenberg in the Neckar valley, for example, represent a 'pure MK II' – if one leaves out numerous conical flat bottomed bowls, mostly made using the 'Schussenried' technique (Koch 2005, 66; Seidel 2008, 69). In contrast to this, the ceramics of contemporary Ilsfeld in the Neckar valley contain many 'non MK ceramics', which can be attributed, for example, to 'Schussenried', 'Entzheim' and 'Chasséen' traditions (Seidel 2008, 142-146, 181). This is also true for Ilsfeld stage MK I with its relations to 'Bischheim', 'Schwieberdingen', 'Noyen-group', 'MK of the middle Rhine and Aisne valley', or NMB (Seidel 2008, 138-148, 152, 178, 181; Jammet-Reynal and Seidel 2014). For the ceramics of Bruchsal-Aue in the Kraichgau, affinities with the 'Chasséen-Cortaillod-Lagozza tradition' can be noticed (*cf.* Reiter 2005, 99-101) in multi-perforated handles or bowls with handles below the carena, for example (Reiter 2005, Taf. 17,5b, 39,6, 51,4, 53,10, 54,6, 69,7 and Taf. 60,5, 86,3), as well as to 'Schussenried' ceramics by flat bottomed and decorated ware (Reiter 2005, *e.g.* Taf. 77,2.3.5, 97,7.8), or to the 'MK of the Aisne valley and the Northern Paris Basin' (Reiter 2005, *e.g.* Taf. 48,4, 50,3, and basin shaped bowls and bottles *e.g.* Dubouloz 1998, fig. 1). At the same time, closed tulip beakers 1,1, being present in Ilsfeld and Miel (Lüning 1967, Taf. 5,20; Seidel 2008, 110), are lacking in Aue. Probably the people living at one or the other site had different relations to other populations.

The repertoire of 'Michelsberg' ceramics appears as a 'continuum', in aspects of technique and shape, as well as in aspects of space and time. Technically, MK ceramics are characteristically built up by coils. There is no separate slip at the surface, but the surface was polished in leather-hard condition, a stage when it was dry and could be compressed; pieces of the – often coarse – temper can be visible (Lüning 1967, 12-18). Höhn (2002, Abb. 99), was showing that there is a continuum of how a MK pot was made. There are no closed pot groups according to functional, formal and technical features, as is the case for the – especially the ornamented – pots of the 'Epi-Rössen' neighbours. Most MK pots are tempered with limestone, with rougher temper in cooking pots and finer in eating / drinking pots. Storage pots can be covered with sludge, but not necessarily. They are more often tempered with quartz and can have a '*Randleiste*', a band at the rim. Cooking pots can be identified by spots of secondary heating, they can – but not necessarily – be finer in temper, often limestone, and show slip instead of sludge; most have a band at the rim. Pots for eating and drinking have rather polished surfaces, originally fired black in a reducing atmosphere, and more often showing an organic temper. Homogeneous groups are in contrast to that the clay discs, of about 1.2 cm thickness, oxidizing fired and containing rough grog; and the carenated bowls, dark in colour, reducing fired, very well polished inside and outside, all containing fine sand and grog.

Referring to the spatial distribution, the profiles of MK ceramics, especially of tulip beakers, are, in Baden-Württemberg, more often carenated and bent (*e.g.* Koch 2005; Lüning 1967; Reiter 2005; Seidel 2008), whereas MK ceramics in the northern regions of the MK appear less segmented and more 'bag shaped' (*e.g.* Eckert 1992; Knoche 2008; Schyle 1997).

This variety of the MK from site to site leads to the question, in which sense does our idea of a uniform 'Michelsberg culture' reflect a historical reality of a distinct cultural unit? The archaeological answer is the separation in regional groups, like the 'Spiere-group' in Belgium, which display in a sense an emancipation from Lüning's classification (Vanmonfort *et al.* 1997).

The variety of shapes, profiles and quality of most of the MK shapes is displayed by the many 'types' and 'variations' that Lüning saw himself obliged to divide.[7] In this respect bottles with high lugs, for example, were divided into three variations: a well segmented variation 1, indicating a 'wide distribution of similar pottery tradition'[8] the less segmented variation 2, and a variation 3, which Lüning (1967, 40) called 'crude'. This raises the question of whether there were 'specialised manufactured' or 'transported' bottles of a better variation 1, besides 'locally made' bottles of variation 2 and less elaborate, perhaps 'imitated' or 'beginners bottles' of variation 3, which is one interpretation.

Taking, for example, tulip beakers – being almost a synonym for the MK – the method of manufacture was not unique. The beakers of Bruchsal-Aue were divided by Reiter (2005, 29-37) into a 'group A' with thinner walls of 0.6 cm, being more segmented and better finished – and a less segmented and less carefully made 'group B' with thicker walls. Between sites of the same typo-chronological MK stage in a region, there are differences in the profile of the same 'Lüning types'. The profiles of the MK II tulip beakers of the Hetzenberg, for example, are different from the profiles of the MK II tulip beakers from the Ilsfeld site (Koch 2005, 46-47, Abb. 47, 48; Seidel 2008, 47, Abb. 57, 106-107, 113). The indices total height / neck of the type 2 tulip beakers from Ilsfeld are between 3.3-2. For the tulip beakers from the Hetzenberg they are between 3.0-2.5.

As evidently no clear 'canon' existed on how to make a tulip beaker, a separation between tulip beaker and a round bottomed cooking pot is sometimes difficult to make. Sometimes only the rim, with or without a band, helps to clear the situation – not profile, size or technique. In this respect one is tempted to see in some conically profiled MK pots a 'beginners form' (see Melko in this volume), pots with a profile relatively easy to produce, even by a beginner.

The variety of temper, the variety of profiles within a 'type' and the variety of profiles between sites, does lead to the impression that at least some of the MK ceramics were not made in a very specialised context, or even in a 'centre of man-

7 Quote in German: "*Durch starke Unterschiede in Form und Größe … ergeben sich zahlreiche Variationsmöglichkeiten…*" (Lüning 1967, 18).

8 Quote in German: "*einen in einem weiten Verbreitungsgebiet einheitlichen Stand der Töpferei*" (Lünding 1967, 40).

ufacture'.[9] One is rather inclined to think about ceramics as being made within every household, in the frame of daily routine, the '*Hausfleiss*'.

The 'continuum of features' of MK ceramics becomes more evident when it is compared with, for example, the repertoire of the contemporaneous 'Schwieberdingen' and 'Schussenried' ceramics of the Neckar region. MK ceramics seem to be less defined in contrast to the 'Epi-Rössen' ceramics, where a very distinct repertoire of shapes exists: jars and bowls representing fine ceramics, often decorated; storage and cooking pots as coarse ceramics; and conical bowls standing technically between fine and coarse ceramics (Seidel 2004, 170-171). All 'Epi-Rössen' shapes are well defined and extremely regular although made without a wheel, the fine ceramic sherds are evenly 0.6 cm thick, very evenly polished, sometimes skilfully decorated and encrusted; the conical bowls have walls that are consistently 0.9 cm thick and there are many handles. A certain training for making such pots seems to have been inevitable.

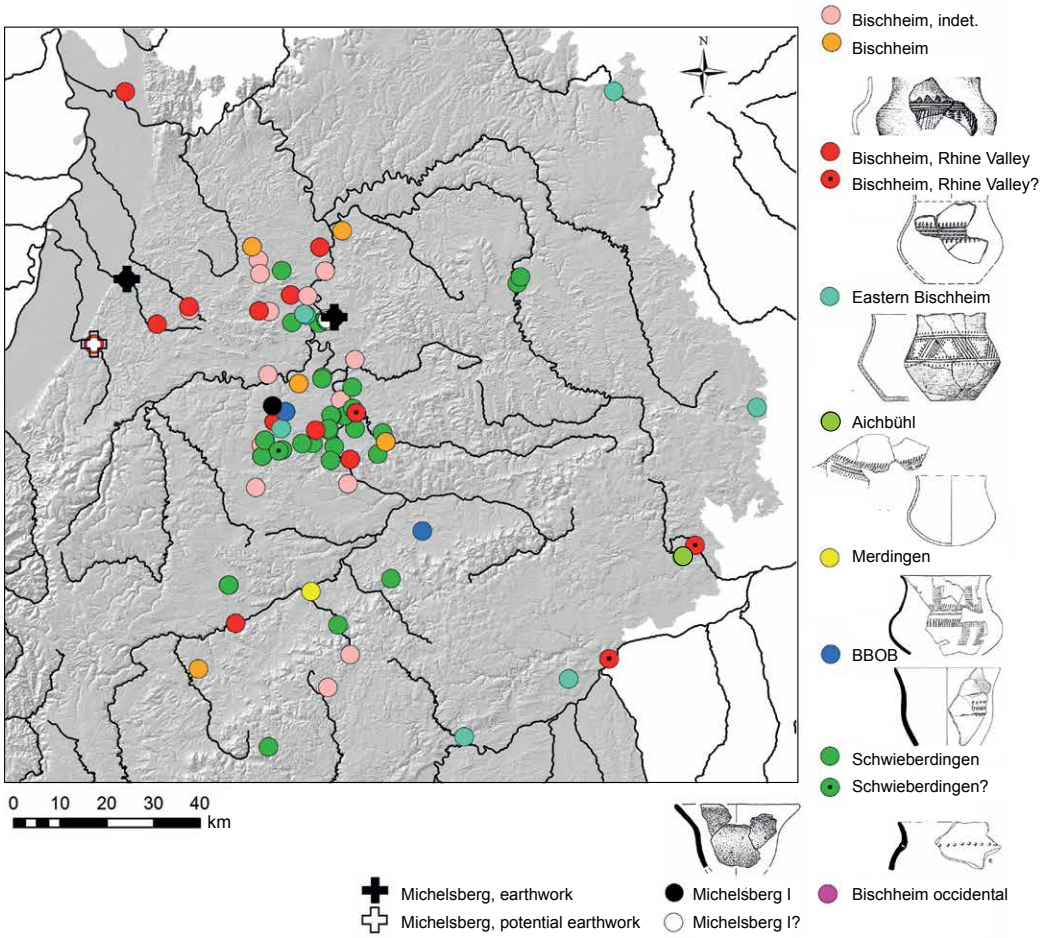
This care and elaboration of decorated ceramics probably requires some specialisation, and a socially shared appreciation for a skill that provides information about a social status and an individual skill that was socially wanted, should be another condition for this cultural characteristic – like playing a piano or manufacturing embroidery could display being a member – and an able member too – of a certain social circle, tribal group *etc.*

The 'informative' character of decorated ceramics has been discussed by various authors. For 'Rössen' and 'Epi-Rössen' ceramics, a concept was introduced; the idea of working with an 'emblemic style', exclusively used by a group to portray its identity and an 'assertive style', shared with neighbouring groups to portray the community (Eisenhauer 2002; Zeeb-Lanz 2006). A mapping of MK I ceramics and ceramics decorated in the 'emblemic style' of the respective contemporaneous 'Epi-Rössen groups' shows beyond regional concentrations a spatially relatively 'mixed' picture. This means during the time of MK I the decorated ceramics went relatively often beyond their area of origin (Fig. 6). In clear contrast to this, the mapping of MK II ceramics and ceramics decorated in contemporaneous 'Epi-Rössen'- styles shows clear borders between the areas of the respective styles (Fig. 7). The interpretation is difficult, as only about 6% of the ceramics were decorated and therefore part of the investigation. But it is notable that within horizon MK I a greater variety of ceramic shapes was decorated, such as pots, bowls and bottles; and the variety of motifs, 'motif arrangements' and techniques was wider. During horizon MK II, decoration was restricted to a few shapes, *e.g.* jars in 'Schussenried' and spherical recipients in 'Entzheim'; only one technique was common, the scratching technique; and only one specific 'motif arrangement' per group was used, *e.g.* horizontal division in four zones for 'Schussenried' and vertically stapled zones for 'Entzheim'. One is tempted to ask whether there was a change of function for decorated pots. They could increasingly have served for special – ritual? – purposes only, reaffirmating a group identity that was founded

9 An example für this situation was displayed by A. Mayor in her oral communication during the meeting in Bern in 2015.

in the past, the decorated pots being no longer a 'living part' of daily life, but representing a 'dying culture' in the sense of Eggers (1986, 258-262).

The mappings show that from MK II onwards there was something like a cultural region using MK ceramics, 'living an MK lifestyle'. The question arises of whether there were special pots in the MK repertoire that could have had compara-



Michelsberg I: undecorated 'tulip beaker type 1,2', Ilsfeld-Ebene, inner ditch (Seidel 2008, Taf. 87,7).
Aichbühl: 'biconical beaker', diagonal band ('*Schrägmetope*') (Strobel 2000, Taf. 82, 2098).
Bruebach-Oberbergen (BBOB): spherical beaker ('*Kugelbecher*'), wrapped around shoulder band, vertical elements on body and neck, Oberbergen–Baßgeige, pit 70 / 10 (Dieckmann 1991, Taf. 184,1).
Merdingen (regional facies of BBOB): 'spheroid beaker' ('*Kugelbecher*'), wrapped around shoulder band, without vertical elements, Merdingen-Duggenbühl, pit 71 / 1 (Dieckmann 1991, Taf. 219,1).
Bischheim, Rhine Valley: closed beaker, assumed to be round bottomed, wrapped around band, hanging triangles and hanging filling elements, Schwalheim, pit 1 (Lüning 1970, Taf. 1,1).
Western Bischheim: spheroid recipient with applicated clay lentils, assumed to be round bottomed, Chassey-le-Camp (Thévenot 2005, 207 Fig. 139,1).
Eastern Bischheim (Goldberg group): beaker with wrapped around multilined band ('*Goldbergband*') (Zeeb 1998, Taf. 35,6).
Schwieberdingen: 'bowl' (open beaker) with 'windows' ('*Metope*'), Remseck-Aldingen-Halden I, pit 131 (Keefer and Joachim 1988, Taf. 40,4).

Figure 6. Mapping of ceramics attributed to the styles of MK I and contemporaneous 'Epi-Rössen groups' in south-west Germany and adjacent areas. Interpretation: decorated ceramics went beyond the region of their stylistic origin (figure: U. Seidel; drawings: as indicated).

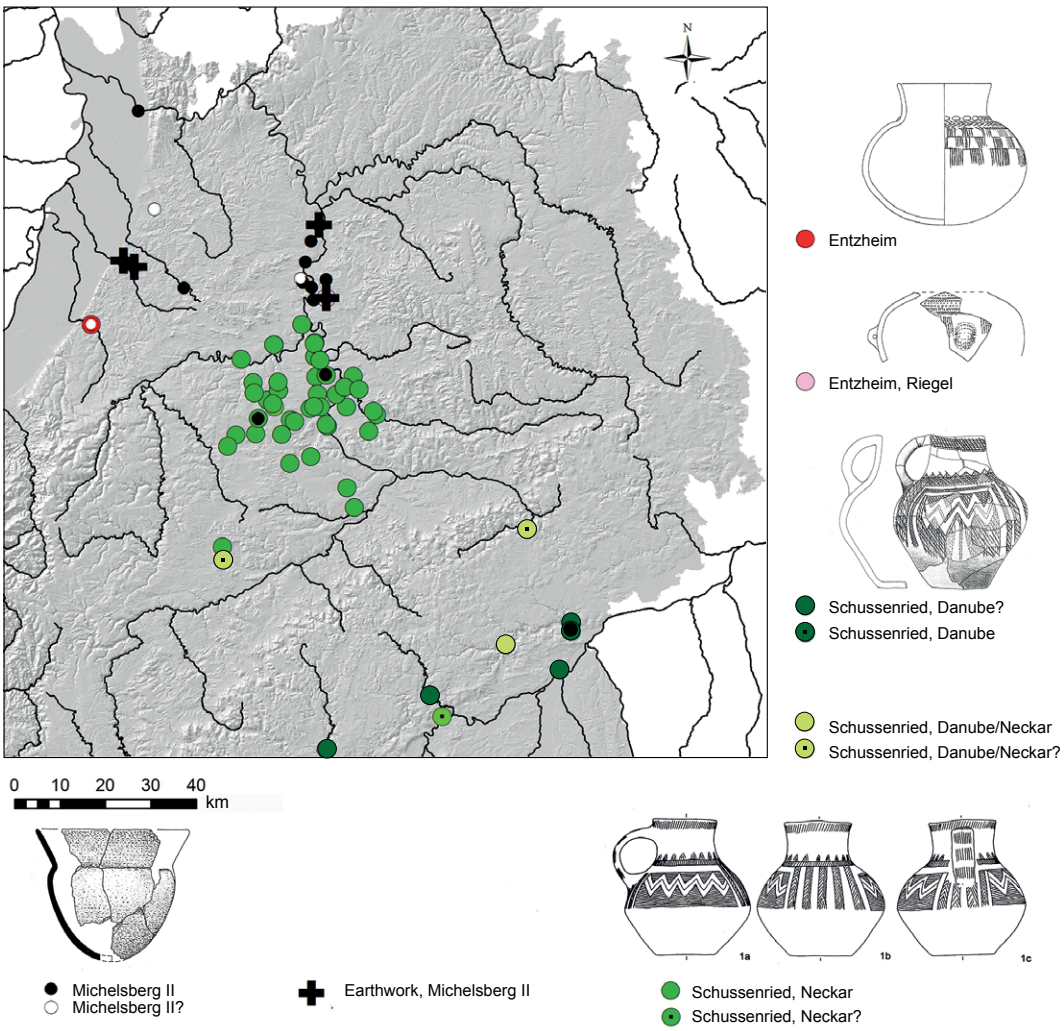
ble functions in displaying an identity, like the decorated pots of the 'Epi-Rössen' are assumed to have done? And what happened to the decorative motifs when they disappeared from the ceramics, as decorated ceramics with 'informative value' reappear only with 'Bell beakers' and 'Corded Ware' around 2800 BC. The information carried by the motifs could have been transferred to textiles, which could be suggested by the appearance of spindle whorls at the end of the Late Neolithic and the growing importance of flax in the so-called 'Pforgen' – a mixture of 'Pfyn' and 'Horgen' – and 'Horgen culture' from 3400 BC onwards (Leuzinger 2002, 115-120). Remarkably, the preference for polished surfaces coincides with the adoption of metallurgy at the time.

In this respect, the percentage of pots in the MK repertoire could be of interest. Among the shapes L. Jammet-Reynal mapped, flat bottomed and round bottomed tulip beakers are – besides 'baking discs' – the only shape present all over the investigated area, covering most of France, Germany and Switzerland (Jammet-Reynal 2012, 157, fig. 4,33). Already Scollar (1961, 523) had remarked that not every region with tulip beakers must be part of the MK. But looking at tulip beakers with a round bottom and tall shape, as they become the 'MK fossil' from MK III / IV onwards, these tulip beakers are restricted to an area east of the Rhine, between Lake Constance and Nordrhein-Westfalen (Nottuln) (Jammet-Reynal 2012, 173 fig. 4,39) – the same area to which bottles with pan pipe lugs, carenated bowls of the MK type, or pots with sludge are restricted (Jammet-Reynal 2012, fig. 4,34, figs. 4,36.38) or, in other words, the distribution area of the late MK (Höhn 2002, 187-190, Abb. 175,176). As the tall tulip beakers became a 'fossil type of the MK' for modern investigators, they could also have had significance for Neolithic people.

The latest tulip beakers – of Lüning's type 4,2 – sometimes display extreme proportions. Their making and firing requires some skill. The portion of tulip beakers in the ceramic ensembles reduces clearly in the course of time (Höhn 2002, 180-184). On the other hand, they can be found as isolated finds in neighbouring contexts, *e.g.* in the prealpine region and the Saale region, even at Prague (Höhn 2002, 190). The distribution and consumption of food and drink always has social implications. This leads to the idea that the late 'exotic' tulip beakers saw – probably analogous to the 'Schussenried jars' or the 'Entzheim spherical vessels' – a change of social function. Their increasing elaboration could have met an increasing exclusivity of use. In this sense tall tulip beakers could have been reserved for a small circle of persons, or for only a few events; reminiscent of a former 'identity' of the MK, but no longer part of a 'living culture' with activities that led to the development of the original wide tulip beaker repertoire and sharing common roots with the neighbours west of the Rhine. The tulip beaker in that case would have changed from a typo-chronological shape of a 'living culture' to a solidified and typologically resistant shape with no finer chronological implication.

A look at the ceramic ensembles of the three sites with enclosures of Hetzenberg, Ilsfeld and Klingenberg-Schlossberg in the Neckar region shows a change in the portions of pot shapes (Fig. 8-10). At Hetzenberg (MK II) only ditches were excavated, at Ilsfeld (MK I – IV) and at Klingenberg (MK V / Munzingen B) ditches and settlement pits were excavated.

In all three ensembles bowls, basin shaped and carenated, comprise the highest percentage, and the percentage of bowls stays more or less the same at all sites (22-24%). Taking the example of the burnt NMB house of Clairvaux VII, A. and P. Pétrequin demonstrated that bowls were three times more often present, in the burnt layer as well as in the earlier debris layer, than large bottles (Pétrequin and



Michelsberg II: undecorated 'tulip beaker type 2', Ilsfeld-Ebene, inner ditch (Seidel 2008, Taf. 78,2).
Entzheim: spheroid recipient, zonated decoration wrapped around, in the main field with stapled motifs, as triangles or, – here – chess-table, Bötzingen-Schneckenbühl, pit 71 / 13 (Dieckmann 1991, Taf. 26,3).
Riegel (regional facies of Entzheim): spheroid vessel, zonated decoration wrapped around, typical are round stampings, Bötzingen-Schneckenbühl, pit 71 / 16 (Dieckmann 1991, Taf. 24,10).
Donaubian Schussenried: jar, decoration divided in four zones: vertical elements ('*Stirnspalten*') in front and back, zigzags ('*Winkelband*') in the main fields, characteristic is cross hatching and 90° connection of shoulder and front, Riedschachen (Strobel 2000, Taf. 95, 2217).
Neckar-Schussenried: jar, four decorated zones: vertical elements in front and back, zigzags in the main fields, characteristic is fine parallel hatching (earlier: stiches, later: scratches), shoulder and front are separated, Leonberg-Höfingen (Seidel 2004, Taf. 40,1).

Figure 7. Mapping of ceramics attributed to the styles of MK II und contemporaneous 'Epi-Rössen groups' in south-west Germany and adjacent areas. Interpretation: decorated ceramics were kept in their area of origin (figure: U. Seidel; drawings: as indicated).

Pétrequin 2015, fig. 15). The same ratio of bowls and bottles show the MK ensembles of the Neckar region, with bottle shapes playing a more significant role in the earlier ensembles (Hetzenberg 10%; Ilsfeld 17%). In the 'MK V / Munzingen' repertoire of Klingenberg only few fragments of bottle shapes were identified (5%). For the MK ceramics from pits and ditches it was claimed that sherds can less easily be attributed to a large bottle shape, whereas sherds of the characteristic bowls are easy to identify (Seidel 2008). But the interpretation of the Pétrequins for the controlled NMB house complex of Clairvaux VII seems also very convincing, as they claimed that the bowls broke more often because they were more often in use.

Interestingly, at late Klingenberg significantly more baking discs were found (13%), than in earlier structures at Hetzenberg (5%) and Ilsfeld (3%). On the other hand, the percentage of storage pots increases, from Hetzenberg (23%) and Ilsfeld (29%) to Klingenberg (44%). It is noteworthy that also the size of the storage pots of MK V / Munzingen B stage increases. The storage and cooking pots MK II from Hetzenberg range between 20-40 cm (Seidel 2008, Taf. 6,8, 8,10), as do the ones from Ilsfeld (*ibid.* Taf. 20,4, 21,4). MK III pots from Ilsfeld achieve heights of about 50 cm (Seidel 2008, Taf. 23,7, 25,1.2). The largest among the 1360 storage pots of Klingenberg show diameters of more than 50 cm (*e.g.* Seidel 2008, 257, Abb. 214, Taf. 156,6, 157,7). Some achieve heights above 70-80 cm (*e.g.* Seidel 2008, Taf. 159,3.4.5) and the thickest pot sherds are more than 3 cm. A storage pot weighting several kilograms can not be produced alone, only by teamwork, and it can not be transported easily. Also, it should be questioned whether the increasing size of the storage pots indicates a certain reduction of mobility in

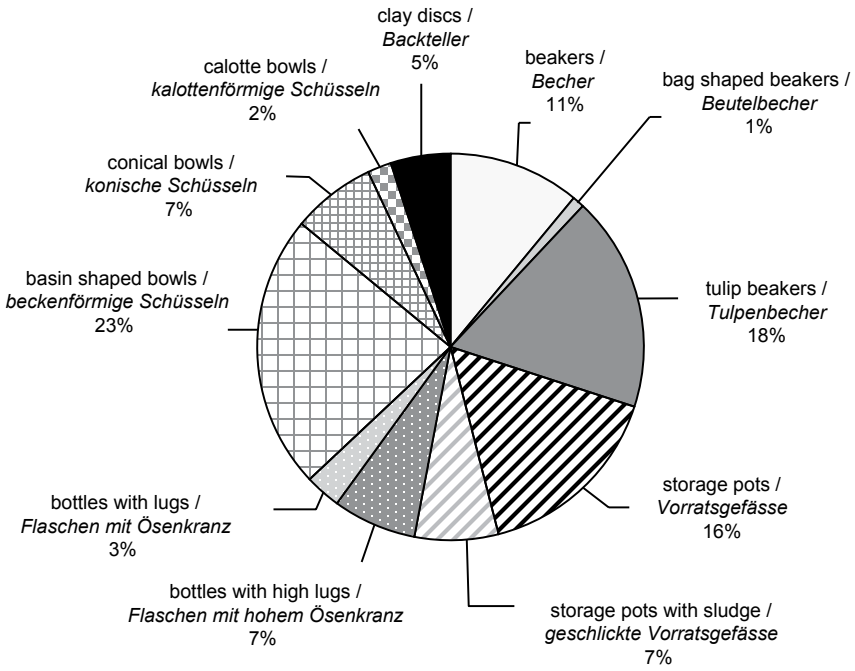


Figure 8. Percentages of MK pot shapes of Neckarsulm-Obereisesheim-Hetzenberg 1989 / 1990 (MK II) (figure: U. Seidel).

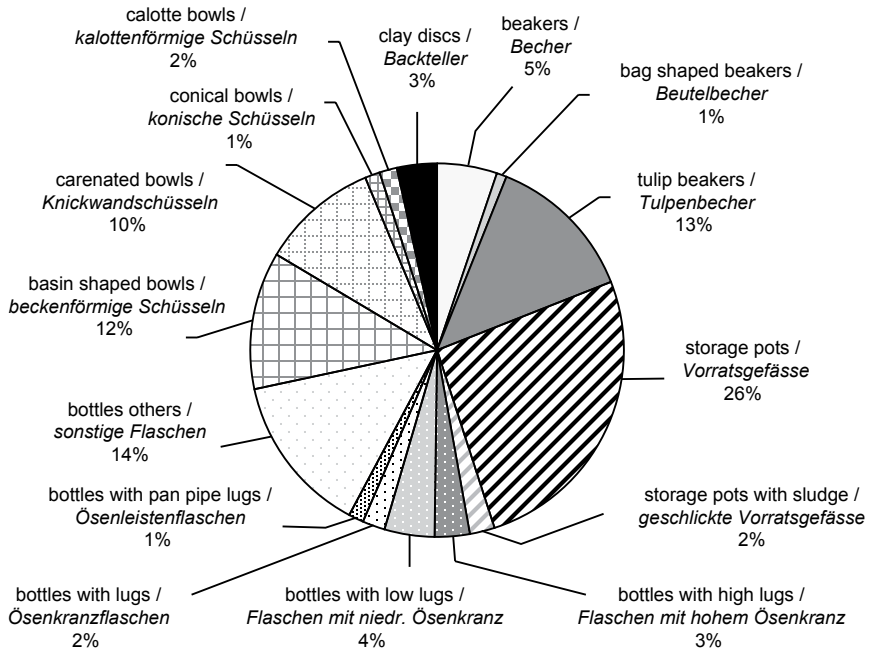


Figure 9. Percentages of MK pot shapes of Ilsfeld-Ebene (MK I – IV) (figure: U. Seidel).

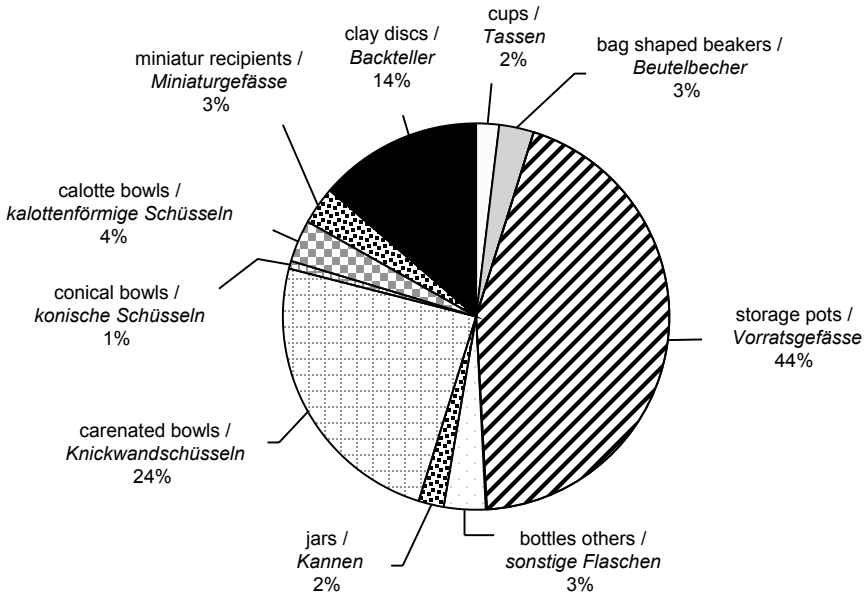


Figure 10. Percentages of MK pot shapes of Heilbronn-Klingenberg-Schlossberg (MK V / Munzingen B) (figure: U. Seidel).

the settlement system – or a reduced mobility of pots, as the pots could have also remained at a periodically visited place. In every case it takes more than one person to move a storage pot of 'late MK V / Munzingen type', even during the making of it. For practical reasons alone, making pottery should have been a 'social event'. A relatively mobile settlement structure was proposed for the MK by Seidel (2008, 388-389; Seidel 2012), based on the observation that only small and scattered groups of storage pits per site were found. It is Klingenberg, with its 288 'MK V / Munzingen' pits during an estimated time of activities of 150-50 years, which does not fit well in the general picture of only 5-6 pits per site. But there is no 'MK V / Munzingen area' with storage pits excavated that could serve for comparison and confirm the observation of growing settlement groups.

Studies dedicated to aspects as touched on above are rare until now. The attempts at interpretation given here aim therefore to point out aspects to be examined systematically in the future, rather than to fix conditions that could have led to these characteristics.

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Social dynamics and mobility: Discussing 'households' in Linear Pottery Culture research (6 ML BC)

Isabel Hohle

Abstract

This contribution introduces an ongoing PhD project at the University of Cologne[1] that examines 'linear pottery culture' ('Linearbandkeramik' short: LBK) settlement structure and the social organisation of the site of Schkeuditz-Altscherbitz in north-west Saxony (DE). Of special interest is the definition, usage and examination of 'households' in LBK research. While highlighting various aspects of LBK research and giving an overview of the project, some thoughts and ideas about the 'household archaeology' of the LBK are discussed. Studies from anthropology have shown how different households can be in terms of composition and function, even within one society. The attempt to deconstruct models that are informed by underlying notions of stability, homogeneity and correspondence – as between houses, households and families – is taken here as a first step to open the path for investigating more dynamic phenomena: e.g. intra-site activities, or supra-regional networks that might have existed in those societies and which were linked to different forms of spatial mobility. These preliminary ideas and thoughts do not claim completion and are better seen as a rag rug.

Keywords: *pottery, houses, households, terminology, spatial organisation*

> *"To put it as simply as possible, households do not adapt to a type of society or stage of development.* […] *While in every society a household-like group or thing can be found, in each place it performs unique mixes of activities and functions. Even in the same community, each household can appear different: some may be cohesive, some very diffuse; some will be involved in production, others will not. There are, in fact, no universal functions.",* Wilk 1991, 30, 34.

1 This article represents the state of the project as of 2016.

> *"[..] d.h. daß das gesamte bäuerliche Leben und Wirtschaften sich unter einem Dach abspielte.* [..] *Diese Höfe konnten als Einzelhöfe stehen oder sich auch äußerlich zu Gruppen von zwei und mehr Betrieben zusammenordnen, ohne dabei gemeinschaftliche, wirtschaftliche Einrichtungen zu entwickeln, denn es gibt keine entsprechenden Gebäude.",* Lüning 1988, 61.2

Introduction

Why have an article about 'households' in a volume about mobility and pottery production? Since 'the household', as most scholars of archaeology use the term[3], acquired its meaning in sedentary societies, it probably had been the place of pottery production until it reached a stage that went beyond that of personal requirements, and began achieving specialisation. Seeing 'households' as 'task-oriented residence units' (Netting *et al.* 1984*b*, xx; Blanton 1994) and a place of social actions and decisions, pottery production and style had been closely tied to 'household' dynamics. In order to address phenomena like movement and mobility it is argued here that one needs first to question models based on stability, homogeneity and congruence that are currently shaping research questions and methods in this field. Thus, this contribution is based on some thoughts and critiques of the meaning of the term 'household' and the usage of this term in the archaeology of the Early Neolithic in central Europe. Thereby, the research on Neolithic 'linear pottery culture' ('*Linearbandkeramik*' short: LBK)[4] will be taken as an example to elaborate the topic, as studying the LBK-site Schkeuditz-Altscherbitz (Saxony, DE; below Altscherbitz) is the subject of my current PhD. What follows consists of preliminary thoughts and ideas, as the project is still a work in progress. The critiques and selected examples cannot be discussed sufficiently here and should better be seen as a rag rug with no claim of completion.

The debate around the use and definition of 'household archaeology' as a method has increased, especially since the 1980s (Beaudry 2015) and predominantly in anglophone research. An overall discussion of this term is still worthwhile, especially in the case of LBK research. In this research area, the term 'household' is mostly used as a synonym for 'family' or the other way around (*e.g.* Fröhlich 2015; Lüning 2000, 14-16; Schiesberg 2010; Strien 2010*a*). This, for example, seems to be similar in lakeshore settlement research, which is also distinctly visible in life pictures (Röder 2010). What B. Röder discusses in the cited article could also fit to LBK research and life pictures. Kinship often functions as an explanation or basis of social and economic models (Lüning 2000, 13). The archaeological feature that

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2 "[..] that means that the complete farming life and economy happened under one roof. [..] These farms existed as single farmsteads or could physically group to one or more farmsteads, but without developing joint, economic facilities, because there are no such buildings." (translation by the author).

3 That does not mean that mobile, nomadic cultures lack of a social unit like a 'household'. But as the term includes the word 'house' the debate in nearly every case goes around sedentary societies.

4 The LBK represents the first societies with an economy that was based on agriculture (intensive garden cultivation, see Bogaard 2004) and animal husbandry in central Europe (between 5600 / 5500-5000 / 4900 BC).

is synchronised with a 'household', 'family' or 'kinship unit' is the house (see also in the cited literature above). This course of action, seeing a house as a representative of one household constituted by one family is viewed critically here. There is a reasonable suspicion that these fixed assumptions neglect the dynamics, inconstancy and complexity of the social unit of the 'household'. Studies from anthropology have revealed many examples that could challenge the established assumptions in LBK research: "In reality, there are numerous societies in which families normally do not form households, and even more instances in which households are not always composed of families" (Bender 1967, 493).

While working on an LBK settlement it appeared that problems with defining terms like 'household' are difficult to answer solely on the basis of the archaeological record. To acquire an impression for possible interpretations of the collected archaeological data, the inclusion of studies from anthropology can be a methodological instrument. This method does not function as an equalisation as the usage of analogy is often misunderstood. Ethnographic studies have shown that households are constituted more through production (of food, pottery, clothing, and so on), consumption, distribution, transmission and social reproduction (Blanton 1994; Netting *et al.* 1984*a*; Wilk 1991) than through kinship and co-residence (Souvatzi 2007, 25). The process of domestic functions, co-residence and forms of 'families' or 'kinship groups' often come together in societies. But as they represent three different social phenomena, they can also occur independently from each other and vary in their appearance (Bender 1967). Debates around social organisation in the Early Neolithic era in central Europe often focus on the composition of families or the number of their members and sometimes their social status. What a 'household' was and what it meant, how it was constituted and what function it had in its particular society, is a rarely asked question, but is maybe more interesting than the question of how many people inhabited an LBK house (see comparable argumentation Bogucki 1993, 494). 'Households' nevertheless stand in the centre of a prominent settlement structure model for the LBK (Boelicke *et al.* 1988*a*; Lüning 1988, 2005) Seeing 'households' as 'activity groups' (*e.g.* Wilk 1991, 204), actions could be retraced in material culture and thus movement and mobility: in the compositions, conservation, usage and distributions of artefacts in a settlement for example. If and what kind of 'family' stood behind this is irrelevant. However, the term 'household' needs to be discussed for every circumstance (see below) in order to avoid arbitrary usage. Surely everybody has a broad understanding of this term but, when examining 'households', empirical, operational units should be made clear.

Mobility and exchange networks

I shall now discuss the case of LBK in more detail. Referring to the actual consensus, the LBK probably emerged in Transdanubia in the Hungarian Plain somewhere around 5600 / 5500 BC (Bánffy and Oróss 2010) and spread comparatively fast over large areas of central Europe. Pot decorations, houses and settlement structures of the LBK in the following centuries appear to have been quite homogenous through large parts of the distribution area at first glance. This requires intensive communication, exchange networks and thus spatial mobility of people as

well as systems of perpetuation of traditions. This is underlined by import finds in general (Strien 2010*b*) and, for example, by the spread of some flint raw materials over long distances (Zimmermann 1995, especially 109-111) or the distribution of raw material for adzes from Jistebsko (CZ) to the western LBK in particular (Ramminger 2007).

The question about mobility and exchange networks is a very interesting one in the case of LBK. It has been, and partly still is, an overall narrative that the social and economic way of life of these early LBK farming communities stands in contrast to the 'hunter-gatherer societies', especially in terms of mobility (Leary and Kador 2016). The time span in which LBK people settled large areas of central Europe assumes that mobility was an important part of their culture. The question of what provoked LBK people to move on has not yet been answered, but that they had been very mobile in general is not only illustrated by the exchange of goods and the spread of pot decorations but also through isotopic analysis (Bickle and Whittle 2013).[5]

Pottery and relative chronology

Until now, around 10,000 LBK houses are known in Europe (Petrasch 2012, 53), distributed in single farmsteads, hamlets, or in settlements that lasted for some hundred years with hundreds of houses. Compared to other prehistoric periods the stock of LBK sites is immense. Since the 1970s, houses have been classified into '*Grossbauten* (longhouses)', '*Bauten* (houses)' and '*Kleinbauten* (small houses)' (Modderman 1970). The average house of the LBK was 20 m long and 5 m in width and houses could reach 50 m in length (Brestrich and Elburg 1996) or even more, so the LBK culture definitely owns the term 'longhouse culture'.

Due to the lack of absolute dates, pottery plays the central part in the chronology of the LBK as it is the main artefact. The decoration style changed a lot through time and, depending on the region and the progress of research, the decorations and forms can be divided into five phases, as for example D. Kaufmann developed for central-east Germany / Mittelelbe-Saale-region (Kaufmann 1987; Fig. 1). Besides bowls and bottles, the '*Kumpf' i.e.* round bottomed jar is the most characteristic and most common vessel of the LBK. They are decorated with spirals and meandering lines and stitches. Typically, archaeologists divide LBK decoration into '*Randmotive* (rim motifs)', '*Hauptmotive* (main motifs)' and '*Sekundärmotive* (secondary motifs)' (Fig. 2). Especially the main motifs that cover the most part of the vessels with their many variations are analysed in detail. On the basis of an extensive catalogue ('*Bandkeramik*-online')[6] these motifs are given codes and ordered in several categories.

Seriation and correspondence analysis are used as methods to order features on the basis of these pot decorations in a chronological sense. The main assumption behind this is the socalled 'unimodal model', the cycle of upcoming styles that are

5 Discussing these aspects in more detail requires a differentiation between mobility on some kind of regional level (*e.g.* marriage alliances) and mobility on a broader level, when talking about hundreds of kilometres.

6 http://www.archaeologie-stiftung.de/de/wissenschaft/bandkeramik_online/bandkeramik_online_1.html [July 2016].

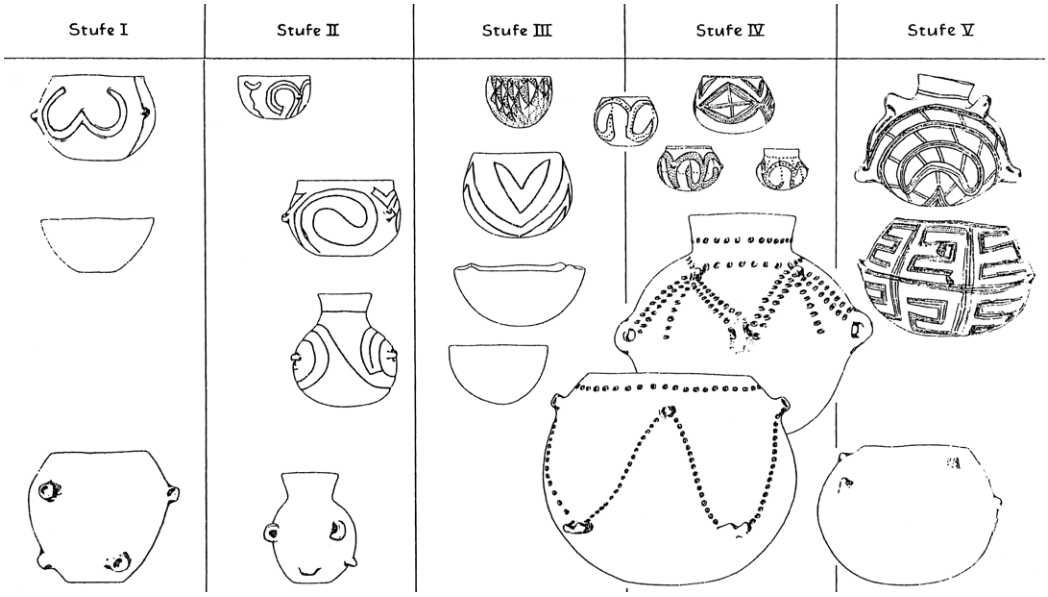

Figure 1. Pot styles of the Mittelelbe-Saale region of Central-East-Germany after Kaufmann (Kaufmann 1987, fig. 2).

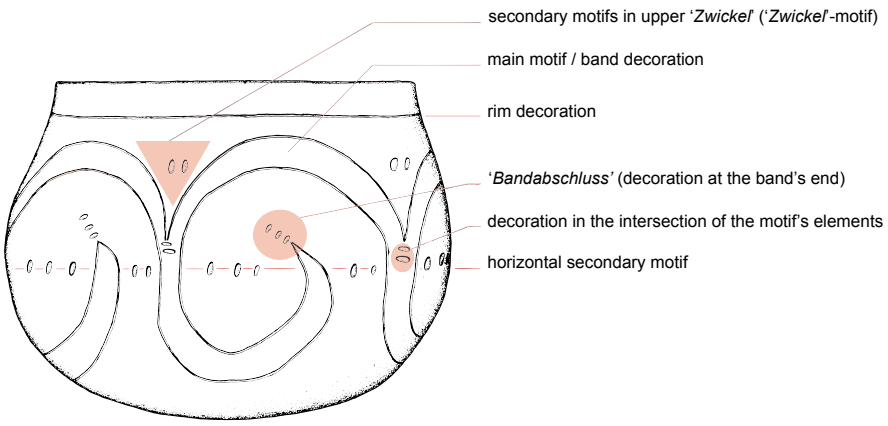

Figure 2. Position of the different kinds of decoration on a pot (Einicke 2014a, 112, fig. 45).

rare at the beginning, become famous after some time and then decline in favour of something new, and so on. Based on the decoration codes, fillings of features are organised according to similarities / differences between each other and after the frequency of occurrence of pot styles (Ihm 1983). What scholars finally hope to get by plotting the results on two axes is a parable-like order of features and / or decoration codes. This probably reflects a gradient that dominates the structure and this gradient is hoped to be time. A central aim is to reconstruct the settlement structure and the chronology of houses on the basis of the results from the correspondence analysis.

Modes of settlement structure and social organisation

There is a consensus between the scholars that the pits found alongside the houses are linked to their construction as they occur regularly next to them. What is still discussed is to what extent the pottery deposited in those long pits allows one to date the lifetime of a house, as there are still many questions about the formation and filling-processes of these pits (*e.g.* Hamon *et al.* 2013*b*; Stäuble 1997; 2013). The most famous settlement-structure-model in LBK is the so-called '*Hofplatzmodell* (courtyard-model)' (Boelicke 1982; Boelicke *et al.* 1988*a*; Boelicke *et al.* 1988*b*; Lüning 2005; Zimmermann 2012) with its assumption that each house with its household needed a certain amount of space where the daily activities took place (Fig. 3). The estimated area is a 25m radius of activity zone around each house. In consequence, it is postulated that houses close to each other cannot have existed together at the same time. Pits in this 25m radius are allocated to a house and pot decorations out of these are used for dating. With this method the quoted authors modelled a '*Wohnplatzmodell* (domicile-model)' with a place consistency that is generated by a succession of generations and their newly built houses after an estimated 25 years. The inhabitants of a house and equivalent of a household in this model are understood as a 'family' (Claßen and Zimmermann 2015), which is seen as an economic self-sufficient production unit (Zimmermann *et al.* 2006, 176). The supposed kind of kinship unit is the core family or extended core family based on patrilineal structure and patrilocality (recently simulated by Schiesberg 2010). According to J. Lüning's quote at the beginning of this text, each house is seen as a dwelling and a place for all the daily activities; houses with other functions than this are not included in the model. The obvious aim of the founders of this model was to reconstruct the house sequence of a village and to a lesser extent the social organisation behind that in detail.

For the case of Altscherbitz, I tried to follow the pattern of houses with their position-groups of pits around a house. Either there are no such pits at all, except the long pits, or houses are so close to each other that it is not possible to relate pits to one single house. Only for the case of house No. 8 does it seem possible to reconstruct an 'ideal courtyard' (see Fig. 3).

The 'courtyard-model' was met with massive criticism (*e.g.* Rück 2007; Stäuble 2013) and as there is more and more research on settlement structure and micro-analysis of special regions, it is clear that one single model is not able to explain settlement structure everywhere.[7] One model that was developed as a concurring one is the '*Zeilensiedlungsmodell* (row settlement model)' (Rück 2007). In summary, this is based on the assumption that houses were used for much longer than one generation, and up to one hundred years,[8] with more inhabitants than the extended nuclear family. O. Rück's work takes the settlement structure as a whole concept into consideration; an approach that should be adopted by more researchers. The arrangement of rows, maybe along streets and paths, serves as the overall idea fol-

7 At this point it has to be stated that the developer of the 'courtyard-model' did stress problems right at the beginning and presented it as a model that works only with the assumptions they named and not as the answer for everything (Boelicke *et al.* 1988*a*), recently summarised by Zimmermann (Zimmermann 2012). Problems occur when this model is presented as a reality for every case.

8 There are some more scholars that presume this (Biermann 2001; 2009; Stäuble 2013, 236-237).

Figure 3. House no. 8 of Altscherbitz (DE) as ideal 'courtyard' with its pits in a 25m radius according to the 'courtyard-model-scheme' in the right corner (Boelicke 1982, 19, fig. 3).

lowed by the villagers. A discussion of communal areas or buildings is implied but not examined in detail. In the end, the methods used for developing this model are the same as in the 'courtyard-model', only some assumptions are replaced (for a comparison of the two models see Link 2012).

There are other examples of research where the results seem to contradict the 'courtyard-model', like in the settlement of Mold (AT) (Lenneis 2012). After the results of pottery seriation and 14C-dates, it appeared that contemporaneous houses were arranged in groups.[9]

Preliminary conclusion and critique

To get to the point of the discussion, it becomes apparent that there are some basic assumptions and foci in most LBK research that are rarely questioned:

1. Each house is seen as a dwelling that was used for daily life activities, whatever form and size it has, no matter how it is placed in the settlement *etc.*
2. Each single house is equal to one household, inhabited by one family.[10]

9 It is a doubtful method, as 14C dating in LBK is too imprecise for distinguishing contemporaneous houses from non-contemporaneous ones.

10 See an article by Strien for a quite detailed imagination of LBK family life and succession (Strien 2010*a*).

3. Zones for any activities connected to daily life were situated close to the house.
4. Pottery was produced on a household level by each family themselves.
5. In general, every household (= each house) was more or less self-sufficient (there is no differentiation between the terms 'autonomy' and 'autarky' (Doppler 2013, 221)).
6. The main focus on pottery is determined by chronological questions; often correspondence analysis is used exclusively for obtaining a chronological order of pot decorations / features.

If the LBK household was self-sufficient then we should ask why they settled together with others, very often for a long time at the same place. "Hinsichtlich der gesellschaftlichen Verhältnisse ist festzuhalten, dass die soziale Grundeinheit der bandkeramischen Kultur der einzelne, **potentiell** [highlighted by the author] autarke Haushalt ist"[11] (Claßen and Zimmermann 2015, 191). This quoted assumption that LBK households had been potentially self-sufficient is justified, amongst others, by the large space between coexisting houses in a settlement. That LBK households could have had the potential to be autarkic is not the point of the discussion. Rather, in further discussion, the idea of autarky as the LBK reality should be challenged. Irrespective of the original aims of the founders of the 'courtyard-model', this model assumes LBK social organisation as a fixed system.

Besides the often-stressed uniformity of LBK, that definitely is one side of the coin, there are clear differences within settlements, for example between house architecture, that need to be interpreted and that could represent differences in the function and meaning of a house. In gaining a picture of these differences, correspondence analysis is a practical method. A neglected category definitely is the settlement as a whole and areas beyond the proximity of houses, as well as a discussion of settlement communities as a form of social organisation beyond the autonomy of single farmsteads or nuclear families. "The degree of settlement permanence critically influences social organisation. The longer populations live together, the more important social mechanisms become in moderating social interactions" (Gregg 1988). As LBK people settled in Altscherbitz for around two hundred or three hundred years, this persistence leads to questions about forms of communal organisation and the detectability of social interactions through the investigation of settlement structure and artefacts.

The site of Altscherbitz

The site of Altscherbitz was situated in north-west Saxony near Leipzig (Fig. 4), and was excavated between 2004 and 2005 as a rescue excavation before the extension of the Leipzig / Halle airport (Friederich 2005). The LBK settlement extended over an area of around 8 ha along a slope with up to 8 m vertical height. A small group of features of 'Stroke Pottery culture' ('*Stichbandkeramik*', short: SBK) north of the LBK settlement and a few features inside the LBK area, lead to the question of the temporal dimension between LBK and SBK. SBK probably derived out

11 English: "Concerning the social organisation it has to be noted that the single, potentially autarkic household had been the fundamental unit of LBK" (translation by the author).

of LBK tradition and there are indications that LBK and SBK coexisted for some time in parts of central-east Germany (Kaufmann 2009*a*; 2009*b*). For the case of Altscherbitz it is not possible to answer the question of whether there had been a hiatus between the LBK and SBK settlements or not. What makes Altscherbitz special amongst some other characteristics are a small accompanying LBK graveyard 120 m southeast of the settlement and a well that was rescued en bloc and excavated under nearly laboratory conditions.

Altscherbitz belongs to the central German distribution of LBK (see Fig. 4), but is situated rather at the eastern periphery. The three main distribution centres of LBK in Saxony differ concerning influences from other regions. While the LBK in the Dresden valley is highly influenced by Bohemian LBK, the pottery of north-west Saxony belongs stylistically to the central German LBK. There are nevertheless some pot decorations of Altscherbitz that show contacts to the eastern LBK (see below).

The land close to the river Weiße Elster in the region of north-west Saxony is rich in Early Neolithic (LBK + SBK) sites (for an overview see Stäuble 2014). A prominent example is the site of Eythra that currently is the largest excavated settlement area of the LBK and the SBK (Cladders *et al.* 2012*a*; 2012*b*). Altscherbitz does not belong to the sites that follow the river Weiße Elster directly as it was about 3 km away. It is not clear if the small stream of Kalter Born, close to the LBK settlement, was water-bearing at the time of the LBK settlement and how important the river Weiße Elster was as a water source (Fig. 5 and 6). That there was a need for daily fresh water at some point is demonstrated by the LBK water well of Altscherbitz.

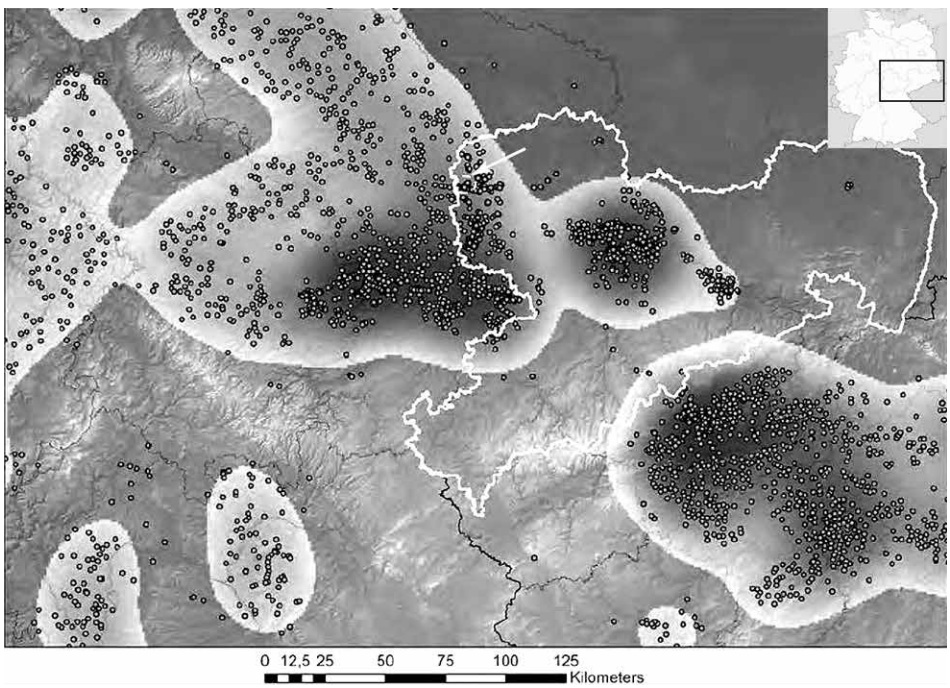

Figure 4. Find spots of LBK and SBK in central Germany; the position of Altscherbitz is encircled by the author (Stäuble 2014, 72, fig. 3).

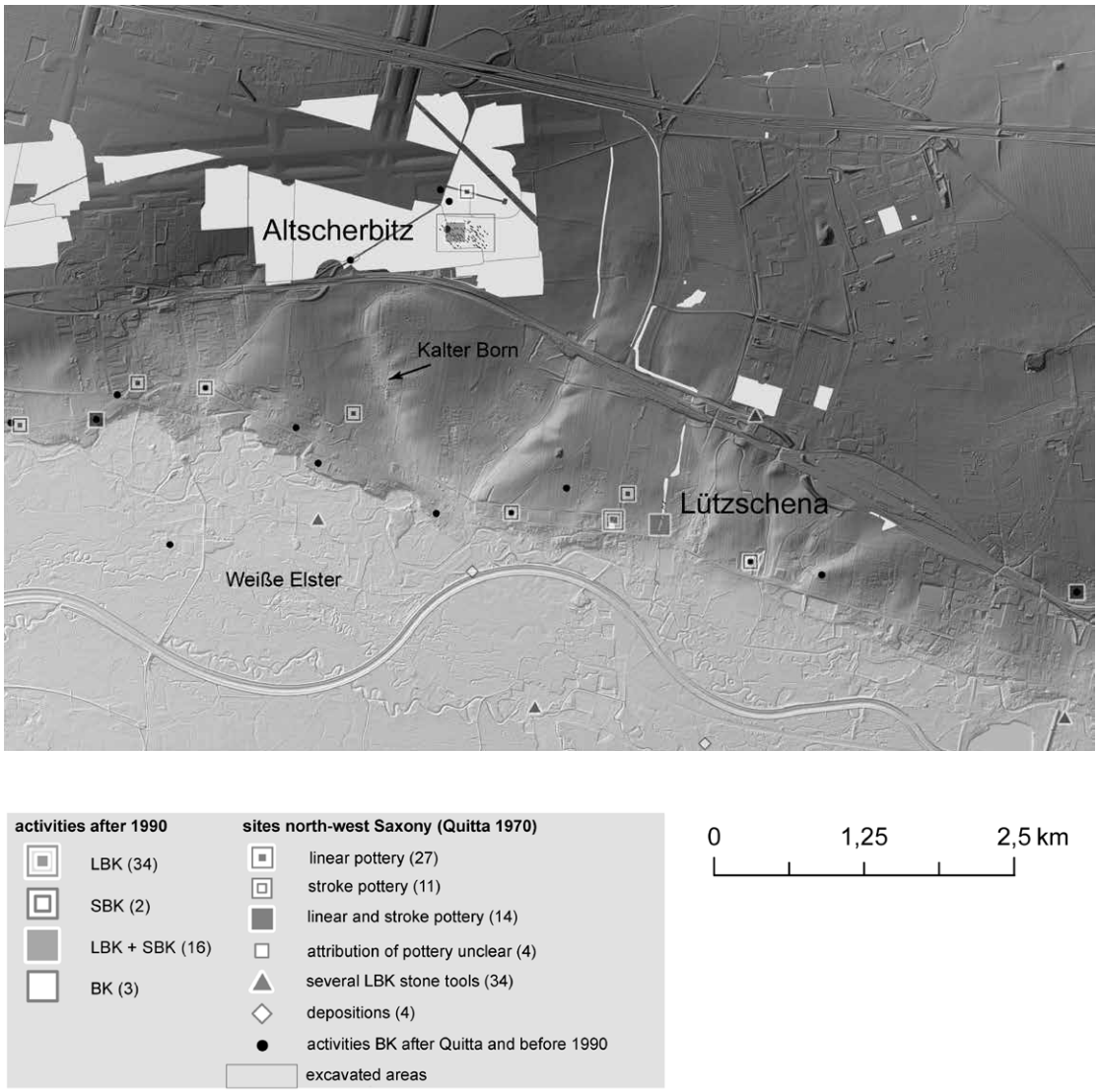

Figure 5. Altscherbitz and its position in relation to the Weiße Elster and Kalter Born (after: Stäuble 2014, 84, fig. 11).

A completely excavated site with corresponding graves

The most distinguishing character of the site is that it was excavated in its complete dimensions (Fig. 6). Furthermore, LBK cemeteries and graves are still rare in Saxony (short overview by deVries 2010); an excavation of a cemetery with its accompanying settlement is scarce for LBK in general. Besides a medieval deserted village in the west (see Fig. 6) and a few Late Neolithic and Bronze Age features, nearly all of the features are Early Neolithic. Fortunately, the overlapping with the medieval village is marginal. The excavations have revealed a huge amount of Early Neolithic features and finds: 3500 features (around 1200 filled with Early

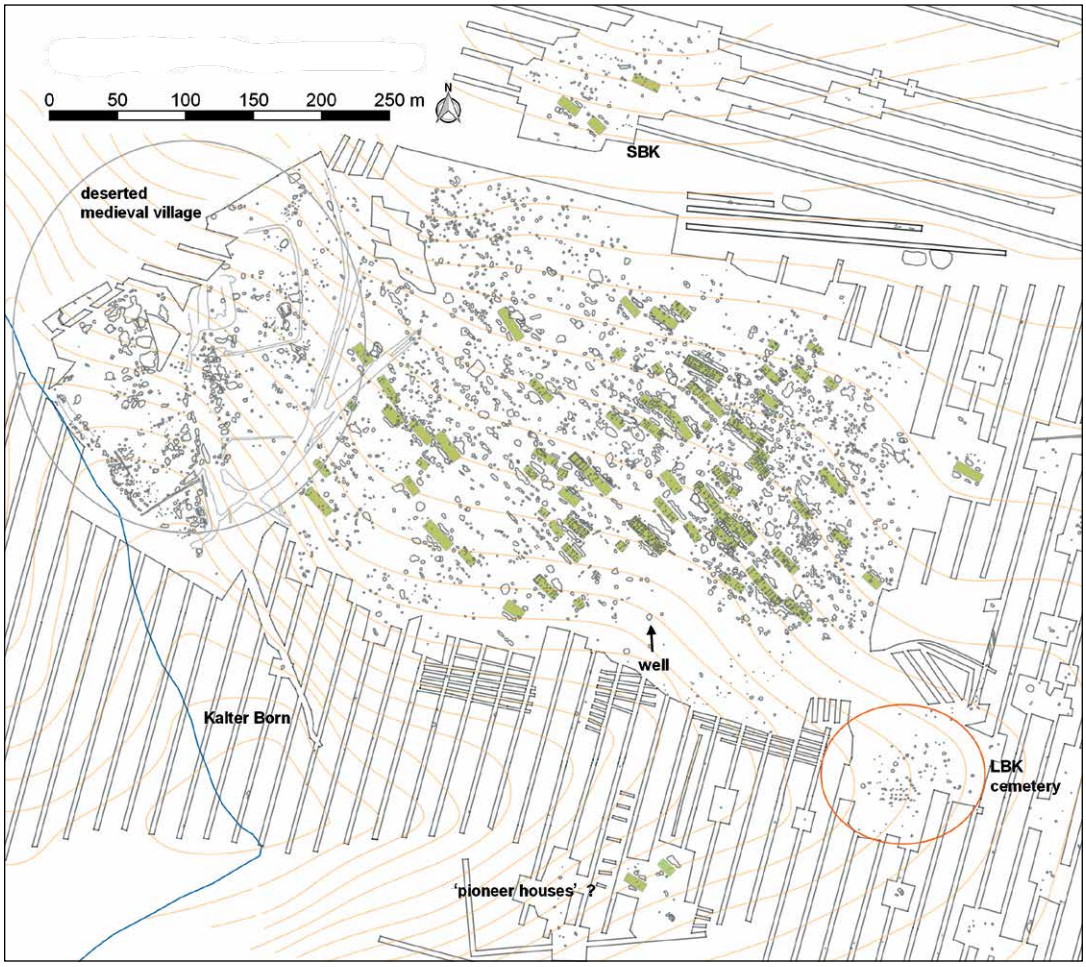

Figure 6. Overall plan of Altscherbitz, houses are highlighted in green (figure: I. Hohle).

Neolithic artefacts)[12], 73 houses (three of them SBK, see Fig. 6), over 43,000 sherds (97% LBK, 2% SBK, and 1% Early Neolithic), 500 flint artefacts, 86 adzes, 3 maceheads and 23 grinding tools. At the current stage of the project, the typology of pot decorations points to LBK II – IV / V (after Kaufmann 1987, see Fig. 1) and Early SBK. The temporal dimension and / or overlapping of LBK and SBK on the site of Altscherbitz has not yet been clarified and the possibility of this problem being solved is disputed.

An interesting but not surprising fact is that only few people from the settlement were buried in the graveyard. Currently in LBK research there are around 3500 graves or deposits of human bones (Trautmann 2006) but around ten thousand settlements and just as many documented houses (Petrasch 2012). With the 33 distinct burials of Altscherbitz and including the burial-like features there are 45 graves against 73 houses. Only eleven graves had grave goods and most of these

12 One third are postholes; features without finds were ordered to LBK or SBK because of their position and / or backfill.

were pots. There are two main special aspects about the graves in Altscherbitz. First, some of them were covered with stones, which is a very rare feature in LBK grave architecture (Peschel 1992, 227-230). Second: in every case the pots were already incomplete when they were deposited in the graves.

Dendrochronological datings and nearly complete pots

The site of Altscherbitz became famous because of the well that was rescued *en bloc* and excavated under nearly laboratory conditions in a hall of the Heritage Office in Dresden (Elburg 2010; 2014; Elburg and Herold 2010). The well revealed a huge amount of extraordinary finds that gave new insight into LBK times. A small plank from the construction pit provided the dendrochronological date around which the well was constructed, namely in 5099 BC. Important for the knowledge about settlement duration is the usage of a plank from another, older, construction in the foundation pit that indicates that the settlement had existed at least one hundred years before the building of the well (Tegel *et al.* 2012). With the addition of the pot decorations from the settlement features, Altscherbitz had probably emerged earlier in LBK II ('Flomborn'), between 5300 and 5200 BC.

After the well was not in use anymore, they deposited an ensemble of complete or nearly complete pots (Fig. 7). These favourable circumstances – absolute dates and a compilation of complete pots – are beneficial for the classification of sherds from the settlement pits. That the well was not used for so long is indicated by a small board in the internal backfill that dates to 5087 +/- 10 BC (Tegel *et al.* 2012). This fits quite well to the pottery examination of the settlement, which showed a high amount of decorations typical for LBK IV and just a few that could be classified into LBK V. But research on the final phases as well as on the relationship between LBK and SBK is still in progress (see *e.g.* the study of Link 2014; Einicke 2014*a*, 242-243; Kaufmann 2009*b*). The most splendid pots from the well are two extraordinary round-bottomed jars that were decorated with many bark strips. Both have common linear decoration underneath and both pots had been broken, then been repaired and had a new life with a new and completely different decoration.

Many questions arise here about the meaning of pots, about the time span of usage and the relative chronology of pot decorations. As organic materials normally decay, the problem of how often pots like these existed is hard to solve. Until now just a few are known from other sites and contexts (Einicke 2014*b*). In general, this kind of decoration is connected by most scholars to the so-called 'Šárka'-style / phase of the eastern LBK in Bohemia where this seems to be typical (Vencl 1961). Surprisingly, sherds of two different pots were preserved in ordinary settlement pits in Altscherbitz that show remains of similar decorations. So maybe this style was more common than most scholars expect? By reason of the small amount of pots with these decorations, which is related to the degree of preservation, only suggestions can be made about their meaning. But it seems as if they occurred more often in later LBK, when the amount of pots with traces of repair seem to increase (Einicke 2014*b*). For some reason, pots gained new life and, in addition, a new image and probably a new meaning. This immense effort was clearly made intentionally (see Elburg 2011) and goes beyond the sphere of 'ordinary' daily usage of these pots.

Figure 7. Left: Virtual compilation of the 3D-scans of the pots from the filling of the Altscherbitz well (© Landesamt für Archäologie Sachsen / T. Reuter and R. Elburg). Right: Two pots with bark strip decorations (Elburg 2014, 14, 15, fig. 11 and 12).

This detailed overview of the site should show the substantial data set and the potential for complex analysis. The Early Neolithic site of Altscherbitz was excavated in its complete dimensions and people settled there for around two hundred to three hundred years in LBK times. This circumstance opens up possibilities for a synchronic and diachronic perspective, connecting the spatial organisation of the whole village. It is possible to grasp the picture of how the settlement looked at the beginning, which houses were probably built first and what happened at the end. It should be possible to reconstruct the size of the village when it had some kind of prosperity and finally when people left and the settlement decayed. Another benefit of this site is the possibility to go beyond the vicinity of houses and features. This means, for example, to look at features and areas that are situated at the periphery of the settlement and the distribution of finds and features in connection to their position in time and space. To summarise, the examination of the settlement as a whole and the relation of features and houses to their position in the context of settlement structure and development could reveal new insights into settlement organisation. The perspective of Altscherbitz will be an exemplary study of the spatial and social organisation of an LBK settlement.

Discussion and implications for future research

The main aims of the PhD project are to reconstruct the time and space of the village of Altscherbitz. This is the necessary basis on which all further questions can be discussed concerning the wider temporal and spatial context in which this settlement was embedded. It would also be the basis for addressing subjects like networks and mobility and thus the discussion of the social dimensions of the archaeological record. How is it possible to grasp the concept of 'households' in the settlement of Altscherbitz? Is it possible that one household, one farmstead could also consist of more than one building? Conversely, could one building inhabit more than one household? What forms of 'households' existed? The idea behind this is that there was no 'ideal' or standard form and function of households in

LBK times. This means one has to discuss this subject for every settlement anew. An exciting idea would be that households consisted of more than one house in the sense of complementary households, as was reconstructed for the late Neolithic lakeshore settlement of Arbon Bleiche 3 at Lake Constance (Canton of Thurgau, CH) (Doppler 2013). Of course that is another region and time and we do not have the extraordinary preservation and similar dating precision for LBK that they had in Arbon Bleiche 3, thanks to wooden house remains and organic objects. Nevertheless, it is definitely a social and economic form we should think of for LBK times. It could be one explanation for differences in the archaeological record, *e.g.* between houses.

From 'households' to 'building units'

How would it be possible to detect the unit of a household in LBK? And how could it be possible to examine the social position of one household in a settlement? The easiest and most used path is to go through the house and the pits that lie close to the house. Finds from the long pits are seen as rubbish from the inhabitants of the house and as indicators for activities in and around the house. This is also a premise of the 'courtyard-model' (see cited literature above) and still an overall assumption in LBK research (criticised by *e.g.* Stäuble 1997; 2013):

> *"We consider that finds from the domestic space – here the refuse pits alongside houses – mirror daily activities carried out by individuals, thus providing an effective means for identifying cultural, economic and social factors governing social interaction within LBK communities.",* Gomart et al. 2015, 231.

The area of domestic space in LBK is seen as being quite close to the house (Hamon *et al.* 2013*a*; 2013*b*) and communal space for special activities and disposal of waste far away from houses are discussed for later times (Kvetina and Hrncír 2013). The operational unit is the house, but it is uncertain whether they really represent households. For that it would be better to talk about and operate with 'house units' as for example L. Gomart *et al.* did for Cuiry-les-Chaudardes (Aisne, FR) (Gomart *et al.* 2015, 232-235). Then, at a second step, discuss what these, in a sense artificial unit, represent. That does not mean to estimate the number of inhabitants of a house but to challenge how deep we really could get into the concept of households in LBK times. Maybe it would even be better to talk about 'building units' because the word 'house' may imply 'dwelling'. Of course, if we question all the work done so far, we get to the point of questioning archaeological science. But at some point it is necessary; otherwise research will be a repetition of unquestioned assumptions. An important point was made by D. Hofmann:

> *"Anstatt präzise definierte Modelle an den Anfang unserer Überlegungen zu stellen und dann zu versuchen, die bandkeramische Situation in vordefinierte Kategorien zu zwängen, ist es durchaus einen Versuch wert, dieses Prozedere umzukehren und mit der täglichen Erlebniswelt einer Siedlung zu beginnen.",* Hofmann 2010, 31.

What she says is that one should start with the actual archaeological record of a settlement and the examination of the situation there instead of coming up with a fixed model. This method is difficult and, as far as it is possible, needs a holistic approach.

In the case of the project about Altscherbitz, households are understood as the following (according to Souvatzi 2007; Souvatzi 2014; Wilk 1991): a household is a social and economic unit that is based on production, consumption, distribution and transmission and is not necessarily based on kinship. It is a 'task oriented residence unit', which does not mean that they have to live under one roof. To make it more puzzling, not every 'household' was compelled to be involved in production and / or distribution. This definition leaves a lot of possibilities and dynamics open and is flexible enough to cope with every new case of settlement. That does not mean that 'household' is seen here as an economic partnership of convenience, as has been criticised (Hofmann 2010, 35) but as a form of social and economic organisation. Households are seen as the driving power for sustaining networks and as the core for understanding mobility in the Early Neolithic era.

Different activities in different houses?

One of the points in LBK research mentioned above is the assumption that every house in an LBK settlement is a dwelling and the arena for daily activities. That some kind of outbuildings and / or buildings for other functions and with different meanings existed is neglected by most scholars. But then Lüning, for example, acknowledges the presence of buildings with an economic function in the case of the 'Rössen culture' (Lüning 2000, 157-159). You could make the same observation for the LBK: amongst the large longhouses there also noticeable small buildings. Most of them disappear in the statistics and analysis of settlement structure for certain reasons. First of all, the guarantee of a definite identification of a small building is problematic as you could always question the degree of preservation. Longhouses with their three parts are less problematic to identify. It depends on the decision making of each scholar who deals with LBK houses. Second, very often the long pits of small houses are filled with fewer artefacts compared to larger houses or yield no finds at all. Because of this, the integration of them into settlement structure and organisation is difficult. There are some researchers who floated the idea of outbuildings or buildings with other meanings into the discussion that were little considered by others. T. Link, for example, suggested outbuildings for the settlement of Dresden-Prohlis (Saxony, DE) (Link 2014, 150-151) as well as H. Brink-Kloke for Sallmannsberg (Bavaria, DE) (Brink-Kloke 1992, 13, 184). Gomart *et al.* brought the idea of communal buildings back into the discussion (Gomart *et al.* 2015, 243-244).

In the settlement of Altscherbitz there are some obvious differences in house architecture, positions of houses and artefact distribution that challenge the assumption that every LBK house was a dwelling place where all the daily activities occurred. There are some very small buildings compared to the rest of the houses (Fig. 8) that are seen here as something other than dwellings. That their preserved size probably represents roughly the original size is illustrated by the small longpits of the two examples in Figure 6. Some of the small buildings in Altscherbitz are

conspicuous through more characteristics but a detailed examination of them can not be made here as the analysis is still in progress. That every building had the same function in LBK, as A. Coudart says (Coudart 2013, 19), is already doubted by the author. Of course, arguing about the size and form of a house could easily be criticised as a reductionist approach. That is why more different sources and features should be included in the argumentation. That the number of inhabitants of dwellings had been flexible in LBK times is seen here as plausible (Schiesberg 2010). That the flexible number of people is the reason for the differences in the size of the houses is questionable. For that to be the case, LBK people had to know how many people would be inhabiting a house before they built it.

Irrespective of this, differences between house units and, in a second step, between 'households' should be detectible, for example through the amount of animal bones, flint, pottery, form of architecture, position of houses, and so on. But differences in the distribution and composition of animals could also be a signal for different subsistence strategies (Doppler 2013; Gomart *et al.* 2015; Hachem 2011) or stages of economic and social development (Bogucki 1993, 495). The scholars involved in the Cuiry-les-Chaudardes-project did exemplary work as they followed a holistic approach to the household archaeology of the LBK with clear disclosures of their questions, methods and terms. According to their qualitative matrix (Gomart *et al.* 2015, 241-243), it is worth trying something comparable for Altscherbitz. The collected data for that matrix could consist in the case of Altscherbitz of artefact features,[13] house type and special characteristics of houses, animal bones and spatial features. The amount of grinding tools per house unit is used in research for the reconstruction of the composition of households or house units as well as their economic position in preparing grain (Gomart *et al.* 2015, 236). Following this assumption, massive problems occur in the case of Altscherbitz. Only 23 grinding stones originate from LBK features and most of them with no direct connection to a house unit (Fig. 9). Therefore, it is very problematic to use the number of grinding tools as a proxy for household calculation (Ramminger 2008, 34-36).

Fortunately, the preservation of animal bones in Altscherbitz was good compared to other sites in the region and the results of the investigation are provided for the project.[14] Most of the diagnosable bones are cattle, which is characteristic for the LBK. The high amount of nearly 70% is special and Altscherbitz can be seen as being focused on cattle husbandry.[15] There are several differences between the house units in the amount and composition of the different animal species. A detailed examination of this by the author is currently in progress. For now, it seems that there are temporal as well as social and functional aspects behind these differences.

13 Because of the amount of features and material, no data about pottery production techniques and taphonomic observation was recorded.

14 Many thanks to C. Oelschlägel, who analysed the animal bones and provided the data.

15 15% goat/sheep, 9% pig, 4% wild animals.

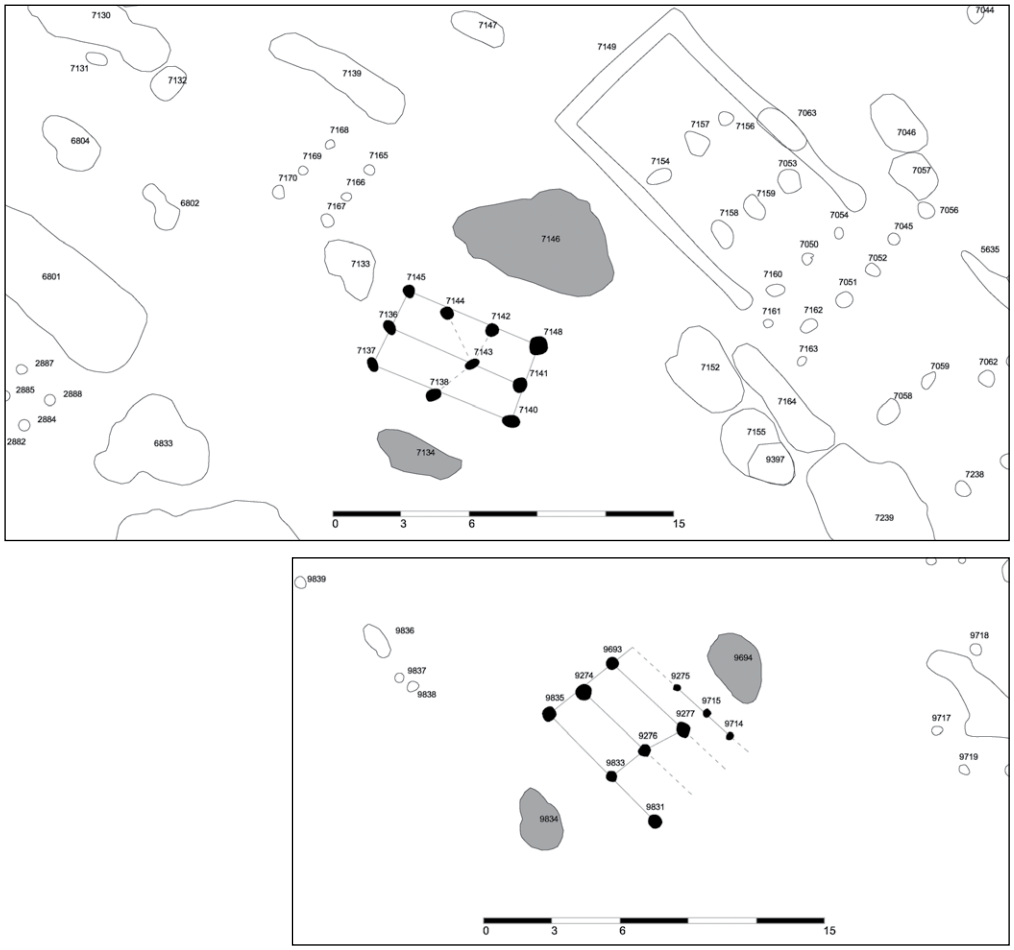

Figure 8. Two examples of small buildings of Altscherbitz. Top: house no. 9, below: house no. 6. The structure of house no. 9 is conspicuous as well as its orientation more towards the west in comparison with the other houses (figure: I. Hohle).

That there was a form of social organisation on a communal level in Altscherbitz is illustrated by some insights made so far. The well probably was used collectively as there was no direct connection to one house unit. The position and the space around the well suggests some kind of public place, which is underlined by the fact that this space had been formed at an early stage of settlement long before the well was built, formed by a kind of semicircle arrangement of houses around that area (Fig. 10).

Another area that probably was used as a communal activity zone over a long period was the north-western part of the settlement. There are no building structures, only a huge amount of pits. Some of these are connected to fire, as they are filled with ash and / or pieces of daub and charcoal. The remains of at least two or three LBK ovens were there. The assumption of the autarky of single households and that they did all their daily activities close to the house has to be doubted, at

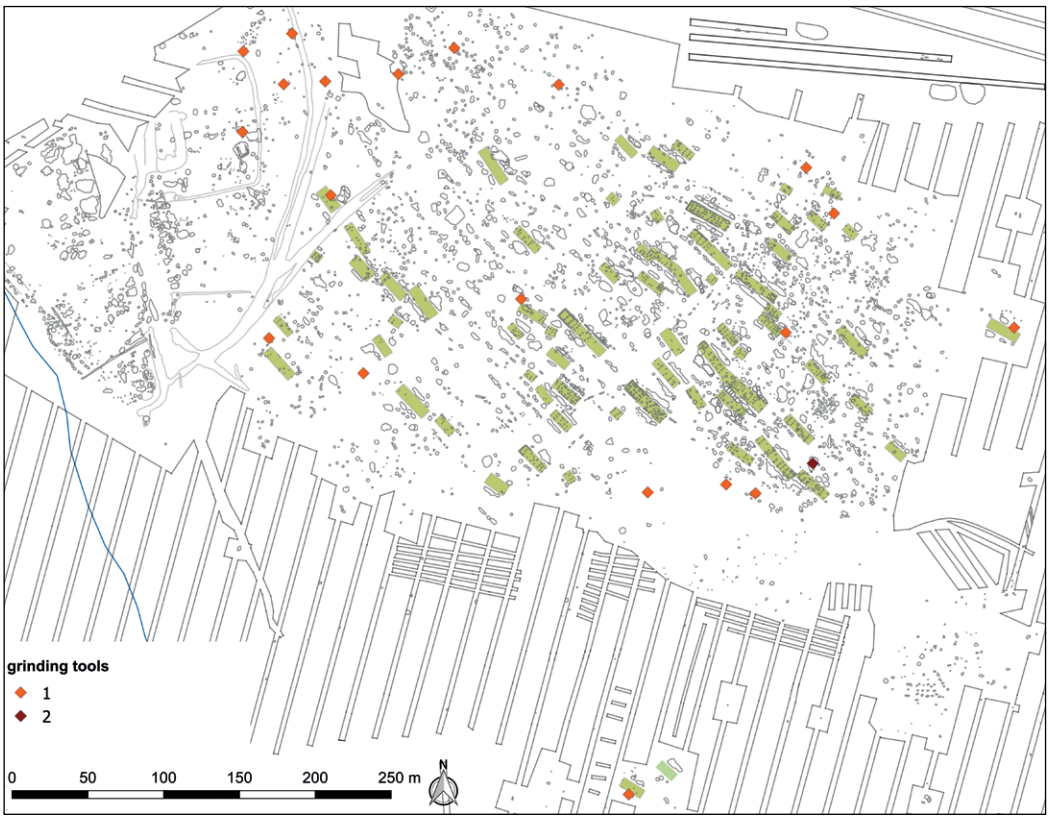

Figure 9. Allocation of grinding tools in Altscherbitz (figure: I. Hohle).

least for the case of Altscherbitz. Finally, the building of houses and the use of a special area for burials also need to be seen as communal actions and should be included in the discussion of the level of communal organisation within the LBK. For example, peculiar forms of houses, especially small or large ones also need to be considered: why did 'they' build it in this way at this place?

The distribution and preservation of artefacts in the different kinds of settlement pits should be discussed and also how they are really tied to the construction and function of a pit, as not all of them are rubbish pits. The so-called '*reiche Gruben* (rich pits)' are a phenomenon that occur in every LBK settlement and should be interpreted instead of excluded from the analysis (Boelicke 1988, 363). These kinds of pits were filled with many different artefacts in huge amounts compared to the rest. In Altscherbitz, there are also some pits, for example feature 1215, which was filled with 350 animal bones, nearly nine hundred pot sherds, two adzes and ten flint artefacts, such as scrapers and borers. Although some of the decorations on the sherds do represent rarely used styles, it is actually extremely hard to connect this pit with one or more house units. Some of the animal bones have cut marks, there is slightly more fine ware than coarse ware and, as there are not that many flint tools in the settlement pits of Altscherbitz, the amount of tools from this feature is striking as well. It seems as if this did not happen accidentally;

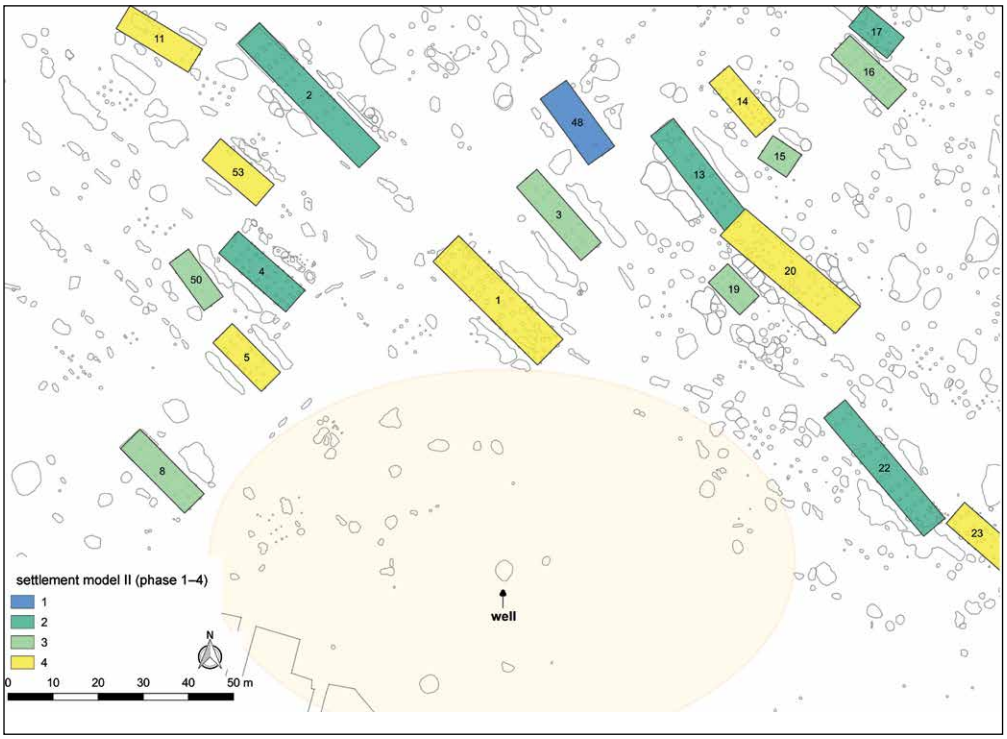

Figure 10. A zoomed-in view of the area around the well. Houses that date into settlement phases before the well was built and used seem to respect the space around the future well (figure: I. Hohle).

maybe this can be seen as the remains of a (special communal) event? In addition, some of the rich pits in Altscherbitz are situated at the periphery of the settlement and / or far away from houses.

Pottery styles as an indication of supra-regional mobility?

The investigation of pottery carried out so far has produced some interesting information that in a next step is planned to be included in the discussion about the social dimensions of the archaeological record. A common character in Altscherbitz decorations is the '*Hantelmotiv* (barbell motif)' or '*Knebelmotiv* (knob motif)', which is very typical for the central German distribution of LBK, especially for north-west Saxony (Einicke 2014*a*, Abb. 118) and which, for example, becomes rare the more you go further east. This motif is typical for LBK III and IV and was also present in the Altscherbitz well and was popular in the settlement in general. There are also some decorations that are similar to the 'Elster-Saale'-style, or are maybe a kind of copy of it, which lead to the final phase of LBK in that region. Some decorations of pots in Altscherbitz give hints of supra-regional contexts, mainly to the Eastern / Bohemian LBK that is illustrated through the 'Šárka'-style, '*Stacheldraht-Verzierung* (barbed-wire-decorations)' and very few '*Notenkopf-Verzierung* (note-head decorations)'. What the presence of these decorations meant for mobility and supra-regional contacts in Altscherbitz needs to be discussed.

They could well throw into question the former notions of correspondence between households once again. The flint artefacts will not give answers to these points as they used regional raw material in Altscherbitz, which is typical for the region.

Conclusion

The social organisation of the LBK, in this article exemplified with the discussion about 'households' as well as settlement structure and social organisation, probably was complex, dynamic and unsteady. This is demonstrated by looking at the archaeological record in detail. Fixed models and assumptions, such as 'one house represents one family', would ignore the complexity of 'households'. Holistic approaches can reveal new insights into the extensive world of LBK times, as the Cuiry-lés-Chaudardes project shows (last Gomart *et al.* 2015). The integration of studies from anthropology can expand the field of vision concerning 'households'. Of special interest is, as it became clear, how the collected data could be linked to 'households' in Altscherbitz. It remains to be seen if it is possible to realise this claim.

This puzzling article just reflects the status quo of LBK research: new detailed examinations of LBK settlements just make the picture fuzzier, and demonstrate once again how complex the social dimensions of the LBK probably were. If we start questioning current models and assumptions in LBK research and go for empirical research that connects settlement structures with the distribution of finds from the bottom up in the first place, we could approach both the intra-site activities and movement within the settlements and around houses as well as networks and ties that might have existed on a supra-regional level. The results might lead to more dynamic narratives than the 'one house-one household-one family' model.

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Special pottery in 'Cortaillod' settlements of Neolithic western Switzerland (3900-3500 BC)

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Abstract

In recent decades, in many lakeside settlements of western Switzerland some 'special' or 'foreign' pottery was identified, which seems to stylistically stand out from the usual predominant pottery set of a settlement. Often, the presence of this pottery was interpreted as the result of unspecified 'contacts' with neighbouring regions, where similar shaped pots occur. Due to the enlargement of well-stratified and partially absolutely-dated artefact assemblages that have been analysed and published in recent years, 'special pottery' or vessels 'built in a non-local tradition' as well as regional pottery styles and their developments are more recognisable today. By studying different aspects of these vessels, such as shape and raw material used, e.g. temper, it is possible to detect a variety of different phenomena related to entanglements and mobility between different societies. In the vessels, produced and used by members of a society, insights into everyday life can be materialised and preserved over thousands of years. The aim of this article is to provide insights into the everyday life and entanglements of the settlements' societies in western Switzerland. Also, possibilities and difficulties in the interpretation of pottery as indications of such phenomena should be addressed. Central for these reflections are the Neolithic settlements of Concise, which show a unique situation in the area of study. In addition, the first results from the settlements of Sutz-Lattrigen and Twann, which are the subject of the ongoing research project 'MET' should open the door for further research.

Keywords: *Neolithic, western Switzerland, pottery analysis, pXRF, mobility*

Introduction

Due to the lack of burials and written records, the study of Neolithic societies, their cultural entanglements, social relationships and mobility is based on the study of archaeological findings. Remains of lakeside settlements, which have been preserved perfectly under wet conditions, are a unique source from which to study the past. Large excavations around the lakes of the Swiss Plateau yielded the remains of numerous settlements and large quantities of objects from everyday life. Through great progress in absolute dating methods during the last four decades, especially dendrochronology, many settlements are precisely dated and their constructional histories can be reconstructed. Large quantities of well-preserved artefact assemblages from these settlements provide great insights into the everyday life of Neolithic societies and their entanglements with social groups from neighbouring or more distant areas.

Previous research focussed more on the similarities and grouping of the finds. By the formation of large regional (cultural) groups ('Neolithic cultures'), the sites were put into a relative chronological order and assigned to a 'cultural tradition' or 'sphere of influence'. These cultural groups are more or less based on stylistic features of pottery, which occurs in large quantities and survived in mineral soils, as well as a few other characteristic artefacts. Some authors equated this 'material culture' of 'ceramic groups' with ethnic groups (*e.g.* Vogt 1967; Winiger 1971) and reconstructed homogeneous clearly differentiated 'Neolithic cultures' for the Neolithic eras.

With the increase of well-documented and absolutely-dated settlement remains and artefact assemblages over the last decades, the picture of the past has become increasingly complex. For quite some time, prehistoric research has disassociated itself from the equalisation of material culture ('Neolithic cultures') and ethnic groups (*e.g.* Lüning 1972, 162-164 and Lüning 1995, 236; Stöckli *et al.* 1995, 20; Suter and Schifferdecker 1986, 39). For these authors, 'Neolithic cultures' are understood as terms of relative chronology. Apart from this, the terms may have a regional significance too, because the formal elements that define them often occur in a limited area (Fig. 1) (Hafner *et al.* 2016*a*; Stöckli *et al.* 1995, 20).

Nevertheless, in many publications a connection between material culture and ethnic groups still resonates. A complete detachment of the established 'pottery groups' from 'Neolithic cultures' by neutral naming based on 'artefact assemblage groups' (Hafner and Suter 1999) was seen as a good approach but has not prevailed for historical research reasons (Stöckli 2009, 38).

To avoid misunderstandings, a clear conceptual distinction of culture, material culture ('cultural groups' / 'Neolithic cultures'), social identity and ethnicity would be desirable (Doppler and Ebersbach 2011, 212). When analysing pottery from different (material) cultures, neutral terms like 'pottery style' or 'ceramic tradition' could be an alternative to the established 'Neolithic cultures' without a complete renaming, as well as indicating that only one aspect of the (material and non-material) culture is being considered.

As recent research shows, the pottery traditions of Neolithic societies were neither homogeneous nor clearly distinguishable from the pottery styles of neighbouring regions. The more pottery assemblages that are available, and the closer they

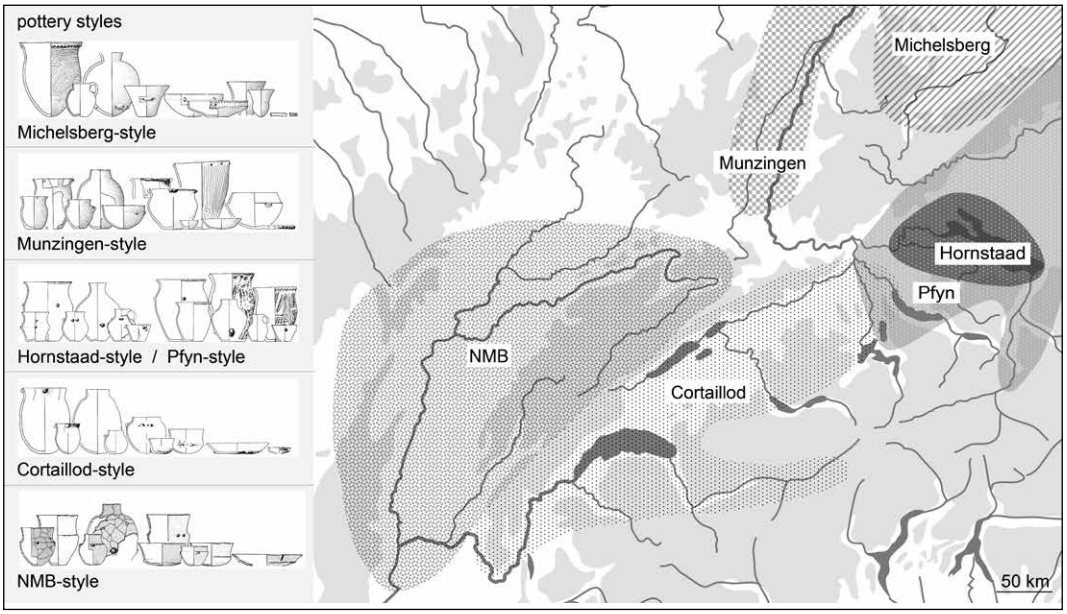

Figure 1. Right: 'Cultural areas' by the spread of pottery styles on the Swiss Plateau and adjacent areas; left: different pottery styles: 'Michelsberg' pottery from Untergrombach-Michelsberg. 'Munzingen' pottery from Munzingen-Tuniberg, Didenheim-Lerchenfeld, Mundolsheim and Holzheim-les Abattoirs. 'Hornstaad' pottery from Hornstaad-Hörnle IA. 'Pfyn' pottery from Eschenz-Insel Werd III and Thayngen-Weier. 'Cortaillod' pottery from Twann. NMB pottery from Clairvaux (figure: R. Stapfer; 'cultural areas' after Hafner et al. 2016a; drawings: Lüning 1967 cited after Stöckli 2009, Taf. 123-125; Lüning 1967, Wiechmann 1998, Maier 1958, Schweitzer 1987, all cited after Stöckli 2009, Taf. 135, 137, 145 and 147; Matuschik 2011, Taf. 1, 7, 19, 50, 54, 64; Hasenfratz 1985, Taf. 4, 5, 18, 20, 22; Winiger 1971, Taf. 8, 9; Stöckli 2009, Taf. 31; Pétrequin and Pétrequin 2015, fig. 34).

can be dated, the more complex the situation appears: on the one hand, regional differences appear within an area that was previously assigned to one 'Neolithic culture'. In the Lake Zurich region, for example, which in earlier research was assigned to the 'Cortaillod culture', many vessels from the 39th c. BC onwards were produced with flat bottoms. In the Three Lakes region[1], however, which was also assigned to the 'Cortaillod culture', vessels with round bottoms dominate at the same time. The reaction to this was the division of the large 'cultural groups' into smaller units, such as the 'Central Swiss Cortaillod'[2] and the 'Western Swiss Cortaillod'[3] (Stöckli *et al.* 1995, 32-37).

A better knowledge of the ceramics from neighbouring regions, on the other hand, indicates that in most settlements more than one pottery tradition occurs and in some places various traditions from different areas exist (Fig. 2). This complex situation in most settlements suggests entanglements and mobility between social groups with different pottery traditions. Current research is just starting to discover these phenomena and their causes (Heitz and Stapfer 2016; Hafner *et al.* 2016*b*).

1 Region in western Switzerland, containing Lake Bienne, Lake Neuchâtel and Lake Morat.
2 German: '*Zentralschweizerisches Cortaillod*'.
3 German: '*Westschweizerisches Cortaillod*'.

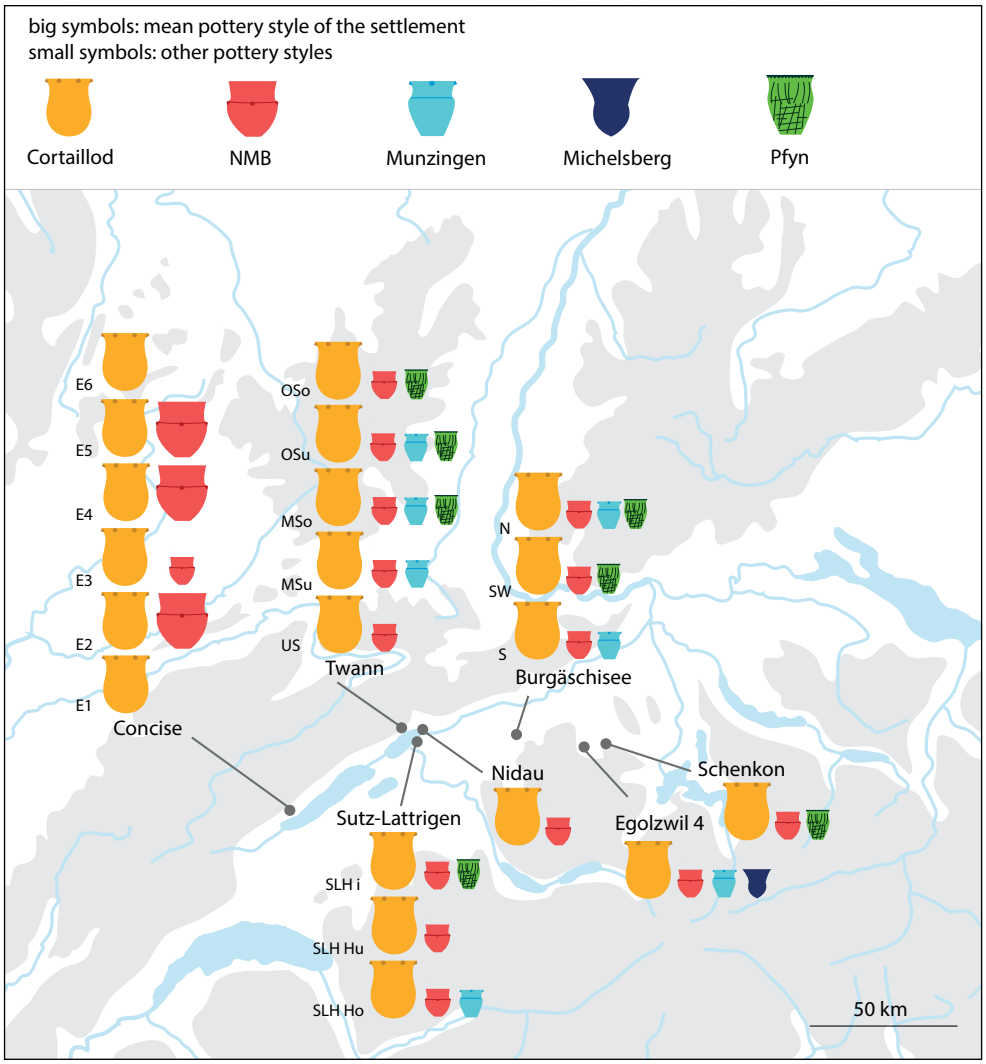

Figure 2. The occurrence of different pottery styles in selected settlements on the western part of the Swiss Plateau shows that the settlements societies were not 'self-contained' but 'mobile' with 'contacts' in different regions. Bottom to top: different settlement phases of Concise (E1-E6), Twann (US-OSo), Sutz-Lattrigen Hauptstation (Hafen unten, Hafen oben and innen), Burgäschisee (Süd, Südwest and Nord), Egolzwil (E4) and Schenkon-Trichtermoos. This picture reflects the current state of research (figure: R. Stapfer and C. Heitz; data source: Burri 2007; Stöckli 1981a and 1981b; Stapfer 2009; Fischer et. al. 2017; Wey 2012; Wyss 1983; Wey 2001).

The phenomenon of 'special pottery'

In recent decades, 'special' or 'foreign' pottery, which stylistically stands out from the predominant local / regional pottery style, was discovered in many lakeside settlements of western Switzerland. 'Special vessels' that are assignable to a pottery style of another region (particularly to another 'Neolithic culture'), are often interpreted as unspecified 'contacts' with neighbouring regions such as eastern France, the Rhone Valley or central Switzerland, particularly the Lake Constance region (Schifferdecker 1982, 38-39; Schwab 1999, 43; Stöckli 1981*b*, 48-57; Zwahlen 2003, 38-40). As the situation in adjacent regions with less favourable preservation conditions and consequently poorly dated find assemblages seems not to have been so clear until now, many 'special vessels' in the research area have not been identified and localised so far. The small amounts of 'special pottery' in the research area, the occurrence of similar forms in different regions as well as a lack of comparisons of well-dated find assemblages in some regions such as Valais, eastern France and the Rhine Valley complicate their identification. Further investigations on the pottery, like archaeometrical laboratory analyses or thin section analysis, to determine the raw material and to localise possible areas of production on the basis of mineralogy or chemistry, are expensive and were therefore rarely performed, although the results are very promising (Maggetti 2009).

In recent years, several well-stratified and partly absolutely-dated artefact assemblages were analysed and published. By comparison with the artefacts from these sites, 'special pottery' in the settlements of western Switzerland as well as regional pottery styles and their developments are more recognisable today. With the publication of the Neolithic pottery from Concise-sous Colachoz (Canton of Vaud, CH) for the first time a sufficient amount of precisely dated ceramics of the 'Burgundy Middle Neolithic'- ('*Néolithique moyen Bourguignon*', short: NMB) style – whose area of origin is situated in eastern France – is available (Burri 2007). This enables the identification of this pottery style in other settlements. A further four studies expanded the knowledge of the NMB pottery tradition in recent years (Jammet-Reynal 2006; 2012; Moreau 2010; Rey 2013) and the publication of the pottery of the settlements at Lake Clairvaux (Jura, FR) (Pétrequin and Pétrequin 2015) completes the current state of research. The presentation of the ceramics from Hornstaad-Hörnle IA (DE) (Matuschik 2011) gives excellent insight into the situation at the Lake Constance area at the same time. This extension of data and reference material makes it now possible to identify many vessels from settlements in western Switzerland as 'special' respectively 'made in a non-local tradition'. For some of them it is even possible to recognise their potential area of origin, which leads to a kind of interrelationship between settlements of different regions. Therefore, current research can focus more and more on subjects like mobility, entanglements of different social groups and transformation processes.

The situation in western Switzerland

Thanks to excellent preservation conditions, large amounts of well-stratified and well-preserved artefacts of the first half of the 4th millennium BC are known. Numerous woods from the settlement remains are exactly dated by dendrochronology and the constructional history of different settlements have been reconstruct-

ed. The artefact assemblages of the associated 'cultural layers' provide numerous precisely dated finds. Comparisons of finds from different settlements from the same time period show big similarities in general. Furthermore, small differences between the Three Lakes Region in western Switzerland and the Burgäschisee / Wauwilermoos in western-central Switzerland are recognisable.

The pottery of western Switzerland was produced in 'Cortaillod'-style respectively in the regional subgroups of the 'Western Swiss Cortaillod' in the Three Lakes Region and the 'Central Swiss Cortaillod' in the region between Burgäschisee and Lake Zurich. Little stylistic differences, most dominantly the earlier prevalence of flat bottomed vessels in the 'Central Swiss Cortaillod', separate the two regional subgroups. In addition, the pottery of both the 'Western Swiss Cortaillod' and the 'Central Swiss Cortaillod' tradition is roughly explained characterised by pots with knobs around the border, carenated bowls and bowls or cups with a suspension in the form of (a pair) of lugs. Further, bottles with lugs on the body as well as uncharacteristic bowls and cups exist (see Fig. 3, left). Normally, the ceramics are made by local clays and tempered with siliceous rock fragments from the surrounding moraines or with sand from the lakeside.

Most of the pottery from the settlements of western Switzerland is made in this regional pottery style and only a few vessels may originate in other pottery traditions.

To the west, the region of western Switzerland is separated from the neighbouring region (Combe d'Ain, FR) by the Jura Mountains, which form a natural barrier. On the far side of the Jura mountains a different pottery tradition, the NMB-style exists. This pottery style differs both in stylistic features as well as in raw material. Characteristic for NMB pottery are pots, bottles and bowls with segmented shoulders, which are often accompanied by knobs or lugs, as well as special forms like baking plates with small holes around the border (see Fig. 3, right). Due to the geological conditions, most of the ceramic is tempered with locally occurring limestone or calcite (Burri 2007, 75).

The exceptional situation at Concise

The settlements of Concise are situated on the northern shore of Lake Neuchâtel and were excavated between 1995 and 2000. Thanks to excellent preservation under wet conditions, the cultural layers of the six settlements of the Late Neolithic[4] can be stratigraphically separated and absolutely-dated by dendrochronology: the oldest settlement, E1, existed from 3868 to 3793 BC. 80 years later, on the same site a new settlement, E2, was built, which was inhabited for 38 years. Ten years after its abandonment it was followed by a third settlement, E3B, which existed for approximately 10 years (3666-3655 BC). After this, a fourth, E4A, was built between 3645-3635 BC. At the edge of the excavated area the remains of a following settlement, E4B, which yielded almost no archaeological material, indicates an ongoing use of the bay between 3606-3595 BC. After an interruption of about one generation the next settlement, E5, was inhabited from 3570 BC onwards and,

4 French: *Néolithique récent* or *Néolithique moyen II*, German: *Jungneolithikum,* 3950-3600 BC.

after 3533 BC, another settlement, E6, was built next to it, both of which existed until 3516 BC (Burri-Wyser *et al.* 2011, 30).

The large amounts of well-preserved and absolutely-dated find assemblages from the settlement layers provide excellent resources to study the different settlement communities over a period of several generations. In addition to this, besides the typical locally shaped pottery, several settlements contained numerous vessels that, stylistically, stand out from the local / regional pottery tradition and are built in NMB-style (Burri-Wyser *et al.* 2011, 26). The quantity of precisely dated pottery shaped in NMB-style from Concise, makes the settlement unique in western Switzerland. And for the first time a detailed evolution of this late expression of the NMB pottery style can be traced. This knowledge of the detailed development of the NMB pottery style can also be transferred to the adjacent areas, where this ceramic tradition had its main distribution area. Thus, by means of comparisons, even poorly dated artefact assemblages from sites with less favourable preservation conditions such as mineral soils can be relatively dated.

Pottery style

As mentioned, in some settlements of Concise a large number of vessels of non-local NMB-style occur beside the regional typical 'Cortaillod' pottery style. The two ceramic traditions differ significantly from each other in shape and raw material. 'Cortaillod'-style cooking vessels are S-shaped and decorated with knobs around the border, while NMB-style pots often have a segmentation in the form of a rounded or buckled shoulder, which is often accented by knobs disposed around the vessels or pairs of knobs. Furthermore, the bottom of the vessels differs: already in the 39th c. BC at Lake Clairvaux some vessels are flat bottomed and around 3700 BC in the settlement E2 of Concise, all vessels built in NMB-style are flat bottomed, whereas the majority of 'Cortaillod'-style pots are produced with round bottoms. Due to the segmentation and flat bottoms, other forms like bottles and bowls can be assigned to one of the two pottery styles as well, while uncharacteristic simple-shaped types like *e.g.* hemispheric or conical shaped cups and bowls look very similar in both pottery traditions and are stylistically assignable neither to NMB nor to 'Cortaillod' pottery styles.

As with the 'Cortaillod'-style ceramics, the NMB-style vessels get coarser over time (Fig. 3): on the one hand, they change stylistically by the transformation of rounded shoulders to squared shoulders or buckling. On the other hand, the thickness of the walls increases. This detailed development of NMB pottery style between 3700-3550 BC was, for the first time, observable at Concise (see Burri 2007). Comparisons with pottery from different settlements of Clairvaux (Jura, FR), which are located in the eastern part of the distribution area of the NMB pottery style, confirm this evolution of the pottery observed at Concise and complement our knowledge of the evolution of NMB pottery style with findings from older periods between 3900-3750 BC (Pétrequin and Pétrequin 2015, 85-95).

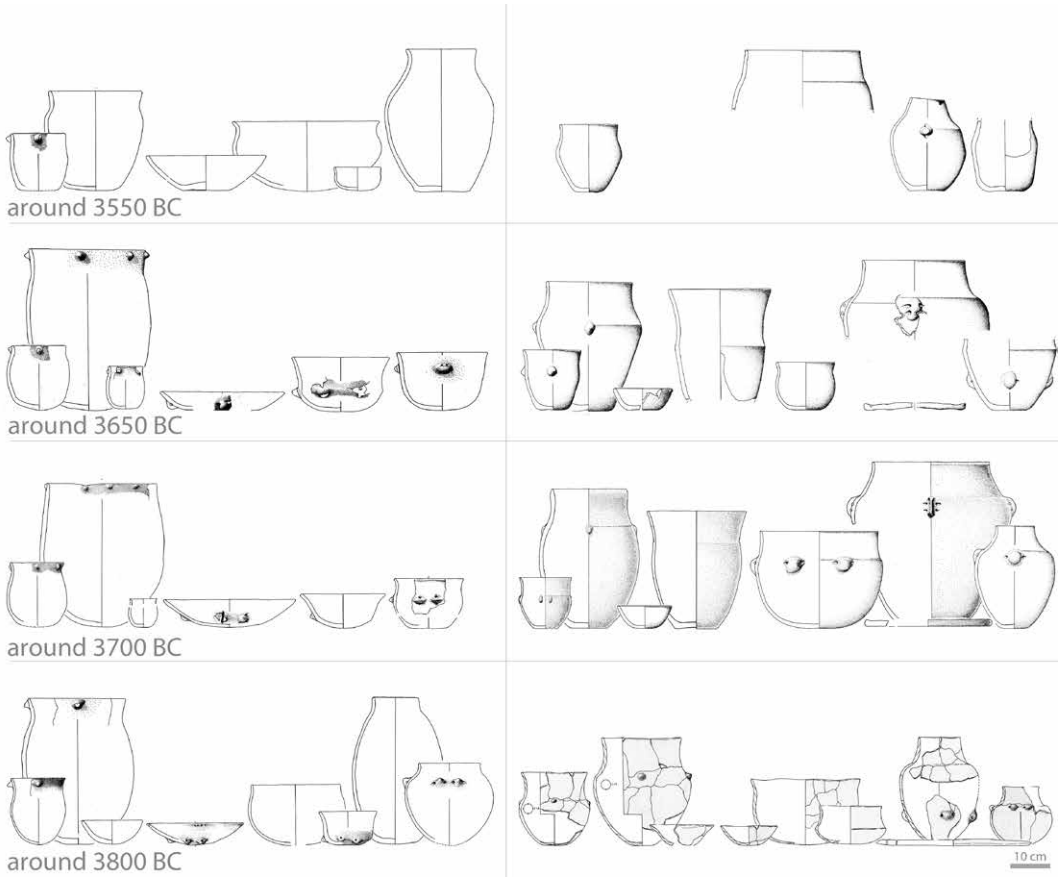

Figure 3. Development of 'Cortaillod'- (left) and NMB- (right) pottery styles between 3800 and 3500 BC. Ceramics of different settlements at Twann (BE, CH), Clairvaux-les-Lacs (Jura, FR) and Concise (VD, CH) (figure: R. Stapfer; drawings: Stöckli 1981a and 1981b; Pétrequin and Pétrequin 2015 and Burri 2007).

Although not all vessels from the different settlements of Concise can be assigned to one of the two pottery styles, it is interesting to compare the quantities of the two ceramic traditions. Comparing the proportions of the vessels, which are stylistically assignable to one of the two styles, such as bottles, high bowls and cooking pots with characteristic segmentation or knobs around the border or baking plates, big differences between the pottery sets of the settlements are detectable (Fig. 4: left): the oldest settlement, E1, dated to the second half of the 39th c. BC, contains pottery shaped in 'Cortaillod'-style only. In the following settlement, E2, a huge number of vessels shaped in NMB-style appear suddenly and they dominate with 54% of all vessels, which are assignable to one of the two styles. In addition to this, some vessels were built using characteristics of both styles (mixed style / hybrids). In the following settlement, E3B – only 10 years later – as in the oldest settlement, vessels shaped in 'Cortaillod'-style dominate clearly with over 85%. Whereas ten years later, in settlement E4A, pottery shaped in NMB-style is very common again (54%). Even 65 years later, in the following settlement, E5, NMB-style is well represented, and 46% of the vessels can be assigned stylistically to this

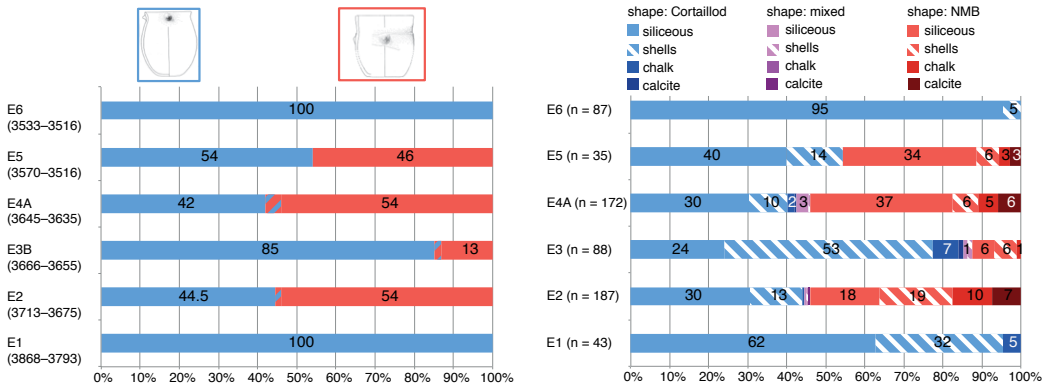

Figure 4. Left: comparison of the proportions of vessels shaped in the Cortaillod and NMB pottery styles; right: the proportions of different raw materials in ceramics of both styles in the settlements of Concise (figure: R. Stapfer; data source: Burri 2007).

pottery tradition. However, in the settlement next to this, which existed between 3533-3516 BC, the whole pottery assemblage is shaped in 'Cortaillod'-style.

The sudden appearance of such a large quantity of vessels of another ceramic tradition, as well as the rapid changes in the proportions of the two pottery traditions at Concise, are an exception in western Switzerland and the neighbouring regions. Assuming that favourable '*Siedlungskammern* (settlement clusters)' around the lakes were already divided between settlement communities in Neolithic times and that communities returned to favourable places repeatedly (Stapfer *et al.* forthcoming), the changing proportions of the two pottery styles are all the more striking. The author of the publication interpreted the situation at Concise in the following way (Burri 2007, 169-172): At settlement E1, which contains pottery of 'Cortaillod'-style only, local people produced the pottery. In the second settlement, E2, where half of the ceramic is shaped in NMB-style, a group of people with 'immigrant background' produced vessels in their non-local style beside a group of local potters. Within a very short time of only a few years, an 'adaptation' of the local pottery style had taken place, so that only ten years later, in settlement E3B, almost all pottery was produced in the regional 'Cortaillod'-style. The renewed increase of vessels shaped in NMB-style ten years later in settlement E4A, as well as in the following settlement of E5, points to a new arrival of a larger group of people from an area with NMB pottery tradition in these two settlements. The youngest settlement, E6, which was built next to and chronologically overlapping with settlement E5, could have been inhabited by another social group, dislocated from the surroundings of western Switzerland.

In addition to these explanations several questions exist: On the one hand, it is not clear whether the population increased due to the supposed 'immigration' of people from the far side of the Jura Mountains or whether people from Concise also moved away. This cannot be decided on the basis of archaeological finds since, on the one hand, the settlements were inhabited for different time spans and, on the other hand, the archaeological finds represent – with the exception of settlements that were abandoned due to a sudden event and could not be cleared up –

only a part of the objects used in a settlement. Moreover, only parts (edge zones) of the settlements were excavated. On the other hand, it is not clear how many people moved to Concise. The vast number of vessels shaped in NMB-style in settlements E2, E4A and E5, which represents roughly half of the ceramics of the settlements, could indicate that a large group of potters moved to Concise. Equally it is unknown if their change of location was permanent or for a short time only. Furthermore, it is not known how many people were making pottery in a Neolithic society and how many potters affected the ceramic tradition of a settlement by passing on the knowledge of pottery production. Nevertheless, the settlements at Concise offer great insights into the everyday life of Neolithic societies.

Raw material

Besides stylistic differences between the two pottery traditions, the findings from other settlements also showed that, for the production of 'Cortaillod' and NMB pottery, different raw materials were used. Thus, to produce vessels in 'Cortaillod'-style, siliceous temper containing rock fragments from the glacier moraines and sand from the lakeside was typical. NMB-style pottery from the settlements of eastern France, however, was often made using calcareous clays and tempered with calcite or chalk. NMB-style vessels occurring in the settlements of western Switzerland (*e.g.* Twann) were often produced with the carbonate-rich, fossiliferous clays (*e.g.* Hauterivien marl) from the southern slope of the Jura Mountains (Nungässer *et al.* 1985, 18-19; Stöckli 1981*a*, 42-43).

Comparing the raw material used for pottery production in the different settlements at Concise, the situation seems to be more complex (see Fig. 4: right). A combination of vessel shapes (stylistic elements) and raw material (temper) shows that nearly two-thirds of the vessels stylistically assignable to the 'Cortaillod'-style contain silicate temper in settlement E2, while the rest contain carbonate temper (chalk, shells or fossils?) or was produced with local fossiliferous clay, like in Twann.[5] NMB-style vessels, however, were produced quite differently: about one third of the pottery was tempered with chalk or calcite, one third with shells or fossils and the last third with siliceous raw material. Thus, approximately two thirds of all vessels shaped in NMB-style contain carbonate-rich raw material.

The relationship between shape, pottery style and raw material is very complex and it is difficult to find out how they might be related. Even if most of the potters in settlement E2 who shaped their vessels in NMB-style preferred carbonate-rich raw materials and scanned the surrounding area of Concise to find these raw materials, some potters used (over time?) the local widely available siliceous raw material to produce their pots with the stylistic features of NMB. 'Cortaillod'-shaped vessels, which were tempered with shells or fossils, however, could have been produced by potters who were used to working with carbonate clays, adapting local stylistic features, as well as by people who had learned to make

5 The author (Burri 2007) has identified four different tempers: '*standard*' (= siliceous temper of rock fragments or sand), '*coquillier*' (= fragments of shells; not specified if these fragments are recent shells originating from the sand of the lakeside or fossils/fossiliferous clays from the Jura Mountains), '*calcaire*' (= chalk/limestone) and '*calcite*' (= calcite).

pottery in Cortaillod tradition trying out a new raw material. Further, these vessels could point to a mixture of the two pottery traditions. Although these phenomena cannot be explained conclusively on the basis of ceramics only, they show the complexity of pottery traditions, including stylistic features as well as the choices of raw materials and the different interpretations that the study of different aspects like shape and raw material can trigger.

A look at the combination of style and raw material in the other settlements of Concise reveals similar complex situations. The large number of vessels shaped in 'Cortaillod' tradition that are tempered with shells from settlement E3B could strengthen the presumption that a stylistic adaptation to the regional typical 'Cortaillod'-style may have occurred; while the type of materials either did not change during the course of stylistic adaptation or did not change so fast. Likewise, the situation could indicate that people who had learned to produce vessels in different pottery traditions using different raw materials, were involved in the transmission of pottery production. This may have resulted in a mixture of both pottery traditions.

In the two following settlements of E4A and E5, the situation seems to be somewhat 'more regular', as most pottery, even vessels shaped in NMB tradition, contain siliceous temper, which indicates local production with local raw materials. Nevertheless, still up to one third and one quarter respectively of the vessels shaped in the 'Cortaillod'-style contain carbonate temper (Fig. 4: right).

The comparison with other settlements of the Swiss Plateau shows that, in settlement E1 of Concise quite a high proportion – of about one third – of the pottery was produced with carbonate-rich raw material, even if all vessels are shaped in 'Cortaillod'-style. The use of carbonate temper to make vessels shaped in 'Cortaillod'-style in this quantity is rarely known from other settlements in western Switzerland.[6] Perhaps, the high amount of carbonate-rich raw material used could indicate earlier 'entanglements' with the area of eastern France (NMB), which are no longer recognisable stylistically but can be seen in the raw material.

Spatial distribution of the two pottery traditions

Assuming that the pottery in the settlements at Concise was produced and used by the residents of a 'house(hold)'[7], the spatial distribution of the pottery from the different settlements can deliver information about the pottery traditions of the inhabitants of these units as well as of the settlements' societies. On the basis of spatial distribution and matching sherds, E. Burri reconstructed different 'consumption units'[8]. These are composed of the pottery inventories of different 'house(hold)s' and reflect the identity of their producers and consumers (Burri 2007, 93-166; Burri-Wyser *et al.* 2011, 32-33). The consumption units are char-

6 Only at the sites of Yverdon-Garage Martin (about 10 km in the north-west of Concise) and Auvernier-Port (about 18 km in the east of Concise) was high amounts of the pottery tempered with carbonate-rich raw materials. Yverdon (not specified which settlement, roughly dated to 38th/37th c. BC): 30%. Auvernier-Port (not specified which settlement, roughly dated between 3790-3620 BC): 16%. (Burri 2007, 203-204, annex 2).

7 For a critical reflection of this term see the paper of Hohle in this volume.

8 French: '*Unités de consommation*'.

acterised on the one hand by stylistic features of the pottery and on the other hand by the raw material used. As mentioned, both aspects of style and raw material provide information concerning the settlement communities (producers and consumers) within the settlements.

Analysing the spatial distribution of the pottery, however, it must be kept in mind that the consumption units are steadily illustrated by the archaeological finds. For the sake of simplicity, the following analysis is based on the hypothesis that the vessels are produced and consumed in the same units. If the production units do not correspond to the consumption units, the spatial analysis correlates to the consumption units only, since the production units do not figure in the archaeological record.

In settlement E2, where for the first time large quantities of vessels in NMB pottery tradition appear, the spatial distribution of the two pottery styles and the raw materials used reveal a complex situation. On the one hand, there are 'consumption units' in which one pottery style dominates and others that contain vessels of both pottery styles (Fig. 5: above). On the other hand, no spatial separation of the units with stylistically different consumption units exists. Consumption units which contain 'Cortaillod'-style vessels exclusively are situated next to consumption units containing NMB-style vessels, which are next to houses where vessels of both pottery styles occur. Following the hypothesis that the production units match the consumption units, this could indicate that people who learned to produce pottery in different pottery traditions from different regions lived next

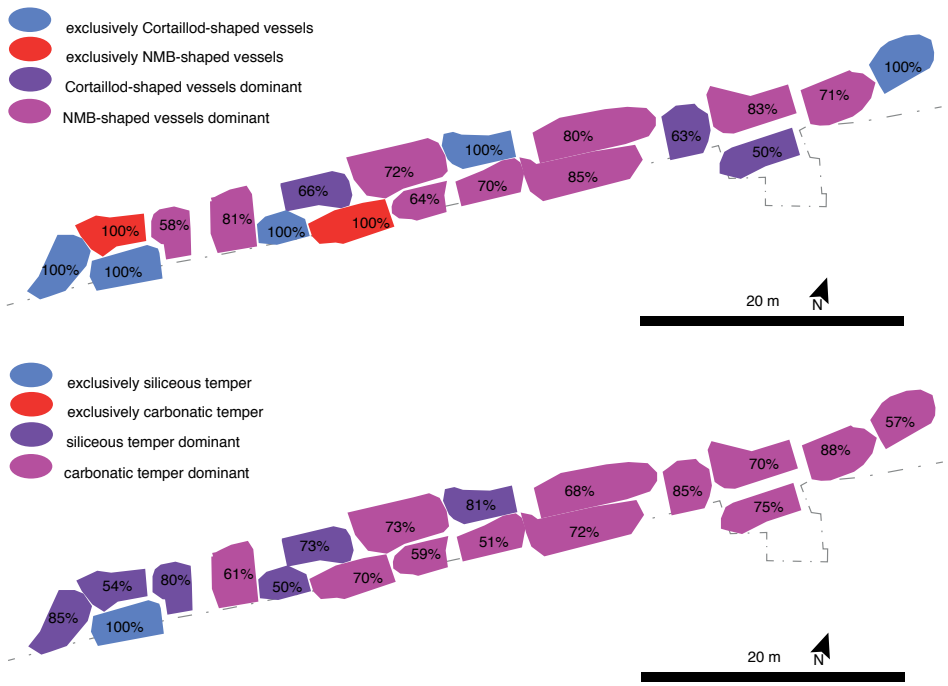

Figure 5. Consumption units of settlement E2 of Concise. Above: spatial distribution of dominant pottery styles; below: spatial distribution of dominant raw materials used in each production / consumption unit (figure: R. Stapfer; data source: Burri 2007).

to each other. Maybe they even lived in the same household or produced vessels for the same consumption unit in different styles. Mixtures of both pottery styles (hybrids) are rare and occur only in consumption units where both pottery styles are represented.

The spatial distribution of temper used for ceramic production reveals a different picture. With one exception, in every 'production / consumption unit' both siliceous and carbonate temper was used (Fig. 5: below). The fact that siliceous raw materials, which are available in large quantities, were used for the local production of vessels shaped in NMB-style is not surprising. But the fact that in units where vessels shaped in 'Cortaillod'-style dominate, many vessels are tempered with carbonate-rich raw materials seems astonishing. As with the comparison of raw materials and style (Fig. 4), this could indicate transformations in the pottery production or a mixture of manufacturing technology, which are difficult to reconstruct nowadays.

In the subsequent settlement E3B – only ten years later – almost every consumption unit is characterised by a mixture of stylistic features and production techniques (Fig. 6). The majority of the vessels are shaped in Cortaillod tradition but are often tempered with carbonate-rich raw material (shells). In this settlement, the two pottery traditions seem highly mixed, which could be an indication that people with different pottery traditions were working closely together. The strong decrease in the number of vessels shaped in NMB-style is not easy to explain. On one hand, it could indicate an adaptation of the local style – which was

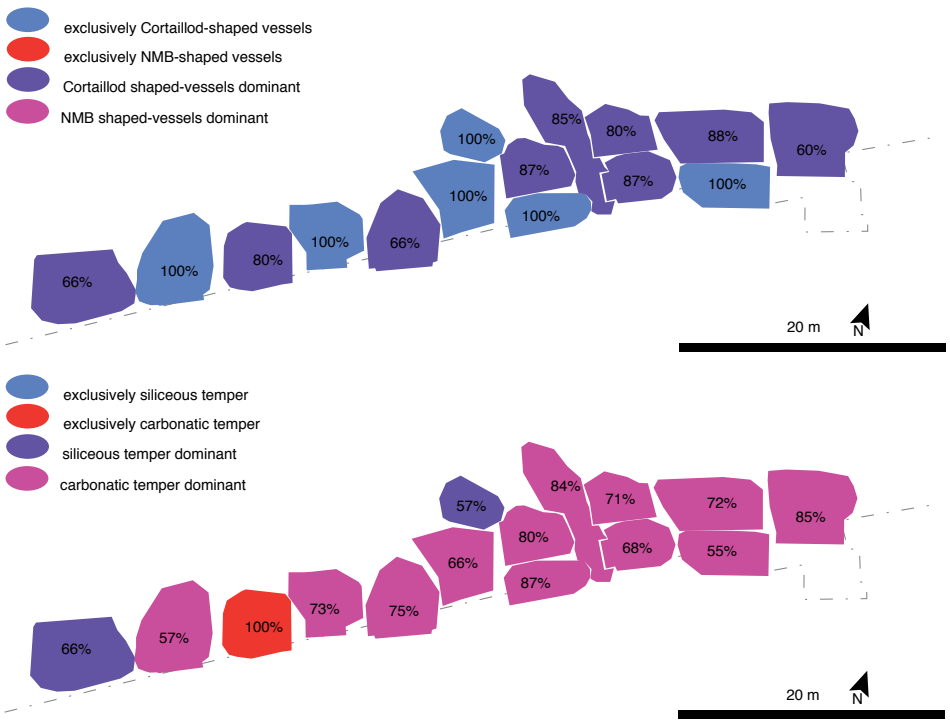

Figure 6. Consumption units of settlement E3B of Concise. Above: spatial distribution of dominant pottery styles; below: spatial distribution of dominant raw materials used in each production / consumption unit (figure: R. Stapfer; data source: Burri 2007).

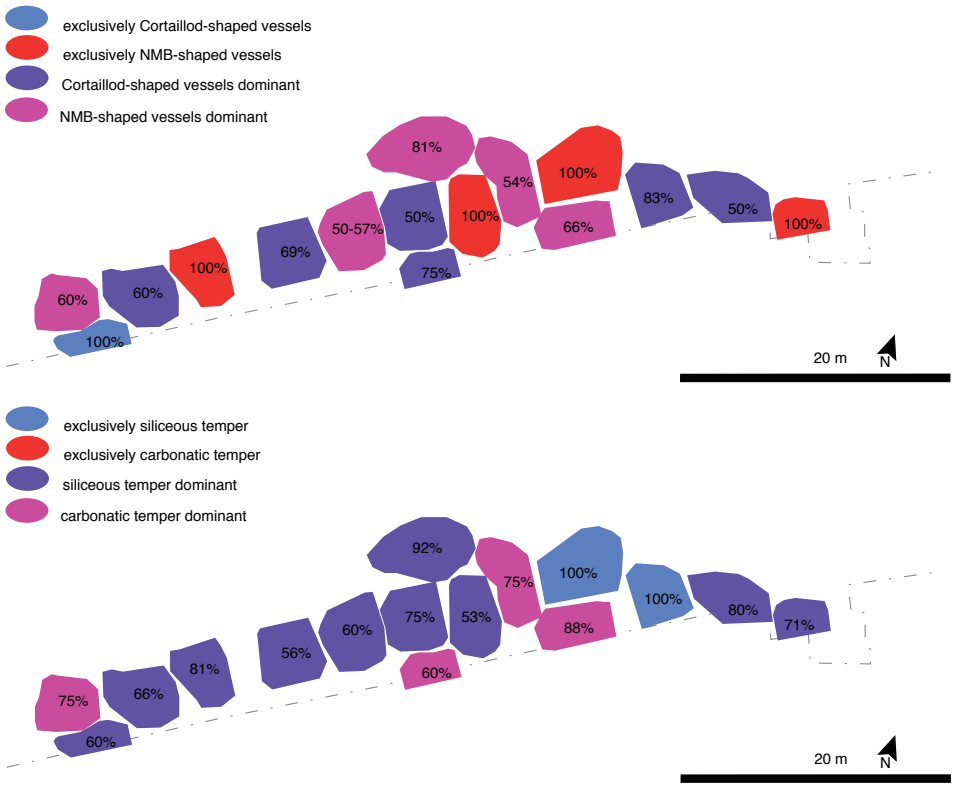

Figure 7. Consumption units of settlement E4A of Concise. Above: spatial distribution of dominant pottery styles; below: spatial distribution of dominant raw materials used in each production / consumption unit (figure: R. Stapfer; data source: Burri 2007).

possibly preferred by (parts of) the society – by potters who learned to produce pottery in NMB tradition using carbonate-rich raw materials. On the other hand, one cannot rule out the possibility that the 'immigrants' moved away or returned to their ancestral settlement after they had passed on their pottery technique of using carbonate-rich raw materials.

Just ten years later, in settlement E4A, again large amounts of vessels shaped in the NMB-style reveal a similar picture to settlement E2 (Fig. 7: above). In one third of the consumption units only, one pottery style occurs exclusively. The situation differs from the previous settlement by the raw materials used: mostly, siliceous raw material was used to produce vessels shaped in both the 'Cortaillod' and NMB pottery style. Consumption units with vessels of both pottery styles are situated next to such using vessels of one style exclusively.

In all three settlements, E2, E3B and E4A, stylistic features and the raw material of the ceramics indicate a mixture of the two pottery traditions. Further, no spatial separation of consumption units preferring one pottery tradition existed. This could be the result of an exchange of knowledge, a mixture of production traditions, adaptations and new creations – not only between different settlement communities but also within the community of one settlement.

Regional comparisons in western Switzerland

Even though the situation in Concise is unique in western Switzerland so far, this settlement cluster exemplifies how various Neolithic societies might have produced their pottery and that neither rigid spatial nor cultural boundaries between societies with different 'material cultures' existed. Although the preservation conditions are often not as good as in Concise, it is worth examining the situation in other settlements of the region. Due to the large amount of precisely dated ceramics of NMB-style in the settlements of Concise, it is now possible to identify vessels of this pottery style in the surrounding settlements of western Switzerland.

Distribution and proportions of NMB pottery style

A look at the settlements of the Three Lakes region quickly reveals that, in almost every settlement, pottery of NMB-style is present (see Fig. 2), whereas the exclusive presence of vessels shaped in 'Cortaillod'-style seems to be rare. For some settlements or settlement clusters such as Twann (Lake Bienne, CH), Auvernier-Port (Lake Neuchâtel, CH) or Yverdon Garage-Martin (Lake Neuchâtel, CH), the presence of different pottery styles was already known (Kaenel 1976; Schifferdecker 1982; Stöckli 1981*a* and *b*). But today, due to the finds from Concise, which made pottery shaped in NMB-style more recognisable, a much more frequent presence of this pottery style is detectable.

In order to compare the situation in the different settlements, which yielded very different quantities of archaeological findings, the proportions of the different pottery styles must be estimated. This is not easy because parts of the shapes are common in both the 'Cortaillod' and NMB pottery traditions. Especially tall vessels like cooking pots, jars, bottles and bowls, as well as special forms like baking plates, are often assignable to one of the two ceramic traditions, while uncharacteristic ceramics like cups or carenated bowls are not specifiable.

To quantify the impact of NMB pottery tradition, only some of the pottery from the settlements, more specifically the vessels that differ in the two ceramic traditions, can be used.

Another problem when comparing finds from different settlements can be caused by the counting method. If the counting is based on the drawings of the vessels in publications only, it is likely that a higher amount of 'special' vessels will be counted than actually exist. This results from the fact that usually only a selection of frequent shapes that occur in large quantities is drawn, whereas 'special' forms are drawn much more frequently. This publication practice may increase the percentages of 'special' vessels, especially in small assemblages and has a significant influence on the comparison of the quantities of different pottery styles.

An example will illustrate this problem: from the settlement of Sutz-Lattrigen Hauptstation innen (Lake Bienne, CH), all vessels where the diameter can be determined as well as special shaped or decorated pieces were drawn (Stapfer 2009, 23). Due to this choice, a quarter of the borders of the vessels shaped in 'Cortaillod'-style – which strongly dominate in this settlement – are drawn. Sherds of special vessels, however, are drawn much more often in relation to their total presence. If the percentage of pottery styles is calculated using the drawings only, it would show that around 10% of all vessels were shaped in NMB-style in the settlement.

phase	site	datation			semiquantitively rating of percentages of pottery styles				
		dendro	14C (1σ)	typology	n assign.	Cortaillod	Cort.-NMB	NMB	others
Cortaillod tardif / NMB récent 3650 – 3500 BC	Concise E6	3533–3516		Cortaillod tardif	34	100%			
	Twann Bahnhof OSo	3563–3532		Cortaillod tardif	342	*ca.* 96%		*ca.* 3%	<1%
	Concise E5	3570–3516		Cortaillod tardif / NMB récent	35	58%		42%	
	Nidau Port-Stüdeli OS	3580, 3560– ?		Cortaillod tardif	115	>99%		<1%	
	Lüscherz innere Dorfstation	3591–3576		Cortaillod tardif	33	>90%?		*ca.* 10%?	
	Sutz-Lattrigen Hauptstation innen	3607–3566		Cortaillod tardif	384	*ca.* 96%		*ca.* 2.5%	ca. 1%
	Auvernier La Saunerie S1	3596–3593		Cortaillod tardif	7	100%			
	Twann Bahnhof OSu	3596–3573		Cortaillod Tardif	1933	*ca.* 95%	*ca.* 0.15%	*ca.* 2%	*ca.* 3.5%
	Auvernier Port III	3623–3617, 3556–3546		Cortaillod tardif	63	*ca.* 97%?		*ca.* 3%	
	Auvernier La Saunerie S2	3633–3629		Cortaillod tardif	35	>94%		*ca.* 2–6%	
	Sutz-Lattrigen Hauptstation Hafen oben	3638–3631		Cortaillod tardif	78	>93%		*ca.* 5%	*ca.* 2%
	Twann Bahnhof MSo	3649–3607		Cortaillod tardif	1430	*ca.* 88%	*ca.* 0.15%	*ca.* 2–3%	*ca.* 9%
	Concise E4A	3645–3635		Cortaillod tardif / NMB récent	249	42%	3–4%	54%	
	Clairvaux La Motte-aux-Magnins V		3655–3535	NMB récent	62	*ca.* 3%		97%	
	Yverdon Garage Martin 14–15			Cortaillod tardif	193	>97%		*ca.* 2.5%	
Cortaillod moyen / NMB moyen 3750 – 3650 BC	Concise E3B	3666–3655		Cortaillod moyen / NMB moyen	85	85%	2%	13%	
	Nidau Port-Stüdeli US	3686–3638		Cortaillod moyen	90	95%		2–5%	
	Clairvaux XIV 5–6		3697–3646	NMB moyen	72			98%	2%
	Concise E2	3713–3675		Cortaillod moyen / NMB moyen	187	45%	2%	54%	
	Twann Bahnhof MSu	3702–3690		Cortaillod moyen/ Cortaillod classique	1770	*ca.* 95%	*ca.* 0.1%	*ca.* 3%	*ca.* 2%
	Thielle-Mottaz	3719–3699		Cortaillod moyen/ Cortaillod classique	>200	*ca.* 98%		*ca.* 1%	<1%
	Yverdon Garage Martin 18–19			Cortaillod moyen	86	91%		9%	
	Clairvaux XIV 3–4			NMB moyen	50			>98%	<2%
	Clairvaux XIV 1–2	tpq 3753?	3757–3648	NMB moyen	62			100%	
	Clairvaux VII AB		3760–3640 3772–3665	NMB moyen	83			>95%	>5%
	Clairvaux VII CD			NMB moyen?				>98%	2%
	Grotte du Gardon c. 42–40		3800–3600	NMB moyen				100%	
	Chassey Le Camp Niv. 6		3800–3600	NMB récent				100%	
	Chalain 3	3740–3730		Cortaillod moyen / Cortaillod classique?	5	100%?			
Cortaillod classique / NMB ancien 4000 – 3750 BC	Auvernier Port V	3791–3679		Cortaillod classique / Cortaillod moyen	77	>99%		<1%	
	Sutz-Lattrigen Hauptstation Hafen unten	3827–3820		Cortaillod classique	152	>91%		<8%	*ca.* 1%
	Twann Bahnhof US	3838–3768		Cortaillod classique	1430	>98%		<1%	<1%
	Concise E1	3868–3793		Cortaillod classique	43	100%			
	Muntelier Strandweg	3844–3840		Cortaillod classique	177	>99%?			<1%?
	Muntelier Fischergässli	3878–3825		Cortaillod classique	44	>98%			<2%
	Muntelier Dorf	3853–3843		Cortaillod classique		100%			
	Hautecombe	3842–3835		?	8	*ca.* 75%		*ca.* 25%	
	Corsier Port	3859–3856		Cortaillod classique	<10	100%?			
	Clairvaux VII E			NMB ancien	98	<2%		>95%	<3%
	Clairvaux VII FG			NMB ancien	43	<2%		>89%	<9%
	Clairvaux VII H		3961–3804	NMB ancien	42	<7%		>93%	
	Chassey Le Camp Niv. 7		4050–3700	NMB ancien, Chasséen				NMB	Chasséen
	Grotte du Gardon c. 46–43		4000–3800	NMB ancien				100%	

Figure 8. (opposite) Occurrence of 'Cortaillod' and NMB pottery in settlements of western Switzerland and eastern France between 3900 and 3500 BC. Semiquantitative estimation of pottery styles based on vessels that are assignable to either the 'Cortaillod' or NMB pottery styles (figure: R. Stapfer; data source: Boisaubert 1982; Burri 2007; Burri-Wyser 2012; Carnes 1997; Gauthier 1985; Hafner and Suter 2005; Kaenel 1976; Pétrequin 1997; Pétrequin and Pétrequin 2015; Ramseyer 2000; Rey 2013; Schifferdecker 1982; Schwab 1999; Stapfer 2009; Stöckli 1981a and 1981b; Stöckli 2009; Thevenot 2005; Zwahlen 2003).

In relation to the total ceramics – also the pieces not drawn – this percentage is much too high. An approach to the 'true' value is possible if the number of 'special vessels' drawn is compared with the number of all borders of jars assignable to the Cortaillod-style (Stapfer 2009, Tab. 1). Using this second quantification method, a much lower presence of NMB shaped vessels of about 2.5% can be estimated for the settlement of Sutz-Lattrigen Hauptstation innen. This lower percentage seems to represent better the total material of this settlement.

This example shows some of the difficulties in comparing quantities of pottery styles of different settlements. Because of the inconsistency of publications, which is caused by different conditions and publication strategies, it is important to declare the basis on which comparisons between different publications are made.

Although the percentage of different pottery styles cannot be quantified exactly, it is nevertheless indispensable for comparisons to estimate the proportions, although these estimates rather reflect a general trend than an exact quantification. Estimations in percentages give a good idea of the frequency of different pottery styles, even if we must keep in mind that they do not correspond to the 'true' values.

As mentioned, a look at the settlements of the Three Lakes region shows that in many settlements between 3800-3500 BC vessels shaped in NMB-style occur (Fig. 8). But with the exception of some settlements at Concise, in most settlements vessels shaped in NMB pottery style are rather rare and represent less than 3% of the total of the settlements' pottery[9]. In the older settlement of Yverdon (Yverdon Garage-Martin layers 18-19, Kaenel 1976) only, vessels of NMB pottery style seem to be a bit more frequent, representing about 9% of the settlements' pottery. Due to the wall thickness, this settlement could have existed roughly in the same time period as settlement E2 of Concise (Stöckli 1981*b*, 49). Nevertheless, even in this settlement of Yverdon, NMB pottery style is much less common than in settlements E2, E4A and E5 of Concise.

In contrast to Concise, where it can be assumed that a large number of the vessels shaped in NMB-style was produced locally – due to the large mass and with reference to the raw material used – looking at the drawings only, it is mostly not possible to distinguish whether the few ceramics shaped in NMB-style from other settlements were produced locally or not. On the one hand, it is conceivable that these vessels were brought from the territory of the 'Burgundy Middle Neolithic' on the far side of the Jura Mountains as a gift, to transport special content or filled with travelling fare. On the other hand, they could also have been produced in neighbouring settlements of western Switzerland, where pottery of NMB-style was locally produced. Also, they could indicate that people who had learned pottery

9 The percentages published in Burri-Wyser *et al.* 2011, Burri-Wyser and Loubier 2012 and Burri-Wyser 2012 are confusing and in my opinion not correct. On one hand, the calculated proportions of ceramics of NMB-style are significantly higher than if the number of NMB shaped vessels were compared with the number of vessels which are assignable to one of the two pottery styles only, because mostly only the drawn pieces were counted. On the other hand, for some assemblages where, in my view, some vessels shaped in NMB-style can definitively be recognised, the presence of them is negated. This leads to wrong conclusions regarding the spatial and temporal spread of NMB pottery tradition in western Switzerland. This should be considered and checked for future research.

making on the far side of the Jura Mountains lived in these settlements and produced vessels in their pottery tradition. To examine such specific questions, it is necessary to analyse the raw materials of the pottery.

Examination of the raw material

Until now, from the various settlements of the Three Lakes Region only 80 vessels from different settlements at Twann (see Stöckli 1981*a*; 1981*b*) have been archaeometrically analysed (Nungässer *et al.* 1985). Besides mineralogical and petrographic analyses, radiographic and infrared spectroscopic examinations were performed. The investigations of the clay matrix and temper show that the vessels were mainly produced locally (Nungässer *et al.* 1985, 19, 23-24). As well as the dominant siliceous raw materials, the potters of the Twann settlements used carbonate-rich clays containing fossils. Natural sources of such carbonate-rich clay (Hauterivien marl) can be found in the vicinity of the settlements at the southern slope of the Jura Mountains (Nungässer *et al.* 1985, 19 and Abb. 13). In many cases, ceramics shaped in NMB-style were produced with fossiliferous clay and, in some cases, so were vessels shaped in 'Cortaillod'-style (*e.g.* Stöckli 1981*a*, Taf. 6,9, 15,7, 16,6; Stöckli 1981*b*, Taf. 49,5). Few other vessels combine stylistically both the 'Cortaillod' and NMB pottery styles (*e.g.* Stöckli 1981*a*, Taf. 5,9, 10,6; Stöckli 1981*b*, Taf. 50,1).

A few pots only, shaped in NMB-style, stand out from the assemblage by their temper of calcite in combination with granite. These vessels could have been produced non-locally, in an area where calcite was used frequently to produce pottery. The granitic component of the temper suggests that they were produced in the western area of the 'Burgundy Middle Neolithic', for example in the Saône Valley, as the granitic rock material does not occur in the region of the Jura Mountains (Nungässer *et al.* 1985, 30). It is striking that vessels tempered with calcite almost exclusively occur in the second oldest settlement period, MSu (6 pieces) and only once in the oldest settlement period, the US, at Twann (Fig. 9). In the MSu settlement period, we have on the one hand the highest proportion of vessels shaped in NMB-style (about 47 pieces or roughly 3% of the pottery), while on the other hand, vessels shaped in NMB-style in this MSu settlement phase were produced about twice as often with carbonate-rich raw materials than in the other settlement phases: while around 40% of the NMB shaped vessels of Twann MSu contain calcite, fossils or chalk, these raw materials were used for 10-20% of the pottery shaped in NMB-style in the previous and following settlements only. Although in general the impact of NMB pottery tradition is low in all the settlements at Twann, this could reflect a stronger presence of potters with a background of NMB pottery tradition at around 3700 BC.

To compare the raw material of the pottery from Twann with vessels from three settlements in the bay of Sutz-Lattrigen – which is situated on the opposite shore of Lake Bienne – a sample of sherds from both settlement clusters was analysed with a portable energy-dispersive X-ray fluorescence analyser (pXRF) from the Institute of Archaeological Sciences at the University of Bern.[10]

10 Methodology and analysis strategy see Stapfer/Heitz forthcoming.

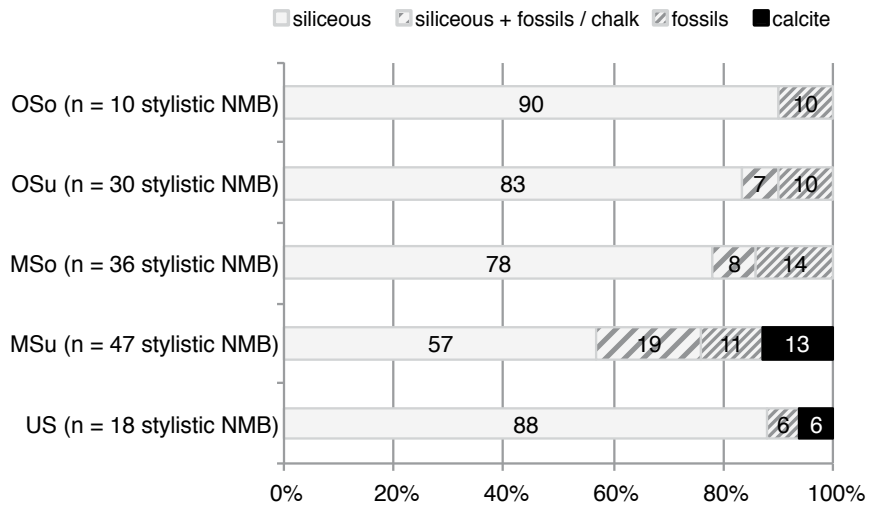

Figure 9. Raw material of NMB shaped vessels in the settlements of Twann US – OSo, 39th to 36th century BC (figure: R. Stapfer; data source: Stöckli 1981a and 1981b).

The pottery from Sutz-Lattrigen derives from four stratigraphically separated settlements: Sutz-Lattrigen Hauptstation Hafen (two occupation layers: 3827-3820 and 3638-3631 dendro BC) and Sutz-Lattrigen Hauptstation innen (two occupation layers: 3607-3595 and 3583-3566 dendro BC), (Stapfer *et al.* forthcoming).

From the oldest settlement, of which only a section of 10 by 80 meters has been excavated, it is possible to reconstruct one row of houses with the narrow side to the lakeshore, using the piles dated by dendrochronology. The houses of this settlement were built between 3827 and 3823 BC and inhabited for probably only few years longer, as the latest repairs show. Such a short lifetime of about 10 years is not unusual for a lakeside settlement, as the settlements at Concise confirm. The oldest settlement of Sutz-Lattrigen was thus simultaneously used with the longer-used first settlement E1 at Concise, as well as partially simultaneously with the oldest settlement remains of Twann (US), which are dated to about 3838 to 3768 dendro BC.

After a break of almost 200 years, a new settlement was built at the same place, using the same orientation, which consisted of three rows of houses. The houses of this settlement were built between 3638 to 3633 dendro BC. The latest (unsafe) dated timber suggests that the settlement also existed for only about ten years. This settlement was inhabited in the same period as settlement E4A at Concise and settlement MSo at Twann.

The following settlement existed between 3607 and 3595 dendro BC and was renewed after a short interruption between 3582-3566 dendro BC.[11] These two youngest settlements existed simultaneously with settlement OSu at Twann and are only slightly older than settlement E5 at Concise.

11 The two settlements are in a few places separated by lake marl. Due to progressed erosion of the cultural layers, the finds of the two settlements are not separable and are analysed together.

As in Twann, the vessels of the settlements of Sutz-Lattrigen are produced using three macroscopic distinguishable raw materials: most pottery is tempered with siliceous rock fragments, some further vessels are tempered with fossils or produced with fossiliferous clay and, exceptionally, some vessels are tempered with calcite or with calcite and siliceous rock fragments (Fig. 10).

Figure 10. Raw materials from the pottery at Sutz-Lattrigen. Most of the pottery is tempered with siliceous rock fragments (left), some vessels contain fossils / shells or are produced with fossiliferous clay (middle) and rarely fragments of calcite were used as temper (right) (figure: R. Stapfer).

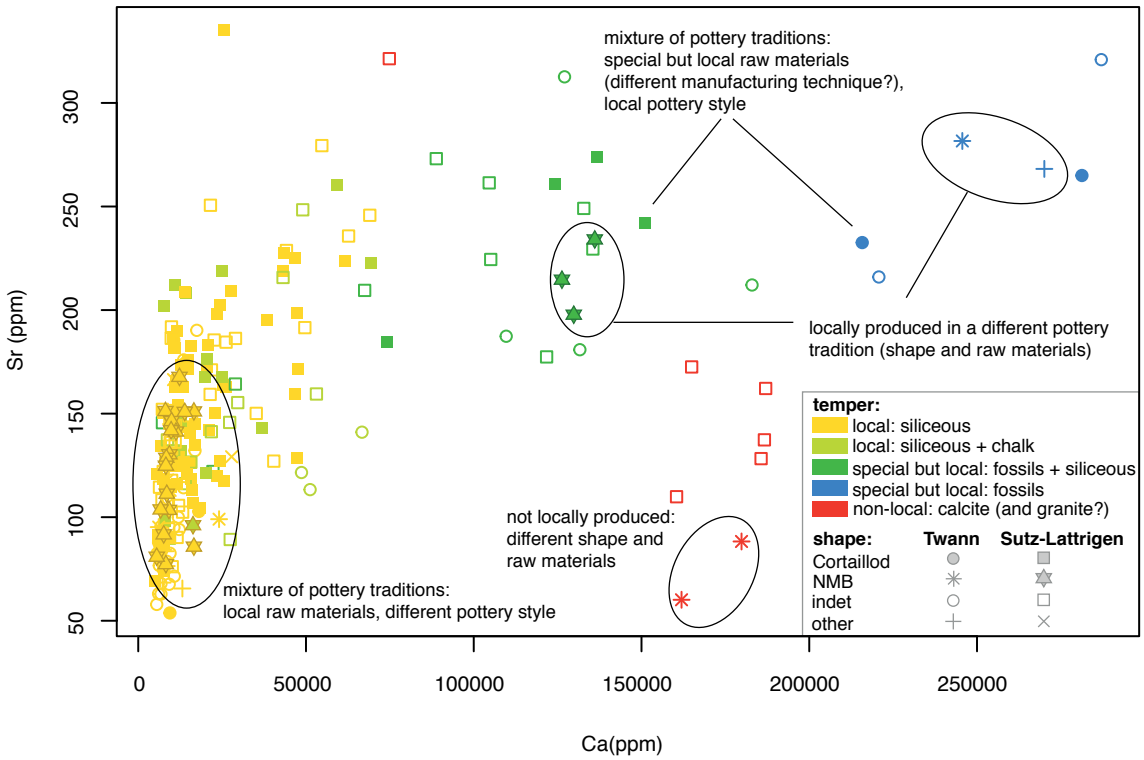

Figure 11. Chemistry of vessels from the settlements of Twann and Sutz-Lattrigen 39th - 36th century BC. The ratio of Ca to Sr (in ppm) shows different raw material groups. The comparison of these raw material groups with the pottery styles shows that most vessels are produced locally. In some cases, the combination of pottery style and raw material used shows a mixture of different pottery traditions and a few pots only seem to be not locally produced (figure and data source: R. Stapfer).

The pXRF analysis shows that these raw material groups are also separated from each other by their chemical composition (Fig. 11). As fossiliferous clays are available at the southern slope of the Jura Mountains near Twann (Stöckli 1981*a*, 42-43), this means that these clays are also available for the potters of Sutz-Lattrigen, within a distance of approximately 15 km along the lakeshore. To produce pottery, the potters of Sutz-Lattrigen tempered this fossil-rich clay additionally with siliceous rock material, while the potters of Twann often used this clay pure. This could indicate that the pots have been locally produced in Sutz-Lattrigen with 'imported' clay from the vicinity of Twann. Nevertheless, it cannot be ruled out that finished vessels produced in Twann were brought to Sutz-Lattrigen. As in the settlements of Twann, a few vessels of the settlements of Sutz-Lattrigen are tempered with calcite and they are chemically very similar to those of Twann, which could have been produced in eastern France. However, most vessels shaped in NMB pottery style from Sutz-Lattrigen are produced locally, as they show a similar chemistry to the large mass of locally produced vessels shaped in 'Cortaillod'-style and tempered with locally available siliceous raw material. These vessels, as well as some pieces shaped in 'Cortaillod'-style, produced with carbonate-rich raw material / tempered with fossils, show a mixture of both pottery traditions.

Comparing the vessels' shapes and the raw materials used, we can assume that in both settlement clusters, Twann and Sutz-Lattrigen, between roughly 3820-3530 BC, vessels in both the 'Cortaillod' and NMB pottery tradition were produced. Additionally, the two pottery traditions were combined, producing new creations (see also contribution of Heitz in this volume). On the other hand, translocal vessels,[12] which were not produced at the place they were used / disposed of, are extremely rare. The small number of vessels that are assignable to NMB pottery tradition in Twann and Sutz-Lattrigen may indicate that there were only very few people with a different pottery tradition as background, that they did not live for a long time in these settlements or that they quickly adapted the local style and raw material.

As in the settlements at Concise, the potters of the settlements at Sutz-Lattrigen and Twann produced their vessels in both the 'Cortaillod' and NMB pottery traditions. Additionally, a combination of the two pottery traditions took place, which could reflect people with different pottery traditions working closely together within 'production / consumption units' or the settlements' societies. However, in the settlements at Lake Bienne, evidence of NMB pottery tradition is very much lower than in Concise and never rises to over roughly 10% of the settlements' pottery. This seems to reflect different phenomena in the settlements at Lake Bienne than in the settlements of Concise.

Entanglements with different regions versus 'waves of newcomers'

In contrast to the settlements of Concise, where exclusive relations with the region of eastern France are detectable, some vessels from Twann and Sutz-Lattrigen indicate additional relationships in other directions. A bowl decorated with channellings from Twann (Stöckli 1981*b*, Taf. 20,9) has similarities with vessels from the

12 About this term see Heitz and Stapfer forthcoming and the contribution of Heitz in this volume.

Grotte du Gardon in the Rhône Valley (FR) (Rey 2013, fig. 91,5, 92,19) and from St-Léonard in the Valais (Winiger 2009, *e.g.* pl. 65,462.500, 79,658.639.642, 82,677, 83,657, 84,616). Decorations of impressions, fingernail impressions as well as slips (Stöckli 1981*a*, Taf. 14,3; Stöckli 1981*b*, Taf. 51,11.12, 47,1.2) are typical for the 'Pfyn' pottery tradition, common in Central Switzerland and Lake Constance region. Baking plates with fingernail impressions around the rim and vessels with knobs on shoulder and rim (Stöckli 1981*a*,Taf. 14,5; Stöckli 1981*b*, Taf. 4,3) are known in the Alsace region ('Munzingen' style, see contribution of L. Jammet-Reynal in this volume). Parallels can be found in Mundolsheim, Holtzheim-les Abattoirs and Magstatt-le-Bas Mattersacker (Stöckli 2009, Taf. 135, 137, 139).

As pottery of NMB-style, these 'special vessels' are very rare in the settlements of Twann and Sutz-Lattrigen and are mostly produced with local raw material (Nungässer *et al.* 1985, Tab. 1 and Tab. 2). Individual vessels of different pottery styles also appear in other settlements of western Switzerland. However, their stylistic assignability is not always easy, due to a lack of well-dated assemblages in some adjacent regions. Also, more raw material analyses would be helpful to study relations between different regions.

In contrast to Concise, in the settlements at Lake Bienne more different pottery styles are present. These indicate in many settlements the presence of people with different pottery traditions. Careful analysis of pottery styles and raw materials used in Neolithic settlements show that Neolithic people were mobile and continued to maintain their pottery traditions in other regions. Further, they modified or developed their manufacturing technology while in contact with other individuals or settlements' societies. Translocal vessels, in contrast, are rather rare and could, probably as cooking pots, reflect a use as travelling gear.

Although in Concise most vessels were produced locally, the strong influence of the 'Burgundy Middle Neolithic' pottery style represents a unique phenomenon on the Swiss Plateau. This phenomenon is easiest to explain by the influx of a group of people from the NMB area. However, the reasons for the repeated migrations remain unknown because there are no simultaneous settlements known (or datable to exactly the same time frame) from the NMB area. It is possible that relationships between the region of Lake Neuchâtel around Concise and settlements in the Jura Mountains existed for a longer period of time. The wide use of shells / fossils as temper used in settlement E1, which represents an unusual raw material in the 'Cortaillod' pottery tradition, could point to older entanglements with eastern France. A reason for closer ties between the western part of Lake Neuchâtel and eastern France could be caused by the physiographic position of Concise (Burri-Wyser *et al.* 2011, 26). Only slightly south of the settlement cluster, a valley through the Jura chains is situated, which connects western Switzerland with eastern France (Vallorbe to Pontarlier). The geographical location of Concise may have enabled much stronger relations between Concise and some settlements situated in the Jura Mountains.

Analysing pottery styles, manufacturing techniques and raw materials used at some key sites on the Swiss Plateau between Lake Neuchâtel and Lake Constance in the ongoing MET-project (Hafner *et al.* 2016*b*), additional entanglements and

forms of mobility between the settlements' societies of the Swiss Plateau and adjacent regions might be detected in the future. Previous results are convincing and show that the idea of homogenous 'pottery cultures' from former research is increasingly dissolving.

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Cultural and chronological attribution of pottery on the move

From rigid time-space schemata towards flexible microarchaeological 'messworks'

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Abstract

Archaeological concepts of structuring time and space determine and constrain the views on prehistoric potteries and mobilities. In turn, these typologies of potteries are often the basis of the same chronological and cultural concepts, especially in Neolithic archaeology. Thus, if either of them shows any distortions, this can lead to something similar to a vicious circle. Therefore, the only way of breaking this circle is to reconsider these concepts in order to obtain a more open and less biased view on pottery in general.

First, a research-history approach is applied to a time-space classification of Neolithic remains in Switzerland. Attempts to deconstruct traditional cultural concepts are discussed and their shortcomings are highlighted by examples from my research experience, some of which have been mentioned in the workshop. This paper emphasises that simplified concepts, outdated terminology, and false dichotomies direct our view and lead us to ignore or manipulate facts that are adverse to our preconceptions. Moreover, traditional time-space schemata do not take into consideration the distortion of the results created by post hoc artefacts of human knowledge production.

Finally, the essay proposes to adopt F. Fahlander's microarchaeological perspective as a new approach to structuring the time and space of Neolithic remains in Switzerland and in adjacent regions. An open set of the most representative and most accurately dated reference sites would provide the basis for this approach. Thus, its frame would not be rigid and categorising as in traditional time-space schemata, but flexible, dynamic, and able to adapt to new evidence.

Keywords: *concepts of culture, Neolithic pottery, microarchaeology*

Introduction

At first view, theoretical reflections about the established time-space schemata of Neolithic times in Switzerland seem to be somewhat apart from the topics of a workshop dealing with mobilities and pottery production. However, upon closer examination, we will realise that preconceptions about cultural traditions and change, preconditions of the different sites of evidence and time-space schemata are irredeemably entangled with each other. If we do not understand these entanglements, many insights about mobilities and cultural traditions about ceramics will stay hidden or misunderstood. Therefore, it makes sense to reconsider these concepts in order to obtain a more open view on pottery.

The current paper is an attempt to solve, or at least to shed light on, some problems I was confronted with when I undertook my research on "absolute chronology and regionality in western and middle European contexts of the fifth to third millennia BC" (Stöckli 2009, 9)[1], which I never finished. This paper is not meant as an excuse for never finishing my research but as an explanation thereof and also a reminder that nothing is ever truly finished for there is always more to learn.

Historical background of research

Traditionally, cultural concepts about Neolithic remains in Switzerland and adjacent regions were based on material culture, especially pottery styles. In the late 1990s, in the process of deconstructing these concepts, I tried to establish a grid for a time-space classification of reference sites. Having similar culture-historical and chronological ideas about the Swiss Plateau in Neolithic times, A. Hafner and P. J. Suter became involved in my attempts and, after some discussion, they developed their own chronological cultural concept. Since then, they have published their proposal in several papers (Hafner and Suter 1997; 1999; 2003). Their concept was a hybrid between the proto-concept I had been developing and their own ideas. The two concepts differed partly in nomenclature, in spatial classification, and in the adjustment of the chronological grid.

The attempts of Hafner and Suter to overcome archaeological cultures based on pottery typology were a step in an appropriate direction. They adopted a stricter grid with 250-year steps. However, such a rigid grid does not take into consideration that the chronological transition between two periods, however they may be defined, rarely corresponds to the 250-year borders. Furthermore, time-space schemata should allow fuzziness of the chronological transition between periods, because radiocarbon dating has certain methodological uncertainties and because the often unsatisfactory source situation cannot lead to more exact results. As no rigid 250-year steps grid, such as Hafner and Suter's, can allow such fuzziness, I would have preferred a more open grid with the advantage of finer chronological adjustment to the individual cases. Hafner and Suter's schema runs the risk that the 250-year steps are not understood as merely a time scale, but as cultural boxes, just as in traditional schemata.

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1 Title in German: 'Absolute Chronologie und Regionalität West- und Mitteleuropa vom 5.-3. Jts., ausgehend vom Modellfall des unteren Zürichsees'.

Additionally, I did not intend to differentiate between Hafner and Suter's four levels of interpretation: 1. Time-space order; 2. Regional-stylistic classification of reference find complexes; 3. Superregional culture-historical processes; 4. Attempts at ethnic interpretation. I am convinced that the various schemata resulting from these levels (Hafner and Suter 1997, fig. 6-8) were one of the reasons why their concept was never fully accepted in our field of research as the concept was too puzzling to understand or use; and in Hafner and Suter 2003, fig. 3 they only used level 2. Nevertheless, the two concepts were comparable and their weak and strong points were similar. Therefore, it would not make sense to rediscover and publish my former attempt now. I could not resolve the dilemma back then; however, after a long break from this field of study, I hope to have found a possible solution.

In discarding the old concepts at that time, we only went halfway through. Our concepts were still orthogonal time-space-grids based on a traditional concept of culture-historical evolution in clear-cut regional cultural contexts. Influences and entanglements between the pottery of different regions or local differences within one region were not considered. W. E. Stöckli even made a step further back to the traditional concept (Stöckli *et al.* 1995), when he published parts of the tables of the project and commented on them (Stöckli 2009). I will not reproduce the quoted concepts – despite the fact, that this would be practical – because I do not want to perpetuate them. They were all reproduced and are easily available (Stöckli 2009, fig. 19-23, 39-43).

The practical work with the now updated and GIS-supported database of my former project by R. Ebersbach and students of the Institute of Integrative Prehistory and Archaeological Science of the University of Basel resulted in a more innovative approach (Doppler and Ebersbach 2011; Ebersbach 2011). This was because the students' mapping of specific traits of the individual reference sites was not that much influenced by preconceived opinions about these cultural groups. It is in this direction that we need to go.

Some examples for weaknesses of the time-space schemata concerning the topics of the workshop

I will use four examples to illustrate how persistently traditional time-space schemata influence the specific Neolithic topics of this workshop:

1. The 'Egolzwil / Early Cortaillod' (or: 'Older Zürich Hafner')[2] example
2. The 'group of Hornstaad' example
3. The KanSan 9 example: 'Pfyn' (or: 'Younger Zürich Hafner') and 'Munzingen'
4. The 'Michelsberg' example

The 'Egolzwil / Early Cortaillod (Older Zürich Hafner)' example

The idea to contribute something to this conference sparked from R. Huber's question of what cultural naming we should give the inventory of Cham-Eslen, a Neolithic wetland site on a former island in Lake Zug (CH), dated to about 4000 cal BC (Huber and Schaeren 2009, 115-120). The cultural naming of the invento-

2 The terms in brackets refer to the nomenclature of Hafner and Suter's time-space scheme, the others to the nomenclature of 'Neolithic cultures'.

ry of Cham-Eslen put us in an almost insoluble dilemma since no attribution was satisfying. As the inventory is only small and probably shaped by the site's special function (Gross and Huber in press), some of the elements needed for an attribution to the so-called 'Egolzwil culture' are missing. On the other hand, we find elements that correspond to the inventories of the so-called 'Early Cortaillod culture of Lake Zurich'. However, some of the relevant elements for this attribution are missing as well. This case shows us clearly that cultural attribution depends on the inventory size, the function of the site, and the chronological position of the inventory.

A

B

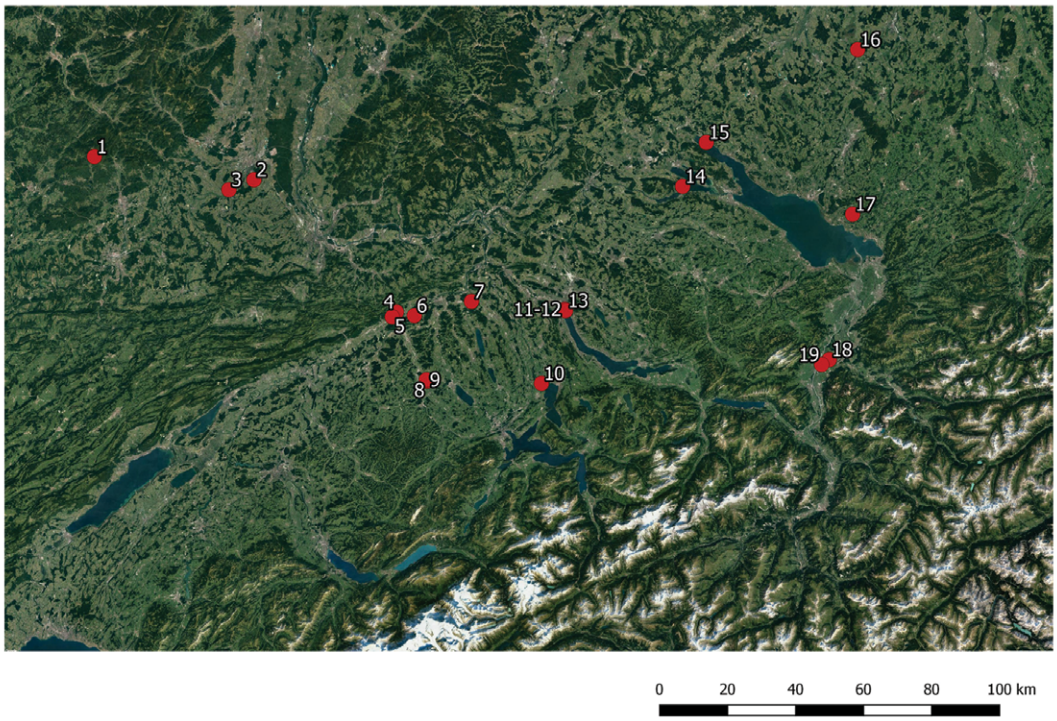
Figure 1. (A) Characteristic 'Egolzwil' pots; (B) shoulder-band-beakers of 'Post-Rössen' found at the site of Egolzwil 3 (Canton of Lucerne, CH), different scales (De Capitani 2013, Abb. 34 and 91).

I am aware that most of the scholars in this field of research know that the cultural division between 'Egolzwil' and 'Early Cortaillod' ('Older Zürich Hafner' after Hafner and Suter 1997; 2003) is only a remnant of past research, passed on from the concept of E. Vogt (Vogt 1951; 1967). However, this remnant still influences research today. In the 1950s, Vogt was confronted with stratigraphic sequences in the eastern part of Switzerland which did not contain the youngest phases of so-called 'Cortaillod culture', because back then these phases of the 'culture' were not known in the eastern parts. In the western lakes of Switzerland, no wetland sites with the oldest phases of 'Cortaillod culture', which he knew from sites in the East, were known. Without absolute dendrochronological and radiocarbon dates and with only a poorly differentiated analysis of ceramics, Vogt could only draw the wrong conclusions. Thus, Vogt did not recognise the cultural connection between 'Egolzwil culture' and 'Cortaillod culture'. Furthermore, his focus on the 'Post-Rössen'-elements of the decorated '*Schulterbandbecher* (shoulder-band-beakers)' in the 'Egolzwil' inventories prevented him from seeing the inventories' connection to contemporaneous pottery from the western parts of Europe (Fig. 1).

However, the differentiation between 'Egolzwil culture' and 'Cortaillod culture' is still in use and causes all sorts of problems. Firstly, it obscures the connection between pottery from 'Egolzwil' and the very similar pottery from sites further to the west and the so-called 'Saint-Uze' (Denaire *et al.* 2011). This makes 'Egolzwil' (De Capitani 2013; Vogt 1951) appear as an isolated little 'culture' in central Switzerland. Secondly, the division between 'Egolzwil' and 'Early Cortaillod' ('Older Zürich Hafner') makes it impossible to see the continuity of pottery traditions. Thirdly, the division also obscures the connections between the 'Glis-Chamblandes / Lenzburg cists' (De Capitani 2011; Moinat and Chambon 2007) – known from central and western Switzerland as well as eastern France – and 'Egolzwil' and 'Early Cortaillod' ('Older Zürich Hafner') inventories. Fourthly, it obstructs the recognition of strong and diverse bonds tied by '*Schulterbandbecher* (shoulder-band-beakers)' (Zeeb 1994; Zeeb-Lanz 1998; 2003) between 'Egolzwil' and 'Bruebach-Oberbergen', and 'Aichbühl' as well as 'Borscht' *etc.* inventories (Jeunesse 1990). Last but not least, the division between 'Egolzwil culture' and 'Cortaillod culture' renders it impossible to attribute sites like Cham-Eslen to either 'Egolzwil' or to 'Early Cortaillod' ('Older Zürich Hafner'). This is because elements used to distinguish one from the other are often missing on the sites, probably because these sites had very specific and seasonal functions, for example Cham-Eslen's function as a fishery installation. A similar example are the cist graves of Däniken-Studenweid (Canton of Solothurn, CH) (Dubuis and Osterwalder 1972; Schweizer 1946): should they be attributed to the 'Glis-Chamblandes / Lenzburg cists' because of the construction of the grave or do they belong to 'Bruebach-Oberbergen' or 'Egolzwil' due to the '*Schulterbandbecher* (shoulder-band-beakers)', which is the only preserved burial-object considered to be a specific cultural attribute.

If we look at the maps of cultural regions (Doppler and Ebersbach 2011 fig. 2; Hafner and Suter 2000, fig. 95), the site of Däniken-Studenweid is geographically included neither in the western part of the Swiss Plateau nor in central

Switzerland. Therefore, this site seems to lie in a '*terra incognita* in-between'. However, it is in fact situated very close to the most important east-west communication axis in the Swiss area – the river Aare – close to the probably most important flint mine in Switzerland in Olten-Chalchofen / Förenwald (Canton of Solothurn, CH) (Lötscher 2014), close to the important contemporaneous hill



			BC cal	4500–4375	4375–4250	4250–4125	4125–4000	4000–3875	3875–3750	3750–3625	3624–3500
Plancher-Les-Mines	1	quarries									
Bruebach-Oberbergen	2	land site									
Illfurth-Naegeleberg	3	burial									
Olten-Dickenbännli	4	hill site									
Olten-Chalchofen	5	mines									
Daeniken-Studenweid	6	burial									
Lenzburg-Goffersberg	7	burials									
Egolzwil 3	8	wetland site									
Egolzwil 5	9	wetland site									
Cham-Eslen	10	wetland site									
Zürich-Kleiner Hafner 5	11	wetland site									
Zürich-Kleiner Hafner 4 AB	12	wetland site									
Zürich-Kansan Seefeld 9	13	wetland site									
Hornstaad-Hörnle IA	14	wetland site									
Sipplingen SiA	15	wetland site									
Aichbühl	16	wetland site									
Tettnang-Degersee	17	wetland site									
Schellenberg-Borscht	18	hill site									
Eschen-Lutzengüetle Schicht 6	19	hill site									

Figure 2. Chronospatial representation in regard to the mentioned sites in this paper (source map: http://www.geo.admin.ch). Green: radiocarbon dating; red: dendro dating; pink: dendro dating with wiggle matching; orange: dendro dates without sapwood; grey: typological dating. Attention: this is NOT a time-space scheme! It illustrates only the momentaneous personal opinion of the author about the chronological and geographical position of some mentioned sites in the text. Every following representation has to be different, according to the focus of the work (figure: E. Gross).

site of Olten-Dickenbännli (Canton of Solothurn, CH), and close to the probably not unimportant north-south communication axis (between the Rhine and Ergolz rivers, Olten and Egolzwil in 'Wauwiler Moos', the Lake of Sempach, the Lake of Lucerne and the Alps) (see Fig. 2).

The reasons mentioned above have shown the weaknesses of our time-space schemata. Thus, the curtain should be drawn over the artificial divisions between 'Egolzwil culture' and 'Cortaillod culture' created by traditional schemata.

The 'group of Hornstaad' example

During the workshop from which this edited volume has grown, I. Matuschik showed us that the pottery inventories of three reference sites of the 'group of Hornstaad', which date to about 3900 cal BC – Hornstaad-Hörnle IA (Matuschik 2011) and Sipplingen A (Lake Constance, DE) as well as Tettnang-Degersee (DE) –, are different from one another, although they are all situated at or near the same lake. Both located in South-Germany, Degersee and Lake Constance are only about 10 km apart. Furthermore, though the two inventories from Sipplingen A and Degersee are but small, he showed us that each of the inventories is, in certain aspects, similar to sites that are situated not at the same lake but along routes from the site to adjacent regions.

If we take his arguments seriously, the traditional concept of the so-called 'Lutzengüetle culture' (Vogt 1967) cannot be maintained. This 'culture' was defined in the 1960s for pottery inventories of the Alpine Rhine Valley and Lake Constance. Apart from the type-site of Lutzengüetle level 6 (Gamprin, FL), the only isolated specimens of the two typical 'Lutzengüetle'-elements were found in further inventories which were attributed to other cultural contexts, like Hornstaad-Hörnle IA for instance (see Heitz in this volume). The two elements in question are ribbon-like handled jugs and flat-bottomed bowls – both decorat-

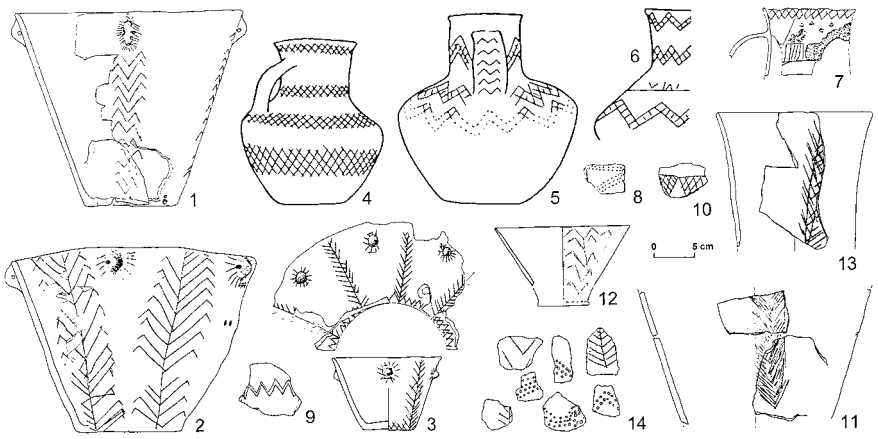


Figure 3. Characteristic 'Lutzengüetle' ribbon-like handled jugs and flat-bottomed bowls – both decorated with M- or tree-like motifs from different sites in Switzerland and Germany: (1-3) Hornstaad-Hörnle IA; (4-8) Gamprin-Lutzengüetle; (9-11) Sipplingen-Osthafen; (12) Zürich-Bauschanze; (12) Schussenried-Riedschachen; (14) Herblingen-Grüthalde. 4-6 without scale (after: Schlichtherle 2006, fig. 16).

ed with M- or tree-like motifs, which were often applied after the ceramic vessels were pit-fired (Fig. 3).

Until now, no other types specific to 'Lutzengüetle' have been defined. The situation on the type site is not much better, due to the difficult stratigraphic situation and the age of the excavation and the assemblage's problematic composition, Lutzengüetle level 6's inventory seems to be nothing but an assemblage of some 'Lutzengüetle' jugs and bowls, some typical 'Hornstaad' elements, some 'Schussenried' elements and some still undefined elements, which might be found in still undiscovered contemporaneous sites on the routes of the Rhine south of the Alps or Tirol (AT). This indicates that the composition of the inventory of Lutzengüetle level 6 is rather the result of trade and mobilities than of a local cultural tradition. The isolated occurrence of 'Lutzengüetle' and 'Schussenried' vessels in the contemporaneous 'Cortaillod' sites of Lake Zurich should be seen in the same context of trade and mobilities. This combination of vessel-types from different 'cultures' – also known from sites further away – is probably quite typical for the important transit-corridor of the Alpine Rhine Valley.[3] Such vessels do not indicate that the sites from the Alpine Rhine Valley 'belong' to these 'cultural groups'; instead, they show that the sites maintained relations with far off sites. Territorial time-space schemata, instead of improving our understanding of these inventories, only fog such meaningful connections. In any case, it would not make sense to assign the inventory of Hornstaad IA to 'Lutzengüetle' (Hafner and Suter 1997, fig. 8) or *vice versa* as elements that differ between the two inventories outweigh the coinciding elements.

The Zürich Seefeld KanSan 9 example: 'Jüngeres Zürich Hafner / Munzingen / Pfyn'

C. Heitz and R. Stapfer (Heitz as well as Stapfer in this volume; Hafner *et al.* 2016) presented many of the connections mentioned above in their presentation during the workshop. When C. Heitz, R. Stapfer and I looked through the ceramic material of Zürich Seefeld KanSan 9 (Lake Zurich, 39th *c.* BC) in 2015, we all had a sort of 'revelation'. When the inventory of KanSan 9 was published 1994, the inventory was interpreted as an unbroken transition between the older 'Cortaillod' inventories and the younger 'Pfyn' inventories: "The pottery from level 9 shows that the Pfyn pottery from lower Lake Zurich arose seamlessly out of the Cortaillod pottery" (Gerber *et al.* 1994, 44)[4]. Furthermore, the assignment of the KanSan levels 9, 8, 7, 6 and 5 inventories to the so-called 'Pfyn culture' induced Y. Gerber to compare it only to other inventories from around Lake Constance and from the Cantons of Schaffhausen and Thurgau (CH) with the same assignment (Gerber *et al.* 1994, 51-54). However, while we were already sceptical about concepts of Neolithic cultures before, the scales fell from our eyes completely when we

3 The 'Rössen' bowl of Gutenberg-Balzers (Hafner and Suter 2003, 61, Taf. 16A), the 'Hinkelstein' vessels of Zizers-Friedau (Seifert 2012), and the 'Laugen-Melaun' jars and the 'Tamins' or 'Schneller' pottery found in Bronze and Iron Age sites in the Alpine Rhine Valley illustrate this idea (Gleirscher 1987; Maggetti *et al.* 1982).

4 German: "*Die Keramik aus Schicht 9 zeigt, dass die Pfyner Keramik am unteren Zürichsee nahtlos aus der Cortaillodkeramik entstanden ist*" (Gerber *et al.* 1994, 44).

looked at the originals of KanSan 9: the pottery exhibits strong similarities to the 'Munzingen' of the Upper Rhine Valley. C. Heitz had already suspected this after inspecting only the published drawings, pointing out that a multitude of pottery features in KanSan 9 resemble 'Pfyn', 'Michelsberg', 'Cortaillod', 'Munzingen' and the 'Burgundy Middle Neolithic' ('*Néolithic moyen Bourguignon*', short: NMB) pottery (Fig. 4). Ties to 'NMB' were already mentioned earlier by Stapfer (Stapfer 2012). However, for me, this insight came only when I looked at the originals. The implicative force of the name 'Pfyn' had been so strong that I (just like Gerber) had always looked only towards the North-East for influences and had therefore overlooked other important areas of influence. When considering the possible routes of communication on rivers, these connections to 'Munzingen' seem much more palpable than the connections to Lake Constance or the Canton of Schaffhausen. Today, I feel ashamed of how we ridiculed R. Wyss when he assigned the inventory of Egolzwil 5 to 'Munzingen' (Wyss 1976); he was far closer to the truth than we were.

This example provides a wonderful insight: firstly, it demonstrates that regional cultural units are only artificial products of the national history of research. Secondly, it underlines that if we start to tear down the strict and clear-cut borders between these regional cultural units, the importance of the intense supra-regional networks of raw materials emerges. Examples are the pelite quartz ('aphanite') from Plancher-les-Mines (Vosges, F) or alpine berg crystal, as well as special artefacts like 'Glis-Weisweil axes' made of flint or '*Hirschgeweihbecher* (antler cups)'.

Figure 4. Pot from the site Zurich Seefeld-KanSan 9 with similarities to 'Munzingen' or 'NMB', photographed during the mentioned common consideration in 2015 (figure: C. Heitz).

If we open the cultural boxes, inventories like the Cortaillod-like burial in pit 10 of Illfurth Naegelberg (Haut-Rhin, FR) (Jammet-Reynal *et. al* 2015; see also Jammet-Reynal in this volume) suddenly appear in a different light. We come to realise that back then individuals – humans or artefacts – moved easily across distances of 300-400 km in different directions, just like they do today. Traditionally, this movement of individuals was seen as 'cultures' spreading from one area to another, in accordance with traditional concepts and colonialist ideas. However, a 'culture' cannot spread by itself: the artefact or the knowledge of how to produce it has to be brought from one place to another by a bearer. Thus, we should no longer speak of the spreading of 'cultures' but of the movement of individuals – people or objects.

The 'Michelsberg' example

The broad concept of a long range and everlasting 'Michelsberg culture' and its intern relative chronology has been in use, though with slight alterations, since J. Lüning wrote his monograph about 'Michelsberg' (Lüning 1967). However, this concept did not persevere because of the stability and uniformity of the phenomena it describes, but because of Lüning's status as an eminent authority in this field of research and because of the unfathomable complexity of Lüning's concept. The existing foundation of Lüning's pottery typology is unresolvably entangled with his chronological and cultural concepts. Some of the main characteristics of the typology emerge only in certain periods and in certain parts of the whole 'distribution area' and with different intensity. As some regional differences are regarded as chronological ones, the boundary between regionality and chronology in Lüning's concepts is not a distinct one. In other words, the phenomena, subsumed in the term 'Michelsberg', are heterogeneous regarding their origins and are regionally subject to different influences of different intensities in different periods (Gross-Klee 1998; see also Seidel in this volume). Thus, the 'Michelsberg' concept is inadequate to describe the diversity of pottery of the attributed inventories. It is only by abandoning the prevailing concept completely that a chance to look at the world from a different, more adequate perspective will emerge.

Conclusion about rigid time-space schemata

The examples mentioned above highlight only a small selection of the abundant problems of small and large-scale time-spatial schemata about Neolithic remains in Switzerland and adjacent regions. Even with the best data-base, the problems did not abate; on the contrary, they increased. More generally speaking, the problems of time-spatial schemata are as follows:

- The concept of 'archaeological cultures' (in whichever sheep's clothing they may hide) is misleading and restricting. It hides more than it reveals.
- The adopting and adapting of traditional space-time schemata is problematic as they are often the results of subconscious and covert ideologies of researchers involved – often traditional views such as nationalism or evolutionism. Furthermore, the traditions of research of modern regional and national units and the financial and organisational power of archaeological

institutions also influence the data corpus and thereby the schemata. It is therefore necessary to thoroughly scrutinise traditional schemata and to become aware of the ideologies and preconceptions that influenced scholars both then and now (see also Van Oyen in this volume).

- One of the above-mentioned ideologies becomes apparent in the use of coloured or screened areas and unilateral arrows for the representation of 'cultural units' and their distribution (*e.g.* Pétrequin *et al.* 2016, 59-62). They suggest images of invasions and infiltrations and are based on western territorial colonialist concepts. These representations seem dehumanised in an odd way. Two extreme views of cultural change followed each other in the history of research: first, scholars saw invasions everywhere; then, in the 1980s and 1990s, we saw only regional continuity and no movement at all. Both of these views obscure possible invasions, mobilities, and population movements.
- The spatial order of space-time schemata is based on spatial concepts of modern political territoriality. It does not consider the big impact of routes of communication (sea, lakes, rivers, human or animal trails) (Edgeworth 2011), obstacles, eco-niches (Smith 2001), and sources of raw material.
- Qualitative designation for chronological periods (as Proto-, Early-, Older, Middle, Classical, Young, Late Final, Epi-) have a suggestive and evolutionistic character and are based on outdated cultural concepts and wrong preconceptions. They should therefore be abandoned.
- Names for 'archaeological cultural units' have an implicative character. As blinders, they force the view in certain directions and hide others. Furthermore, these names are often kept even if they are based on outdated cultural concepts or wrong preconceptions.
- The establishing of chronological order does not adequately consider the big impact of taphonomical factors and the sites' specific functions and locations.
- The evidence of chronological order even in stratigraphical sequences may be wrong or may be misinterpreted (even when the evidence is statistically representative), due to wrong preconceptions about the underlying features. Not all significant differences can be explained chronologically. Inappropriate assessment of scientific data (14C, dendrochronology) may lead to wrong results and quite often even the raw-data are dubious for specific reasons.
- Chronological schemata belie gaps or fill them, instead of simply acknowledging their existence. Moreover, they have the tendency to exclude or manipulate the data corpus according to preconceived concepts.
- Boxes and grids in time-space schemata have the tendency to build up dichotomies and exclusive categories. They hide the broad middle ground of exceptions (for the concept of middle ground see Smith 2001). They level individuality and complexity of individual cases to an average and keep us from looking carefully enough at the contents of the boxes.

Even though, in the past, I was not able to perceive the source of these problems, they had always been present and had had a bad impact on my work. As you can imagine, when I finally came to understand the source of the problems at play, I despaired, for these results were not what we expected. I was supposed to look for a proper chrono-spatial order, but what I found was a complete mess. As no traditional time-spatial scheme would be able to clean up this mess, a different way of looking at time and space had to be found.

The microarchaeological perspective and the micro-archaeological 'messworks' of fluid data from interchangeable reference sites

In accordance with the Cartesian worldview, traditional archaeology perceived the world as a place of order. However, as both the world and archaeological findings are influenced by an abundance of factors, it is impossible to find clear classification criteria. Thus, they are not as structured as Descartes and, in further consequence, traditional archaeologists thought. In fact, the world and archaeological sites are no place of order, but are largely places of disorder. Upon noticing this, T. Ingold decided to substitute the concept of 'networks' with 'meshworks' (Ingold 2011, 69-70). While Ingold had sought to eradicate the idea of a structured world, the expression 'meshwork' does not do justice to his noble intention, since etymologically 'mesh' refers to 'fabric' or 'net' both of which are structured to a certain degree. For this reason, I propose 'messworks' as an alternative for 'meshworks'. The realisation that the world is a chaotic place leads to the question of how this chaos can be interpreted.

In the last two years, I have come to appreciate F. Fahlander's microarchaeological perspective (Fahlander 2001; 2003; 2008; 2013; *Homepage of Social Microarchaeology*[5]) as a wonderful toolkit for handling archaeological matters and messworks. His reflections became the basis of my new approach of structuring time and space of Neolithic remains in Switzerland and adjacent regions.

Fahlander created a theoretical background for "the relation between the grand scenario of history, on one hand, and local and particular developments, on the other [..]." He stated that:

> "[This] *is one of the most hotly debated issues in Social Sciences and Humanities. At times, one of the two aspects tends to dominate the debate. To a certain extent, the so-called 'postmodern' phenomenon stressed the particular, and today there are some tendencies towards a renewed interest in the big scenario. However, this is not clear-cut; but is a rather complex issue. For instance, a particularistic and constructionist vision may be as deterministic and essentialist as any general scenario of human development. What is general and particular is not pre-given; it depends on our research focus and the problems we address. 'Microarchaeology' is a tool-box of concepts and perspectives developed as a conscious and coherent approach to this complex set of issues. In order to make archaeology a viable means for addressing social theory and the complexity of social life, it is important to retrieve more*

5 http://www.mikroarkeologi.se/ [April 2016].

detailed and complex information from the fragmented sources. We must, simply, be better at exploiting the potential information content of our sources. This can only be achieved by detailed small-scale studies. Microarchaeology is thus a 'from the bottom up' approach rather than a 'from the top down approach'.", Fahlander, Homepage of Social Microarchaeology, see Fig. 5.

"The basic idea is to do a number of independent studies of a number of locales and then relate the similarities and differences of identified practices in order to reach a larger frame (see fig. 5). A first step in the small-scale studies is to establish relations between events in order to get at the internal development at each site. We need to find some sort of relational chronology of practices, or bundles of practices, in order to make use of as much information as possible (and to grasp social variability, including the queer and strange). By doing this, we can trace changes, internal variation on a much more detailed scale than by the traditional approach.", Fahlander, Homepage of Social Microarchaeology.

The microarchaeological toolkit is easy to adapt to the chrono-spatial problems mentioned above. The only thing we have to do is to leave out the tribulations of establishing rigid time-space schemata. We even have to take a step further back from Hafner and Suter's level 1: we have to abandon the regional groups, the chronological grids, and the chronological terms. Nevertheless, we should stick to the most representative and best dated reference sites. Some scholars fear that this approach will result in a schema of too great complexity; however, as the

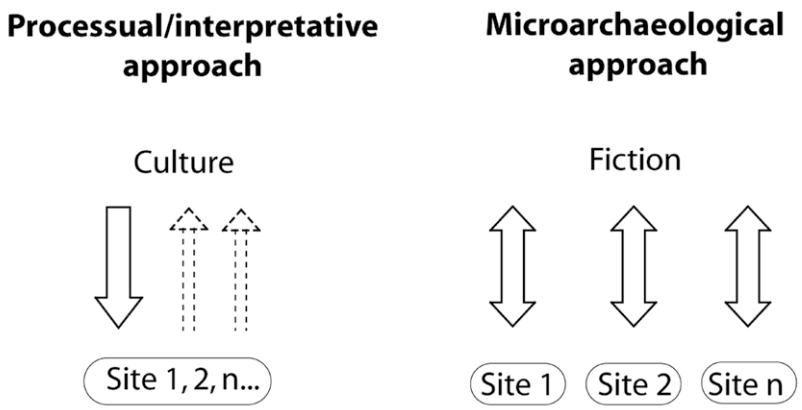


Figure 5. Fahlander, Fredrik: "A schematic illustration of the traditional top-down perspective and the microarchaeological approach. Left: The dotted arrows refer to the lesser impact of individual sites on the general idea of a culture, time period or region. Right: New and old information from individual sites are equally important for the continuous reconstruction of a general fiction (i.e., image, idea or preconception) of a time-space section" (source: Fahlander, Homepage of Social Microarchaeology.)

group of sites that can be used as reference sites is quite small, the schema will be more accurate than, and just as easily comprehensible as, current schemata. For the chrono-spatial order we only need the names of the sites, an appropriate assessment of their data, and their coordinates in space. All this and much more can be stored in permanently ameliorable and GIS-supported databases. Similar to modules of a 'mobile' (kinetic sculpture) the information about the reference sites float suspended on flexible strings in the vast rooms of space and time (see Fig. 2). We can exchange them with better ones, downgrade or upgrade them, and adjust them to new data. Moreover, we can do so without destroying the whole construction, because every single element is independent and interchangeable. According to our questions and our focus, we can add other sites with smaller inventories, poorer dating, and lower quality of features. The students' attempts (Doppler and Ebersbach 2011) proved that this approach does work out. Specific items such as '*Schulterbandbecher* (shoulder-band-beakers)', '*Tulpenbecher* (tulip-beakers)', or combinations of traits ('pottery styles', see Heitz and Stapfer 2016, as well as these authors in this volume) can be mapped easily and endlessly.

Figure 2 illustrates what one such microarchaeological manner of representation without any cultural assignation could look like by using the example of sites mentioned in this paper. In order to underline the importance of waters for Neolithic networks, the map shows both the sites and the bodies of water. The grid shows the individual sites and their possible dating according to chronological evidence (from radiocarbon or dendrochronological dating). Most of them (Fig. 2, 2.7-16.18.19) would be reference sites in my suggestion for chrono-spatial representation.

I am convinced that rigid space-time models are typological relics from a time when the storing, mapping, and publishing of big data was still a technical problem or too expensive. As these models had to be easy to produce and understand, they tended to be simplistic and meaningless. Some archaeologists still argue that schemata and the names for cultures and periods facilitate the communication with lay people and improve the understanding between archaeologists. However, remembering typical discussions between archaeologists about chrono-spatial questions and schemata, I doubt that these concepts have high communicative values outside of mock and exhibition fights. Furthermore, lay people are not interested in such casuistic problems of specialists. We have far better stories to explore and tell.

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Weblinks

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PART THREE

Actor-centred perspectives: Movements of making – mobilities of pots, potters, skills and ideas

Movement in making: 'Women working with clay' in northern Côte d'Ivoire

Iris Köhler

Abstract

Central to this article is an ethnographic case study of pottery production in today's West Africa and the entanglements of people, pots or pottery-making and mobility or places. The small village of Sangopari in northern Côte d'Ivoire has become a regional centre for the production of pots and supplies its products to customers within a radius of 30 km of the village. Within the village pots are omnipresent; wherever you look you see pots in different phases of production. A major part of the village's female population is able to make pottery. They do so with simple tools in their free time, in addition to their manifold domestic and farming tasks. The focus of this paper lies on these women who are involved in pottery-making, their daily work, their decisions about what they do and how, why and where they do it. It describes, among other things, how pots are made out of clay, which techniques are used, which places potters occupy and what is done with the products. The paper is an extract from the results of ethnographic research carried out among these pottery-making women between 1996 and 2000. With the help of a special example, the author tries to show what people have 'written' in the pots and what may have been materialised.

Keywords: *pottery production, ceramics, West Africa, ethnographic case study*

Research area

The research area this article focuses on is located in northern Côte d'Ivoire in West Africa, in the region inhabited by Nyarafolo-speaking people (Fig. 1). The Nyarafolo are a sub-group of the Senufo and live in the area around the town of Ferkessédougou (Savanes, Côte d'Ivoire) and to the north-east of it.

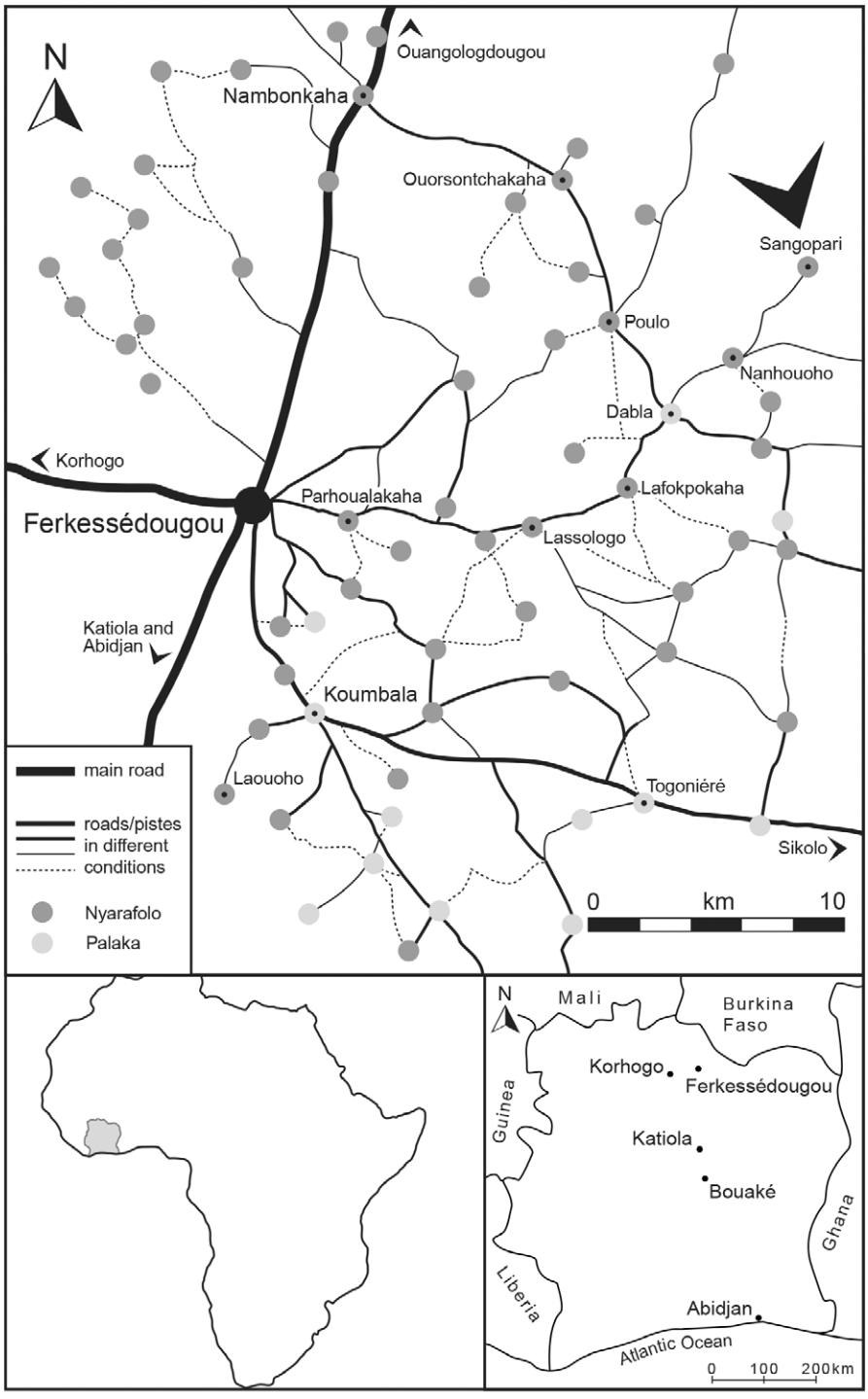

Figure 1. Area of field research (figure: © 2016 I. Köhler).

Thirty kilometres from Ferkessédougou, a small village is located at the bottom of a hill.[1] Sangopari, with roughly 330 inhabitants, is one of the last settlements towards the scrubland and the border with Burkina Faso. Its residents are farmers. Cultivation there is characterised by a mixture of subsistence farming, production for national markets and, to some extent, for international markets. Most farmers grow maize, millet, yams, rice, peanuts, tomatoes and spices; and they do so generally without the help of a plough. As a consequence of the social unrest and the ensuing civil war and temporary division of the country, the villagers have faced a number of economic changes: for example, growing cotton has ceased; the risk of theft by groups of thieves has risen and markets and trade routes have become more insecure. The project of building a water reservoir, the planning, or rather the 'desiring' of, which goes back twenty years, will result in further extensive changes if it is realised.

From the ethnographic point of view, my data are relatively old, but not from an archaeological perspective. One could call my work the excavation of a find spot dating from very recent times, with direct access to the social, economic and cultural context of the time concerned.

Who works with clay?

On arriving in Sangopari, one thing quickly becomes obvious: it is only the women who make pottery. Men are not forbidden to work with clay but they would not do it, simply because it is women's work. Men have reservations about working with clay; nevertheless, one man told me that he had helped his grandmother with collecting clay. The gender-based division of work with regard to pottery-making is seen as a matter of course and not questioned, just like other activities assigned to men or women.

Female persons of all ages make pottery – married women, old women, unmarried girls; and even very small children may play with clay. Pottery-making is basically open to every woman. So, in Sangopari pottery-making is not tied to endogamous birth-descent groups, as is often the rule in West Africa. It is basically open to all women in Sangopari, even to members of other ethnic groups who do not actually live there.

Sangopari is the only village within a radius of 30 km where pottery is made. But it is not the only place where clay for the production of pots can be found. People name several villages where pottery was made in former times but the old women there who worked with clay are now dead, they say. The reasons why pottery-making is no longer attractive to women can be seen in the social changes that have taken place within the last sixty years. Why this is the case will become clear later on.

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1 The author carried out ethnographic research in and around this small settlement between 1996 and 2000, for a total of 16 months. The study is a snapshot of the relatively calm times before the beginning of social unrest in 1999, the ensuing civil war and the temporary division of the country in 2002. For further ethnographic information, see Köhler 2008.

Strictly speaking, there are no potters, even in Sangopari. The term 'potter' is only used by the local people to speak of potters in the past. Today one says 'women working with clay'. Not even the women see themselves as artisans or 'potters'. In this article, these women are called 'potters' for the sake of simplicity – and because they are doing potters' work.

What is clear is that there are no full-time workers or 'specialised artisans' in a narrower sense in Sangopari, who are predominantly producing pots. Women working with clay are specialists in the sense of having special knowledge, in contrast to other women in Sangopari or in other villages, as I will explain later on. But the women involved in pottery are not professionals or full-time workers. Instead they are primarily wives and mothers, working in the fields, gardens, houses and compounds, and they only work with clay during their free time to earn money for themselves. Pottery is primarily made for selling in the surrounding markets. Certainly, the potters all have pots in their households, but only one woman made pots only for her own use and not for selling.

In the village it is generally said that 'all women' make pottery. Looking at the women more closely, it is striking that in the part of the village where most potters live, 43 out of 52 adult women are able to make pots – that is a percentage of 83%. In addition to these, there are four unmarried girls with the skills of experienced potters and at least ten girls who are still learning the craft with varying knowledge and skills.[2]

Although pottery is made throughout the year, production declines drastically during the rainy season. There are several reasons for this: first, as already mentioned, women have to find enough time for making pots in addition to their daily domestic work. Second, there is the problem of collecting clay, which is dangerous or even impossible in the rainy season. Third, when women begin constructing pots, their aim is to perform the whole process and finish the pots. This means, for example, that the pots have to be able to dry without being drenched with rain in the potters' absence and dry wood for firing has to be available in sufficient amounts.

Places of the potters in or around the village

Nyarafolo villages are rural conglomerations, not enclosed within walls, but with most doors facing towards an imagined centre of the compound. The various compounds are not visibly separated from each other; there are no fences or walls between them.[3] Most daily activities take place in the open air and anyone can watch. This enables children to become familiar with the ways adults act in their daily lives: children are present when adults work in public; they hear adults speaking

2 In his ethnoarchaeological study, T. Knopf worked out, among other things, that in subsistence-based economies pottery is done almost exclusively by women and, where this is the case, by every woman or most women. In most such cases, they use coils for building up their pots or combine different techniques. Learning pottery by using coils, newcomers learn not only from their mothers, but also from other women, like their mothers-in-law (see Knopf 2002).

3 In another article I have described the spatial arrangement of the compounds in detail (Rödiger 1999).

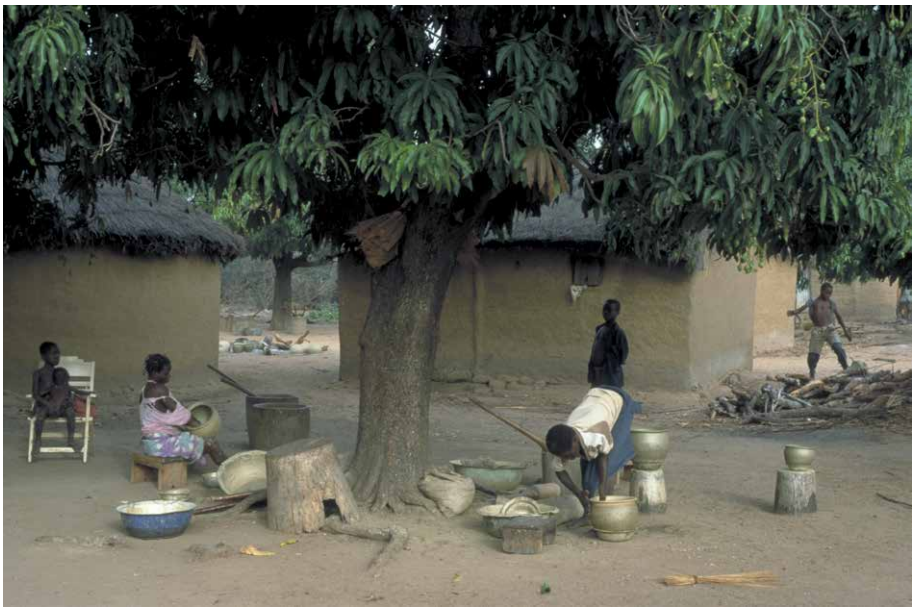

Figure 2. Women working with clay under a tree in their compound (figure: I. Köhler).

about numerous topics; observe them when they rest and watch them making pottery (Fig. 2).

As we have seen, the actors in pottery-making are exclusively women, for it is a female affair. Women working with clay do not separate themselves from women who are performing other activities or from women who are not able to make pottery. So, they may be watched by anyone, not only by their own children or relatives.

Mobile work places

In this small village, there are no fixed areas or locations for working with clay – except the clay pits outside the village and the areas for firing the pots at the edge of the village. Women work with clay in the immediate proximity of their houses in the same places where they perform other kinds of work. They choose shady places, under the porch roof in front of the house, or under trees in the compound. Women store their utensils inside or outside their houses; they leave their work pieces to dry and put everything else away in a safe storage place in the evening. The places potters occupy are cleared after finishing work and are then used for other kinds of work. In Sangopari there are thus no fixed workshops. The work places are mobile, temporarily occupied and correspond to other spaces women use.

Although it is not verbalised, it is understood that no woman would make pots in front of a man's house, where the owner himself usually sits. Apart from anything else, this would not be practical. The utensils would be further away, paths would be longer, other work, like looking after small children, would not be so easy to coordinate and the company of other women would be lacking. The production of pots among the Nyarafolo in Sangopari does not require hours of non-

stop, uninterrupted work, as we will see. The work is divided into several steps, according to the demands of the clay and phases of drying. In short, the ideal place to make pots is wherever the women usually spend their time in the village.

Clay pits – beyond the village, within walking distance

Another place where potters work is the clay pit, where the raw material comes from. Women in Sangopari know four different places, which can be reached after a walk varying between a few minutes and fifty minutes.

One clay pit is only a short walk away from the settlement. This is the main place used. Another place nearby was abandoned after a potter was trapped and died inside the clay pit. The third and fourth sources can be reached after a walk of thirty to fifty minutes. The one furthest away is on the bank of a small stream that contains water only in the rainy season. The potters head for this place only a few times each year, when the clay is accessible on the surface. Although it is a long way to walk, they value this clay because it is more viscous and 'solid' in contrast to the home clay, which is more like sand, as they say. So, they distinguish different clays with regard to their material properties. If the more viscous clay is available, the potters mix the two kinds of clay together.

The most frequented source of clay is located near the village in an open area that is on a slight slope. Here, women dig holes up to several metres long. The place changes over the year. They dig several low-ceilinged tunnels, trying to find the best clay. Women use these holes together, creeping inside – several women at the same time, if there is enough space, and choosing the best spot in which to work. 'Where it is hard to dig', they say, 'the clay is good'. Whereas new holes do not reach very far below the surface and the women may be seen easily from the outside, older holes extend deeper into the ground (Fig. 3).

The potter's aim is always to dig out the best clay possible with minimal effort. This is a cause of rivalry, because when a woman finds a layer with good clay and has to leave, other potters may begin digging there. If a woman digs out more clay than she is able to carry and leaves some piled up beside the pit, it may be gone when she comes back. However, sometimes women work together as a team, with girls or elder women waiting outside to take the clay and collect it in big enamel bowls for transport back to the village (Fig. 4).

In the rainy season the pits become flooded and tend to collapse. This makes them too dangerous to use. For this reason, potters build up a supply of clay before the rainy season begins.

Firing places – at the edge of the village

In contrast to the mobile work places inside the village, firing takes place at special places outside the settlement that are used exclusively for firing pots. There is one place at the edge of Sangopari with up to 13 firing sites. Potters may use the site of a parent or a friend if they do not have one of their own. Other potters have firing places at the edge of the village close to their compounds. The process of firing is described in more detail below.

Figure 3. At the entrance to the clay pit: a potter digging clay next to the surface, another waiting outside caring for a child (figure: I. Köhler).

Figure 4. Arriving at the village of Sangopari on the way back from the clay pit (figure: I. Köhler).

Processes of making pots

Pottery made in Sangopari is totally handmade. Every stage of the work, from digging clay to firing the dried pots, is performed with simple tools and utensils. These can be acquired for a very small capital investment, or they are available in the households.

The utensils used are: old enamel bowls and plates with holes or without a bottom; a small adze; a mortar and pestle; pieces of old pots; sieves; bowls with water; old sacks or plastic covers; reflectors of torches replacing the shells used in former times; coiled springs from a bicycle saddle used for surface treatment, which have replaced plaited-fibre roulettes; snail shells; pebbles; fragments of calabash gourds and pieces of cloth (Fig. 5).

Figure 5. Some of the utensils potters use in Sangopari: (A) the saddle springs (~ 10-12 cm) serve as roulettes; (B) the utensils in use: a piece of cloth, a fragment of calabash gourd, a saddle spring and the reflector of an old torch (figures: I. Köhler).

After the clay has been dug out and transported to the village, it is spread out close to the house to dry and obvious impurities are removed. Immediately before it is used, the material is pounded in a wooden mortar and sieved. The clay is used in its natural composition and is not mixed with any kind of temper.[4] The required amount of clay is mixed with water and kneaded by hand in a big enamel bowl or on an old sack and then left for some time, half an hour or an hour.

Shaping process – the potter moving around the pot

Most pots are built up by forming a big cylinder with a rounded top, which is placed upside down on a ring, which is an old enamel plate without the well. This is often placed on the bottom of an old, upturned mortar (Fig. 6). In former times, or for smaller work pieces, a fragment of an old broken pot is used in which to place the cylinder of clay.

Here, the forming process of the most frequently produced pot will be described. Except for very small pots or very big ones, which are placed on the ground or on one's knees, the pieces are left on the mortar to be worked on. Some women prefer to construct their pots in the enamel ring on the ground. Whatever the case, the work piece remains stationary, while the potter moves around the piece. These potters do not use a rotating wheel.

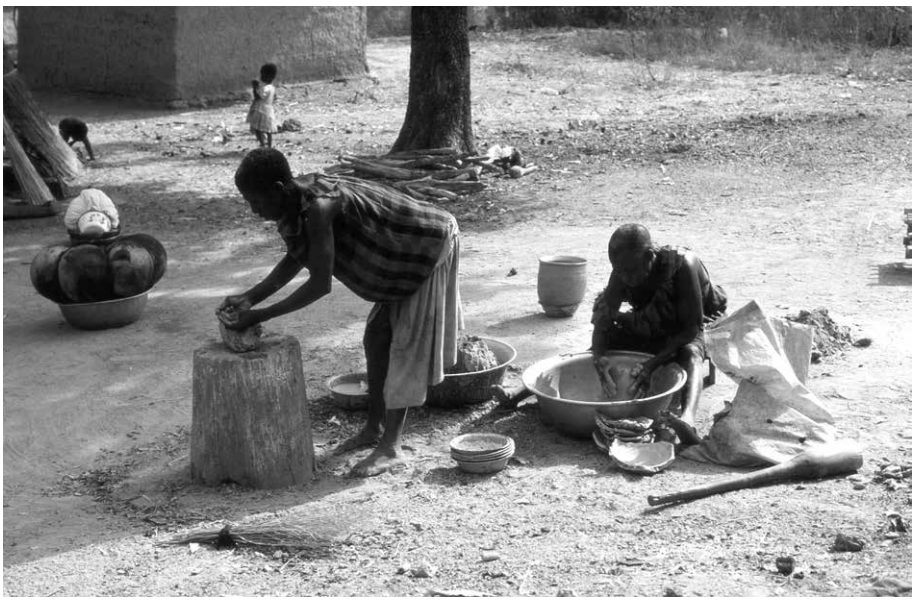

Figure 6. Two elderly potters begin making pots. In the background is an enamel bowl filled with pots piled up ready for being taken to the market (figure: I. Köhler).

4 I suppose the clay contains pieces of sheet silicate minerals. Mineralogical analyses would give detailed information about the composition of the different clays.

Figure 7. Pot built up out of a lump of clay with coils added. Left: a potter correcting its rim with her thumb; right: smoothing the coils from the outside with a piece of calabash (figure: I. Köhler).

Figure 8. A potter is shaping her workpiece while walking around it (figure: I. Köhler).

The cylinder of clay on the mortar is smoothed on the outside, from the bottom up, a light depression being made on the upper part with the left hand.[5] The interior of this cylinder is dug out by hand. The fingers, especially the forefinger, function as a knife and form the walls of the pot. The material dug out is now used for building up the walls with coils. With a piece of gourd, the women smooth over the coils and scrape, smooth and form the walls on the interior and the exterior (Fig. 7).

Until the desired form is obtained, the women leave the piece immobile on the mortar and turn around the piece themselves. Depending on the stage of the work they are at, they turn clockwise or anti-clockwise, walking sideways, nearly backwards (Fig. 8). While working with the fragment of gourd in the interior to form the belly of the pot, the women do not look inside, where they are working, but they look at the outside to judge the form of the belly. The rim is shaped with thumb and forefinger, the thumb pressing surplus clay forwards, and maybe sticking it on another spot. The rim is finished with a piece of cloth. Some stages of the work are repeated, forming the belly from the interior, smoothing the outside and shaping the rim again and again. While working on the next pot, the women leave their pieces to dry and rework them from time to time. After some time, the shoulder of the pot is decorated. A smooth pebble is used to make a narrow, roughly polished strip going all around. Lines are drawn using the piece of gourd or a pebble, and dots are made with a point of this piece of gourd or the top of a snail shell.

Surface treatment – little movements, little gestures

When the pot is firm but not completely dry (leather hard), surplus material is scratched out of the interior with the reflector of a torch, giving the interior a rounded form. After removing the piece from the enamel ring, the bottom of the pot is treated in the same way from the outside and scratched until the desired thickness of the wall is achieved (Fig. 9). Competent potters know how much to scratch off by the weight of the pot.

After drying, the pot is rubbed with a lump of wet clay to cover it with a thin layer of the material, both inside and outside. On the inside, this slip is polished with a smooth pebble, while the outside belly is textured by rolling a saddle spring over it. The pots are not treated with any other slips, paints or baths, neither before nor after firing.

Notwithstanding their identical shape and decoration, the potters themselves, or anyone with a trained eye, can always distinguish the pots according to their producers.[6] For judging the pots, apart from cultural standards, the character and competence of the potter plays a role, as well as individual preferences with regard to decoration depending, for example, on which utensil is used, or whether the tip of a fragment of calabash or the point of a snail shell is used.[7] Variations in decoration details are usual and are accepted – for example the exact number of dots or

5 The majority of potters are right-handed, but left-handers are not unknown.

6 In this context, see also Bolliger Schreyer 2009, who has analysed Late Bronze Age ceramic material from Zug-Sumpf in Switzerland. Analogous to graphology, she worked out 16 'handwritings'.

7 Customers recognise and value different qualities; some women have made a name for themselves; their products are bought selectively by local salespersons.

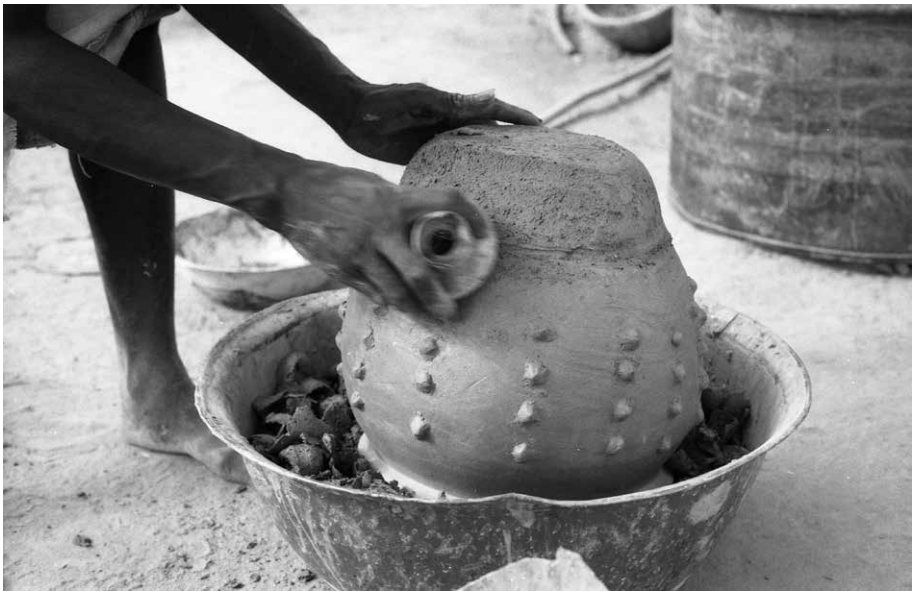

Figure 9. A woman scratching surplus clay off the bottom of a pot with the reflector of a torch to get it rounded (figure: I. Köhler).

lines. These lines and dots are not found on every type of pot. Furthermore, decoration serves as a mark or label. Especially in the markets, when a multitude of pots are presented together, a pot may be assigned to its creator. Potters who separate themselves from the others in the markets are not forced to decorate their pots with lines and dots. On the other hand, potters value the decoration as beautiful; they say that they cannot change their style of decoration, because consumers consider it when choosing which pots to buy.[8]

The time needed for drying interrupts the production process and draws it out. Because of this, the women normally do not make only one pot. They usually construct several pieces, profiting from these interim times to execute different work stages – and to do other things like breastfeeding a baby, fetching water or wood, preparing food and so on. Generally, they produce the number of pots that easily fit into the big enamel bowl they use to transport the pots to market, or double this amount.

Firing

Totally dried work pieces are stored in or beside the women's houses before they are taken to the firing places outside the compounds. Every potter organises her firing by herself, collecting firewood in the neighbourhood of the village or on the way home from the fields. Women like using bark and they usually do not mix fire-

8 The texturing of the bottom and the belly of the pots also has another functional benefit: the surface is broken up to enhance resiliency and withstand the thermal shocks of firing and cooking.

Figure 10. Firing place. The potter in the foreground has constructed two bigger pots (figure: I. Köhler).

wood collected for cooking with that for firing pots. The firing places are littered with ash and the remains of charcoal and pieces of wood (Fig. 10).

Firing places are initially prepared by scraping a flat depression in the middle of the heap of ash. The pots are placed upside down on a layer of wood and bark. Most firings average about five to twelve pieces. The potters, who have brought glowing embers with them, start the fire by putting these between the pots or on one side of the 'heap'. This is covered with more wood or bark. Before the fire has burned down, the women cover the mound with the mixture of ashes, charcoal and pieces of wood they scraped out at the beginning. Some women use the leafy branches of a plant that grows like a hedge around the village as an interface layer so that the fire continues after the whole mound has been covered.[9] The mound is left for about an hour before the potters come back to roll the pots out of the embers with long sticks.[10] They test the quality by knocking with a finger on the belly, like we do with porcelain. When the pots have cooled down, they are kept inside the house overnight or in a kind of portico and taken to the market the next day.

How is pottery production organised?

Women organise the whole process backwards, counting back from the next market day. They only begin making pots when they plan to go to the market or have an order to fulfil. Normally, pots are not made until they are actually needed – they are finished one or two days before the market day and fired on the previous day. There is no safe place in the compound or in the house where such fragile goods

9 *Loofah luffa* of the cucumber family, *Cucurbitaceae*.

10 With the help of Seger cones I measured temperatures lower than 685° C and more than 780° C.

can be stored for a long time, because family members and children may enter without permission. Keeping pots means risking damage before the work has paid off.

Unlike everyday work within the family economy, pottery-making does not have to be learned at a certain age. Making pots is not part of every woman's duties. Knowing how to produce pots is a qualification that is additional to the repertoire of everyday tasks – it is an option. Nevertheless, it is learned within the everyday context. Women working with clay in Sangopari are specialists in the sense that not every woman is able to do this work. Learning how to make pots is a long process, which is described in more detail in Köhler 2008 and 2012. Without special knowledge, repeated practice and ability or a kind of 'flair', it is not possible to make pots.

There is no strictly organised division of work among the potters. But it can happen that more than one person is involved in the production of a pot. Girls participate in pottery-making, just as they participate in daily life. From collecting clay and transporting it to the village, to fetching water or going to the market, they act as assistants. A daughter or daughter-in-law who is still learning or already skilled may be charged with polishing or finishing pots for her mother or mother-in-law, without her having to master the whole production process. The person who forms the pot is regarded as the originator of the pot. Other people involved are disregarded.

Women alone exercise control over the production and distribution of the pots. There are only single traders. In the markets, consumers and some local sellers take the pots. The profit potters gain by selling their pots does not serve as a means of subsistence. Men have to supply the needs of their family by farming. They have to provide the household with 'solid' food, growing for instance maize, yams, rice, and millet. Married women are responsible for providing liquid food – meaning the sauce for meals, but also drinking water.

It is only after women have completed the tasks that secure their own and their family's means of survival that they can make pots. But it is in their personal interest to make pots and sell them for profit, as they spend their money on soap, kerosene, medicine, sugar, clothes or other items for themselves and their children. Additionally, they regularly buy ingredients for the sauce, such as oil, spices, peanuts, and tomatoes. Thus, the income from making pots flows into the livelihood of the household.

Using pots within the village

The women in Sangopari produce exclusively utilitarian pottery. Their products are mainly used for storage, cooking or preparing meals, rarely for washing, and hardly ever as eating or drinking vessels. Pots with the function of transporting have been replaced by containers of other material, such as enamel or aluminium (Fig. 11).

Most potters in Sangopari are able to produce only a few types of pots. Single, very skilled and experienced women manage to create all of the pots shown. But all women who make pottery master one type of pot, a kind of standard pot, which is made most frequently and which constitutes the basic shape for other pots. We

have already seen the manner of constructing this vessel. This standard pot is omnipresent in the settlement and in the nearest market. It is made regularly, whereas other types are produced only infrequently and some only on explicit order.

The standard pot is multifunctional. Solid and liquid substances are stored or cooked in it and it can be used for preparing herbs, heating and keeping them. This pot is generally used for rituals or traditional medicine. Pots contain substances that are expected to protect one's compound or are used in the context of religious traditions. For example, some diseases require treatment with an earthen pot. It has the advantage that it can easily be made unusable after the treatment is finished, so that no one will get the same disease by using the same pot.

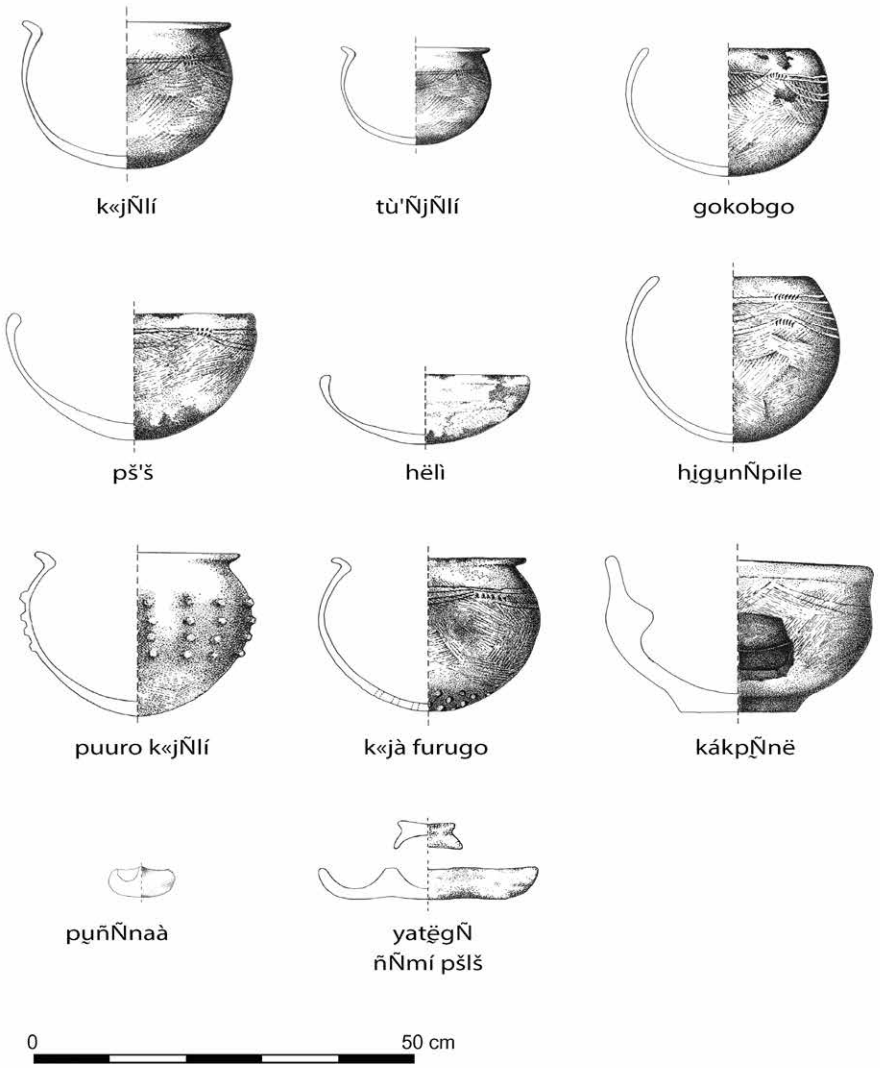

Figure 11. Various types of pots (figures: A. Haller, I. Köhler).

Changing places, shifting context – pots with multiple meanings and functions

Pots are found in different places in the village. As already seen, pots in diverse stages of production are spread out where women work with clay. Pots are positioned where they are used: in women's houses behind the fireplace and on the low wall built from the central pillar to the outer wall serving as a room divider. Things are stored there, protected in the piled-up pots. Those pots behind the fireplace must not be touched by men, so women may hide things in the pots. Huge pots positioned directly beside the entrance of a women's house contain water for cooking and washing for all members of the family. In men's houses one may find pots containing medicine or embers to heat the house on cold nights. In houses with ritual functions, one may find an earthen pot. Outside the houses there will be pots used to wash newborn babies containing a brew of special plants that would stain plastic containers. Huge pots may be stored in the middle of the compound near racks, beneath which firewood is stored and upon which dishes, pots or other things are spread out to dry out of the reach of small children or animals. Other huge pots are found in tobacco fields directly behind the men's houses. Some household objects, including pots, are deposited beside the road leading out of the village. This may look like discarded rubbish, but these things are intentionally placed there in a ritual way after someone has died to help them in the other world. Women are also expected to do their work after death. Being a counter world, the things are damaged while being deposited.[11]

In general, pots are positioned at the places where they are used or where they are needed. These places may be fixed in the case of water storage pots, or they may be temporary, for special security or for a limited period of usage. They are located where they are handy for use, where they do no harm or do not disturb anyone, where there's space, or where they have a special meaning.

Earthen pots have different properties or performance characteristics, as J. M. Skibo (Skibo 1994, 113-126) has pointed out. Pots are valued for keeping water cool because of evaporative heat loss, or for storing heat during cooking. Furthermore, special qualities are attributed to pots. Meat is said to taste better if cooked in an earthen pot. Local people buy pots to prepare traditional medicine in, because very often the preparation of such medicine requires an earthen pot.

Transgressing times and places – old pots, 'foreign' pots

As numerous women are able to make pottery, questions concerning the inventories of their households arise. The spectrum of pots produced in Sangopari does not necessarily correspond to the inventory existing in the village. The pots found in the houses and compounds are of different origins − in time and space. There are pots produced by the women themselves and pots produced by their master

11 As the other belongings of a woman are divided between her parents, maybe things that are already damaged are deposited, or they are made unusable to avoid them being removed by an uninvolved person.

Figure 12. Big old pot of 'foreign' origin, filled with tobacco to be fermented. It is stabilised with various strings, fibres and a bicycle tyre (vessel's height approx. 45 cm) (figure: I. Köhler).

Figure 13. Fireplace in a woman's house with standard pots piled up, containing condiments for cooking (figure: I. Köhler).

potters – often their mothers or mothers-in-law.[12] These are pots created by their own group, today or in the past. Some of these pots are of other types and often bigger than those made today. These days, women are not able to create the huge pots used, for example, for preparing beer from millet. These pots are valuable; even if they can no longer be used for containing liquids, they are repaired and re-used for storing dry things like tobacco (Fig. 12).

In addition to these, there are pots from other social or ethnic groups and other places. Most of these pieces differ clearly from those made in Sangopari, for example in shape, colour, size, raw material used, construction techniques or decoration. Some of them were once exchanged for cereals like maize or millet, but this is an uncommon form of payment today: the price of the pot was the same volume in grain.[13] Pots for water storage are today bought exclusively in the town. They form part of every woman's household equipment (Fig. 13). Women often value pots because of their durability, or because of their elaborate decoration. The reasons why potters in Sangopari, who in general are people with limited resources, own pots they have not produced themselves, are manifold. Women see differences of pots and are able to identify their origin. Some buy a pot because they like it. They say it is 'beautiful' or 'good' by using the same word without having the linguistic differentiation.

Selling pots beyond the village – mobility to market places

Some places frequently visited by the potters from Sangopari, which have not yet been discussed, are the market places. Women in Sangopari rarely create pots only for their own use. Production is primarily for sale in the local markets or on demand.

There are three different markets used by the potters for selling their pots. One is 10 km away from Sangopari, the other two are 20 and 30 km away; all are held once or twice a week. Potters choose markets with regard to the time of absence involved and the prices their pots may realise.

The nearest market is in a small village located at a crossroads, called Yarabele or – because of the day the market takes place – Dabla (Fig. 14). Among the Senufo, the week has six days only, and the market is held every six days. This market place is 10 km away from Sangopari and can be reached after a walk of about two hours. It is the key market for the potters from Sangopari and every woman from there sells her products here. Those who are prevented for any reason, such as illness, urgent work or important visits they need to make, will send a girl to market with the pots. This market day is also a social event, ideal for meeting people, hearing the latest news or drinking millet beer.

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12 There are differences between the house of a non-potter and a potter's house, where the inhabitant has been closely related to one of the old master potters. Women who are not able to make pots by themselves are disadvantaged in two respects: they cannot produce pots when they are in need and they earn a lower income by doing other work. Making a comparison between these different houses or households would be a promising research theme.

13 This is a possibility of acquiring a new pot without the availability of cash.

Women from Sangopari are the only potters to supply this market with their products. Here, prices for the pots are relatively fixed, varying from rainy to dry season and depending on the supply of pots. Women are not always able to sell their products within one day. This forces them to store the remaining pots with someone living in Dabla until the following market day.

The next most important market place is about 30 km away in the town of Ferkessédougou. Market day is every Sunday and every Thursday, the latter being the main market day. Only young women or older girls from Sangopari go there on foot, leaving as a group in the morning, spending the night with relatives in the town or somewhere nearby, trying to sell their pots the next morning and returning to Sangopari late in the evening.

Often, the potters do not go there themselves – not every married woman can afford to be absent from the household for two days. In this case, the woman sends a girl or a young woman to the market with the pots, taking the money earned for herself and sending the same girl to market on another occasion. This time the girl may keep the profit for herself.

In Ferkessédougou, the quantity of pots from Sangopari is smaller than in the nearest market place; but one finds a wide range of pots from other regions and other ethnic groups, who produce pots of different shapes and sizes, which are often sold by professional salespersons. Here the products from Sangopari have to compete with lots of other pots. Potters from Sangopari accept this, and the long distance to be walked, because the market in Dabla is often saturated – and in Ferkessédougou they can get higher prices for their pots.

Figure 14. Market day in Dabla: customers looking at the pots while the women from Sangopari wait in the shade (figure: A. Haller).

The third market place is about 20 km away, in the town of Nambonkaha and is called Nafuo, again corresponding to the day on which the market takes place every six days. Prices are higher for pots from Sangopari and women manage to reach the market, sell their products and return to Sangopari in only one day.

Another kind of distribution functions informally. Some pots are only produced on demand. If someone has a need for a special pot, he may talk to the potter and place an order. After the pot or pots have been made, producer and client meet at a certain place, on a specific day, which is often the market day in the nearest market place. Sometimes customers come to collect their pots from the potters' house, referred to as 'the women come from over there on foot'. This system works, even if the price has not been fixed in advance, or if the potter is ill and can only produce pots after a delay. Even if the people involved do not know much about each other, communication about such special orders works, as it does in other spheres of life, and with other goods, 'through friends of friends', *i.e.* via a network of persons.

Seeing things as actors themselves, you can say that the pots find their way from producer to consumer, even without a market. The potters do not have to walk around offering their products in order to find someone who needs pots. Commissioning pots works, even where there are no close social relations or deep knowledge of each other.

Different market conditions and production on demand influence the range of pots available in the markets. Thus, the variety of products offered in the markets does not necessarily correspond to the whole repertoire of pots women in Sangopari are able to produce.

Pottery making in flux

Let me touch briefly on some aspects of change. Today, most potters are able to produce two or three kinds of pots, which are common in the markets and which are the most commonly required types. Women working with clay differ extremely according to their abilities and skills. Some pots can only be made by skilled potters who have many years of experience. They are old, and have learned from the old master potters.

Potters make pots they have seen being made by their master potters and which they dare to produce themselves. Especially huge pots are no longer produced. Potters today are only able to make pots up to a certain size. Decoration has changed and has become less detailed. Foreign shapes or decoration are normally not adopted. Some past master potters are said to have been able to 'calculate something in their minds' and create it. Only very few potters today try to create types they have seen elsewhere, for example in the market.[14] So normally the same pot types are regularly reproduced. Today's 'mass production' of the standard pot is also due to a lack of self-confidence on the part of the potters and the great number of young and inexperienced potters. Old potters complain about their master pot-

14 I remember two examples of pots whose shape was not harmonious, one with three feet and one with a kind of hollow foot or circular stand.

ters, claiming they kept their knowledge for themselves and prevented them from gathering experience in pottery making.

Changes can be seen not only in the types of pots produced, but in pottery-making within the region as a whole: in former times there were also potters in other villages. We can identify three factors that have influenced continuity in pottery-making in this region. First, young women learn in spatial and social proximity. Second, they continue to produce those pots that are predominant in the place where they live.

The small settlement of Sangopari began to grow seventy years ago as an 'offshoot' of another village. The first settlers brought with them their knowledge of pottery-making from their old village. Knowledge of pottery-making goes back to a handful of ancient master potters. In Sangopari this knowledge survived as in an enclave. Women who are not able to make pottery are often young *and* they came from other villages on their marriage. Because the society is patrilocal, a woman moves to her husband's compound in his father's village. Young married women who leave Sangopari for other villages often have no time to make pottery because they are kept busy by their mothers-in-law. Additionally, it is usual to do the work that is common there, as becomes clear talking with the women of Sangopari.

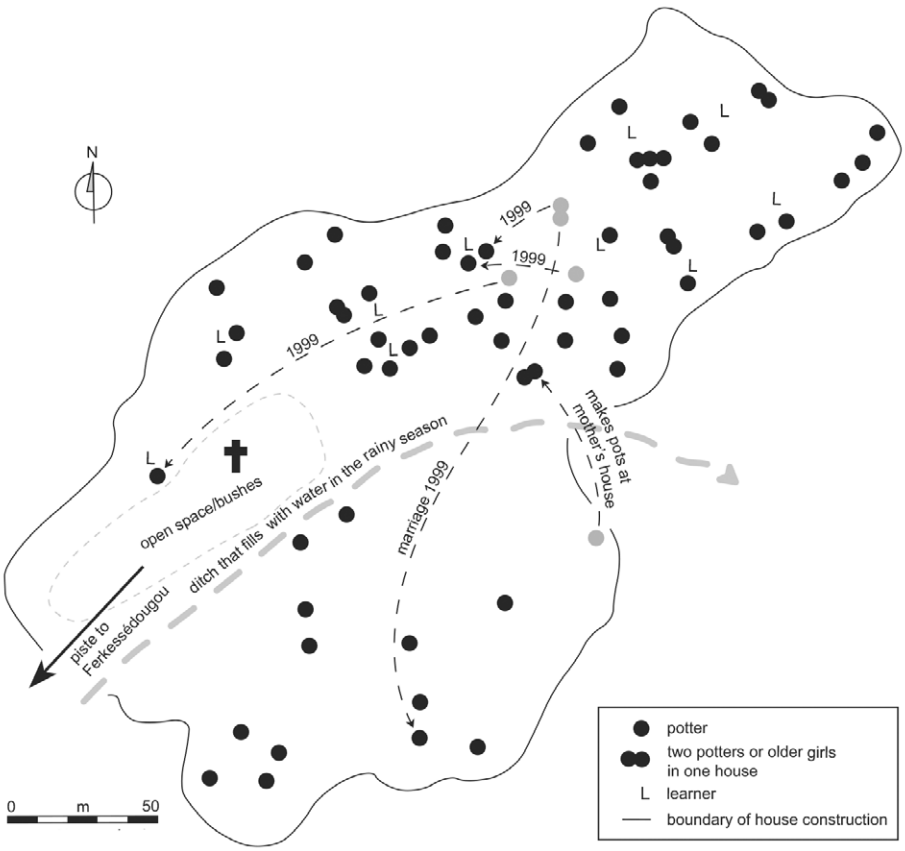

Figure 15. Distribution of potters within Sangopari (figure: © 2016 I. Köhler).

The third factor that influences continuity is a trivial, but not unimportant one: it is the possibility of generating income. Of course, potters are smeared with clay, especially when they return from the clay pit; and firing pots is hard and it makes them ill, the potters say. Pottery-making is considered as hard and dirty work – but nevertheless in Sangopari it is seen as the best way to earn money. Women do not need any initial capital and near the scrubland there is enough wood for firing pots, which is not the case nearer to the town, where required materials for certain types of work may not be available. Furthermore, in and around the town of Ferkessédougou, which has over 77,000 inhabitants, the level of infrastructure is higher; for example, there are regular bush taxis, a school and a clinic. Women therefore have other opportunities to earn money. So, some kinds of work that women used to do one or two generations ago have been abandoned. In short, women in Sangopari make pots to combat their poverty, and because of their limited access to other kinds of work.

Today, pottery is not made or is no longer made in other villages in this region, so that Sangopari has become a regional centre for these products. Even in Sangopari itself, the distribution of pottery-producing women is not evenly spread (Fig. 15). Why is this so?

This also has to do with the importance of learning in spatial and social proximity, which goes beyond the scope of this paper.[15] The first master potters all moved to the same part of Sangopari. There, younger women saw how to make pottery, helped the old potters and practised doing it themselves. In the other, younger, part of Sangopari there are more people from other settlements and none of the handful of old master potters lived here. Thus, the young women's argument that you do what is usual where you live applies both within the region and within Sangopari. Pottery-making is the predominant kind of work for women in Sangopari, mainly for the purpose of generating income. The central aspects relating to this work have been described in this article, as well as the spatial and temporal dynamics of the movements and mobilities of 'women working with clay' and pots.

15 For details of the learning process, see Köhler 2012.

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Form follows fingers

Roman pottery, the producer's perspective and the mobility of ideas

Nadja Melko

Abstract

This article engages in the distribution of superordinate ideas of forms of common pottery ware. Therefore, pottery fragments from an archaeological context are judged as a mirror for past people's value systems in crafts, which influenced the body technique of the producing potter via apprenticeship and acquisition. In return, the transformation of body memory from apprentice to professional is reflected in the produced object. When it is possible to identify value systems, superordinate shapes, individual hands of a single potter, his / her skill-level or a workshop style, we will be able to generate distribution patterns of culturally characterised ideas of forms on the basis of a more profound data set. This would allow us to approach certain phenomena of mobility in a second step: not the ´mobility of pots´, but the mobility of superordinate ideas of shapes.

For this, however, it is necessary to communicate intensely with representatives of pottery craft in terms of ethnoarchaeology, with the aim of gaining a deepened understanding of the acquisition processes of craftspeople in their environment. Roman wheel-thrown pottery from the vicus Kempraten, Rapperswil / Iona (Canton of Saint-Gall, CH) will be used as an archaeological example to elaborate.

Keywords: *knowledge transfer, learning process, embodiment, experiments, distribution patterns*

Initial situation

As a part of the project '*Limites inter provincias*' (University of Zurich), I research in a recently discovered pottery complex ('Area Fluh') in the Roman *vicus* Kempraten, Rapperswil / Iona (Canton of Saint-Gall, CH), a site of the late second century, which is located near the provincial border between *Raetia* and

Germania Superior.[1] Over the last ten years, the state of knowledge of the *vicus* has changed rapidly: several excavations, conducted by the Archaeological Service of Canton of Saint-Gall,[2] Switzerland, revealed a Roman site with a representative *forum*, prestigious mansions, two impressive sanctuaries and six pottery sites. For my thesis I have to investigate the economic situation in the second century AD on the basis of the northern pottery complex, 'Area Fluh' of Kempraten, with its five kilns and great amounts of sherds. These sherds show regional and supra-regional shapes and can be used as an indicator of different layers of a complex system of cultural areas and identities.

To unravel this system and to trace the courses of certain characteristics of vessels, I had to reflect upon the reasons that lead to the emergence and the dissemination of 'cultural shapes'. Especially when we look at distribution as the result of mobility, it seems to be helpful to differentiate between the mobility of craftspeople, the mobility of pots (through trade, human mobility, *etc.*) and the mobility of ideas. In the case of the common ware of Kempraten-Area Fluh, we still do not have hints for widespread trade, but the spreading of certain ideas of shapes through the transmission of workshop traditions, which is still not sufficiently used as a source for analysing beyond typological patterns.

Figure 1. Copying Roman bowls and the process of acquisition. School for pottery in Landshut (figure: N. Melko).

1 Imperial provinces of the Roman Empire: '*Raetia*' comprised an area of eastern and central Switzerland, south-eastern Germany, part of western Austria and part of Lombardy. '*Germania Superior*' comprised an area of today's western Switzerland, eastern France and south-western Germany.

2 German: *Kantonsarchäologie St. Gallen.*

To gain a comprehensive examination of the Kempraten pottery complex it seemed reasonable to use archaeological typology, chemical analysis of the sherds, and ethnoarchaeology as three pillars for my studies: in this way, it could be possible to compare typology as an academic construct for the generation of distribution patterns, with the origins of the clay and its routes of transport based on natural science analysis and with the results of my observations of recent potters to detect traces of workshop traditions on vessels.

While the chemical analysis of the Kempraten sherds has just started, the archaeological data and the ethnoarchaeological experiments are already in an advanced state. In particular, some theoretical and experimental thoughts I developed while working with the material can be presented in this paper. For the ethnoarchaeological part I visited the School for Pottery Apprentices in Landshut[3] (Lower Bavaria, DE) several times, where I was allowed to observe the teaching methods as well as the development of the trainees. I documented the attitudes of teachers and apprentices and was allowed to conduct special experiments by the courtesy of the head teacher and the staff (Fig. 1).

Typologies and distribution patterns

Facing the problem of constructing distribution patterns for so-called 'vessel types' and of categorising the production of the *vicus*, I increasingly struggled with the concept of typology in general. It was not only the jungle of terminologies, which are alternately based on technique, appearance, surface, site or researcher. It was also the question of 'what do we actually search for?' while using pragmatic-assortative typologies and seriations. 'Sorting methods' are most helpful when we have to deal with masses of sherds and subsequently masses of data but, in the end, what do we actually receive? What do arising patterns really show?

Given the fact that identities are articulated in objects (Connerton 1989; Lang 2006, 301; Sofaer 2007, 1, 4) and therefore information about the actions and values of the producer are stored in such cultural things, will common typologies based on measurements or empathic decisions be adequate? C. Hinker has critically observed that almost all typologies of Roman provincial pottery neglect the historical context of the producer and consumer of the vessels and it is our own modern cultural perception that is leading the typological analysis (Hinker 2013, 33; Read 2007, 69, 73). Also, the introspective, empathic method of typology could, but does not have to be, identical with an ancient perception of objects. Decisions to relate one sherd to a certain type or the creation of types *per se* would be based on our modern and individual experiences (Ettlinger *et al.* 1990, 45; Hinker 2013, 32). I would also like to consider the lack of our proximity to the world of craftspeople in general.

Of course, we cannot delete the temporal or spatial distance existing between the producer and ourselves, but what we can improve is the understanding of pottery craft and therefore also of dependant social actions, technical decisions, cultural imprints and more.

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3 German: *Keramikschule Landshut.*

Embodied knowledge – why a *chaîne opératoire* is just the start

A detailed '*chaîne opératoire* (operational sequence)' should tell us about every single step of a crafting process. It shows us what to do to produce a certain object. Sometimes it is more detailed or even illustrated with photos of potters' hands, centring, opening, throwing and finishing. But what does this description tell us exactly and does it, for example, lead to a deeper differentiation of skill-levels and a comparability of vessels?

Like the much-quoted example: even if you know everything about friction, wind resistance, instant speed, tyre pressure, inclination and more, you do not necessarily have any clue about riding a bike. Even when we add the physiological facts, like muscularity, length of extremities and related leverage, metabolism or psychological points like willpower or concentration, *etc.* still you will have to practice with a bike and fall and stand up again and learn through your body until your body – the first and most natural instrument of a human (Mauss 2010, 206) – learns to remember the technique.

Undoubtedly, a *chaîne opératoire* as an 'organizing principle to define moments of choice' (Wendrich 2012, 259) is a good start to the understanding of crafts. But if we do not describe and include the information generated from the analysis of implicit knowledge – the knowledge that gives the biker the ability to ride his bike – we only get half of the picture. Or as K. Botwid expressed it, regarding the craftsperson's perception in archaeology: "things that aren't described, don't exist" (Botwid 2013, 43).

Of course, as archaeologists our aim is not to work as a potter. Pottery is a craft that needs an appropriate education, experience and above all time for training. But my aim is to use a potter's insight into the craft for my research.

Before explaining the possibilities of obtaining this implicit information, I want to provide an example that demonstrates the advantages of this method. When types are mentioned in the publications of pottery sites, we often read the note 'compare with…' regarding another vessel from another site. This procedure suggests that we should recognize a similarity between both vessels. Often, however, there is no hint about the character of these assumed similarities and too often it just sticks at a short note. But to what exactly will this method lead? What exactly should we compare? If we do not classify such detected similarities, I fear we will end up with the conclusion that similar pots were made in certain areas. Questions about extent of, or even the reasons for, the detected similarity are also mostly not asked. In the worst case this approach could lead to the creation of illusionary patterns.

To point up the chances of a concrete classification of detected similarities and to show that it is not my aim to create just another data mass, I will take a simple vessel as a fictive example, regarding the size of objects: a wheel-thrown conical bowl with wide, flared walls. Supposing we find a very similar bowl (also conical with wide, flared sides) but half-sized, this would not only imply a simple 'similarity'. In this small fact of different sizes of flared bowls for a practising potter there is already hidden a whole universe of information:

First, the technical or process-related information: flared walls of small, wheel-thrown vessels – up to about 10 cm in diameter – are easily made. But when the height of the vessel exceeds 15 cm or more, it needs a trained and experienced professional to produce it. This is an important fact I have obtained while interviewing teachers of the School for Pottery Apprentices in Landshut (DE). Another fascinating source is the publication 'The potter's wheel – Craft specialisation and technical competence' of V. Roux and D. Corbetta (Roux and Corbetta 1989). The central part of their work was to interview and observe potters of different skill-levels and to document their work at the potter's wheel. Afterwards they analysed and classified a whole series of vessel types by size (amongst other factors) to find the necessary skill-level.

Roux and Corbetta choose two basic shapes for their research: open bowls with different wall-bottom angles and containers narrowing at the orifice with a kinked wall (schematic summary in: Roux and Corbetta 1989, fig. 2 and 3). They measured the throwing times regarding shapes with different heights and diameters and exposed precisely the correlation between wall-thickness, height and necessary skill (Roux and Corbetta 1989, 112-113).

Using our example above – the conical bowl – I will summarise their four most important technical facts in four headwords, which are an excellent example of implicit knowledge, expressed in words and connected with our scientific perception and possibilities.

1. When the *diameter* increases, the clay *mass* increases. Consequently, it is more difficult to manage the centrifugal force at the outer rim; a large amount of clay mass is more difficult to centre.

I would like to add that, during the throwing and the wet state afterwards, the stability at the outer rim is restricted by the clay's adhesive power against gravity. Because every clay recipe has its own grade of adhesive power, the maximum of the diameter and the maximum of the used clay mass depend also on the clay recipe.

2. *Base*: if the base is too broad it will need higher skills to hollow the clay lump in the opening step. Otherwise the action will probably decentre the lump. If it is too small, the vessel could collapse outwards because of the flared walls.
3. *Height*: higher vessels are more difficult to produce in general. More mass has to be pressed and the wall needs to hold its own weight.

At this point it should be remembered that the anatomy of the potter is also a restricting factor of the vessel's height, if the vessel is not made out of several pieces that are later combined to create a taller one, as is the case with certain *pithoi* or *amphorae*.

4. *Thickness*: thin walls are generally more difficult to make than thick walls. Again, the lower part of the wall should support the upper part. Thin walls could collapse because of centrifugal force or gravity.

I would state that it is important to find the adequate thickness of a wall in relation to the skill of the potter, the characteristics of the clay, the chosen height and the used centrifugal force and the potter's anatomy.

To manage all of these hidden facts, it is not possible to remember everything consciously while throwing Roman bulk ware. The knowledge has to be bound to the body. The tradition of developing and manifesting in apprenticeship, helps to deal with these problems. Even when it is not obvious why a certain training practice is exactly helping the apprentice to receive body knowledge, the steps were brought to perfection over long periods of practice and different craftspersons reflecting the process (about the reflective work of the masters in crafts see Høgseth 2012, 68).

For a further interpretation of technical facts, we can ask now if there are sites where only small bowls with wide, flared walls were made and if there are other hints of low skill or training. If not, it could be a vessel-size consciously chosen by the producer, which leads to the assumption that this object-size probably had a certain function. We should also focus on the clay resource and the clay recipe and ask if it is suitable for a shape that needs high adhesive power to manage the problem of gravity. There are a lot more striking questions that arise when we think like a potter about the necessary skill-levels. As the entire crafting process is embodied in a find (Andrén 1997, 111), the summarised analysis of Roux and Corbetta or the 'artisanal interpretation' of Botwid (archaeologist and qualified potter) are vital steps to understand objects (classification into three levels of skills: good artisanal knowledge, Artisanal knowledge, Professional artisanal skill, see Botwid 2013, 33-34; Roux and Corbetta 1989, 112-113). The point is to categorise marks on vessels that can show us a conscious decision of the producer or a process-related situation that the producer had to deal with. This is an extremely important differentiation, in my opinion, as a basis to generate distribution patterns showing the mobility of ideas and subtle cultural connections manifested in objects.

The acquirement of body knowledge and its role in the archaeological interpretation of distribution patterns

Knowledge becomes embodied when certain actions are bodily and mentally trained until they happen automatically (Høgseth 2012, 68). This transformative act is highly complex and depends on the natural abilities of the apprentice and the teacher's skill of knowledge transfer. Different necessary stages of the learning process were recently described (see quotes above) and contain a deep insight into embodying actions: the state of entire embodiment could not be reached until "… the apprentice is able to (exactly) copy the master through controlling the tone, technique, rhythm, sensitivity, insight, and so on, such as the master and tradition demands [...]. Now he can develop his talent and particular personal expression" (Høgseth 2012, 69).

How far-reaching the dimension of this transformation is, H. B. Høgseth (archaeologist and qualified carpenter) describes as follows: the process will not only reprogram the body in favour of the craft (Budden 2008, 1), but also shape the character of the apprentice. Thereby the transmission of knowledge would be always bound to a cultural community (Budden 2008, 1; Høgseth 2012, 66; Mauss

2010, 207). These effects on the character and value system of the apprentice were also summarised by S. Manem: "Operational automatisms which will be hard to modify over time because of the routine nature of the undertaking as fixed since childhood. The process of learning manufacturing techniques profoundly affects the individual, implying a correlation of body and mind, as observed in psychology and ethnology" (Manem 2012, 141).

The acquirement of embodied knowledge will evolve with the help of two fundamentally different, but indispensable, connected ways of social practices: the descriptive / discursive method and the incorporating activity (Connerton 1989, 72-73). Or, in other words, in the descriptive part, information is passed at a cognitive level aiming to teach *what* needs to be done, while the incorporating, non-discursive or procedural part will show *how* something should be done (Budden 2008, 1; Høgseth 2012, 64; Mauss 2010, 208; Sørensen and Rebay-Salisbury 2012, 2). At this point I would like to refer to the example with the biker above and the different categories of knowledge interacting during his performance.

I was surprised, that potters will express the mental-bodily-sensation of gaining the professional level – a state identical with the level of *professional artisanal skill* in Botwid – in very similar words. For S. Pflugk (unpublished interview: 4.5.2015) – a master of the throwing technique at the Landshut School – the moment of the change from training to a state of entire embodiment for a new shape shows up "when the mind is free and the hands know what to do". J. Wiener (unpublished interview: 13.7.2015) – another teacher of the throwing technique at the same school – describes the sensation as 'being in the flow' like the experience also expressed by Botwid: 'the flow of reflection-action-understanding' or the 'being *in the moment*' as a state when body and mind are strongly connected until 'the borders are erased' (Botwid 2013, 34). She also calls this state the 'hand's intelligence' and 'knowledge-in-action' (about the hand's knowledge see also ethnological approaches in Howes 2005, 27-39). Such a body-mental state can only be reached through intensive repetition and experience. The attitude and the underlying values gained in the time of education will accompany a potter forever, even when he adds more techniques and influences during his or her career.

The role of repeated imitation in the development of 'culturally affected technologies' has already been discussed by M. Mauss. Thereby, different talents of imitation could lead to different skill-levels but will not leave the cultural affiliation (Mauss 2010, 203). A circumstance, which could show us an influence on archaeological distribution patterns, if we consequently try to detect the attitudes and values passed down from master to apprentice and manifested as hidden marks in the vessels to gain an understanding of this special connection between pottery sites. Manem's exemplary work for the diligent comprehension of different operational sequences and workshop styles of Bronze Age pottery from French cave finds showed the impact of this method on archaeological interpretation: the differentiation of combinations of coiling, modelling, beating, pressing, smoothing, scraping, planning and burnishing techniques visible on vessels leads to the identification of 'family styles'. Subsequently it leads to the differentiation and identification of the contexts, in this case of dwelling caves *vs.* gathering caves, based on

the assumption that the diversity of operational sequences in gathering caves were significantly higher than in a dwelling context (Manem 2012).

With Roman wheel-thrown vessels we have to deal with a higher technological standard that was aiming at standardisation for bulk ware. While the Bronze Age pottery is produced with a combination of several techniques, for Roman mass products we need to differentiate within one single technique – throwing. But as explained in this chapter, the value systems of a craft developed in apprenticeship will stay visible.

The archaeologist and the potter – two perceptions of a craft

The central difficulty when generating information of implicit knowledge from potters was described by L. Malafouris. First, he describes what is necessary for making pottery: brain, body, wheel, clay and physiological, mental and biological resources. During the process the producer is getting tactile information and has to come to important decisions in less than a second (Malafouris 2008, 19). To learn about all these subtleties and this kind of knowledge we can ask practising potters. But Malafouris observed in his work that a potter would tend to show what he means rather than explain it verbally. When the questions become more detailed, the potter would perhaps not talk much because he or she is not trained to speak about his or her craft. So, potters know a lot more than they are able to tell us because the "verbal description, however detailed, can hardly capture the phenomenological perturbations of real activity and the reciprocality between the crafted and the crafter" (Malafouris 2008, 20).

The best place for an interview in my opinion is a school. This is a place where teachers are trained to verbalise processes that become tacit when learned. Teachers are also trained in comparing the development of their pupils and are able to spot patterns of skill. A school also offers a large number of individuals – teachers and apprentices of different ages and various grades; a fact that helps us to avoid an inadvertent elevation of a single view to a superordinate law, as could happen when we speak only with one single craftsperson as a basis for our archaeological interpretation. Furthermore, the lack of economic pressure in a school helps to keep up the relaxed atmosphere of the place; a place where the identity and *habitus* of a school's cultural environment are transferred and manifested (and partly recreated), and expressed through a certain range of shapes.

During my research week at the School for Pottery I was allowed to learn about the difference between the producer's perspective and an academic point of view. Especially when we as archeologists engage in the crafting process sometimes pottery masters could have very differing opinions, for example regarding the classification into types or the grouping of variations. In my opinion, the reasons are hidden in the verbalisation of a non-verbal craft and in the various steps of abstraction and reduction. These steps can be summarised as follows:

1. There is a first *abstraction* of the crafting process or a detailing of the process when the informant is asked to verbalise a non-verbal process.
2. Then there is the first *reduction* because the listening archaeologist – from a craftsperson's point of view – is not even an apprentice of the craft.

3. What the archaeologist writes down is a second *abstraction*, because he or she has got to verbalise it again.
4. Finally, what the reader of the published paper understands could be another *reduction* of the process.

Between the first described action and the last description of information a gap could emerge. It gets worse when it is about an archaeological artefact and the former producers are separated from us through time and cultural habits. The fact that it is about wheel-thrown vessels – a technique that hides individual marks and aims for standardisation – does not simplify the task.

How can we bridge the gap and improve the situation? The most important element is time: Contact between archaeologist and pottery master (or another craftsperson) is still not common. It needs time and more than one conversation to

Figure 2. Jakob Wiener, teacher for throwing technique, while copying Roman storage vessels (figure: N. Melko).

Figure 3. Apprentices during their haptic perception of a Roman bowl for the copying experiment. School for pottery in Landshut (figure: N. Melko).

Figure 4. Some results of the copying experiment with a class of apprentices. School for pottery in Landshut (figure: N. Melko).

correlate terminologies and to overcome psychological aspects, which should not be underestimated. On both sides there could be uncertainties and inhibitions as well as subtle defensive behaviour, influencing the results of the interview. But the awareness that the potter takes his/her time for the questions of the archaeologist and the archaeologist takes his/her time for the craft will create an atmosphere of respect and a conversation based on mutual regard.

While questioning and listening it is important not to provoke certain answers with influencing formulations, but to ask neutrally and with interest. As archaeologists we are not used to interview informants, so it could help to record the conversation. Because of the density and the unfamiliarity of the information it is possible that we will remember only those parts we understand and already knew before. With the records we will discover details we did not realise within the situation. There will be also hints of learned values and implicit knowledge in anecdotes or figurative language. For experiments like the copying of archaeological shapes, we should also observe postures, gestures and the silent communication between craftspeople, without disturbing the atmosphere. After the interview the acquired information should not be judged as an absolute truth, but should always be compared with information of other representatives of the craft.

In this way, it was possible for me to learn about the communication, implicit knowledge, perception and environment of several potters. All experiments for my work were consequently performed by professionals or apprentices of the craft (Fig. 2, Fig. 3 and Fig. 4), while I had time to concentrate on the situation and develop questions. Some results will be published in my thesis expected in 2018.

Artisanal analysis and the mobility of ideas

A valuable breakdown of the technical steps and hints that help us to trace variabilities in skills in tabular form is presented by S. Budden. The listed technical steps can largely be correlated with the sequences of a detailed *chaîne opératoire*: clay preparation, manufacturing, wall thickness, additions like handles, interior surface treatment, exterior surface treatment, decoration, rim deviation on the horizontal plane, rim symmetry, handle symmetry, profile symmetry and firing (Budden 2008, 4). For every point she gives clear examples of the marks of technical incertitude visible on a finished object. Especially for the production of Kempraten-Area Fluh, I noticed the following examples of difficulties in the production progress:[4]

The sherds show unintentional clay lumps on the vessel's bottom, tension cracks, defects in the coating, cracked inclusions of limestone, the break-off of handles at predetermined breaking points, variability in wall thickness, rim asymmetry, general warpage, a 'marbling'-effect caused by the inhomogeneity of the clay mass and reworking of parts of the vessels. Variability in wall thickness or a rim deviation from the horizon line is rarely described. While the control of the thickness should be manageable by an apprentice very early on, the balance of the rim needs more skills, especially for larger forms, which tend to be 'wavy', even from advanced potters.

4 The next paragraphs are a summary of information from several unpublished interviews.

At this point, it is necessary to mention that a great deal of the fragments of Kempraten-Area Fluh, is the broken waste remaining from the firing process, which was dumped around two kilns. This fact makes the high percentage of visible production problems less absolute. Keeping this in mind we should, furthermore, evaluate the quantity and the severity of the 'faults', we recognise in vessels. An uneven coating, for example, matters less than a crack, which will make the vessel unsellable. Similarly, we should consider if a certain defect is showing up repeatedly and if there are combinations of several production problems visible in single vessels. In this way we will gradually eliminate vessel marks based on skill-levels from our typologies.

Regarding the production of Kempraten, it is possible to recognise which vessel types were made by many or by a few individuals of different experience: there are, for example, the very common storage pots in 'Late La Tène'-style, which are very challenging to manufacture (assembly in Fig. 5) – especially in larger size, exceeding 40 cm in height. These pots have generally a tense shape, and were visibly quickly and confidently made. Only very few exemplars show defects, like Fig. 6, which has a very thin change from base to wall. However, the general wall thickness concerning the vessel's height is very fine for this shape, so the threshold from right proportion to a too thin wall is easily passed over – even for an experienced potter. Another aspect in favour of the high skills of the producers of this shape is that the 'fault' is always at the same critical position (kink between foot and wall). If the variability of the wall thickness showed up also at other points, it could count as uncertain. But in this case it is probably a sign of '*Routineteufel*' like J. Fritz (qualified potter at the laboratory of experimental archaeology in Mayen, unpublished interview 5.12.2015 on the occasion of the annual '*Keramiktag*') called the situation, when a trained potter is making routine mistakes during the process of advanced acquirement for a certain shape.

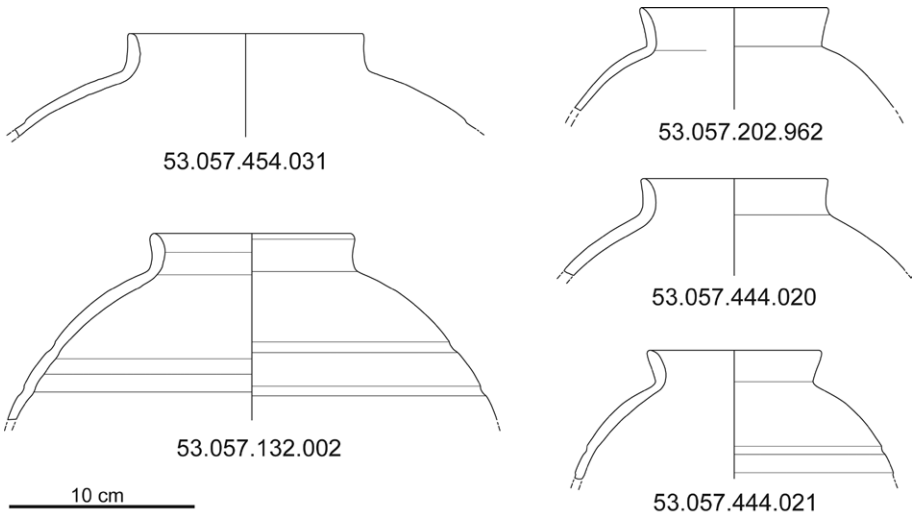

Figure 5. Common storage pots in 'Late La Tène'-style (Archaeological Service of Canton of St. Gallen, Inv. no. as indicated (figure: N. Melko).

A single example for the same vessel type seems not to fit in the range, especially when the vessel is tactually perceived (Fig. 7). The wall's thickness is unequal. Subsequently, the weight – height relation is clearly different compared to the others. In this case we should act on the assumption that the producer had not completed the process of acquisition for this special shape. The 'fault' is related to the throwing process and the amount of clay was not calculated correctly.

We could consider that a 'poorly made' object does not have to be produced by an apprentice, it could be the decision of an experienced master to spend little effort for certain reasons (Wendrich 2012, 258); Like the grubby channels on the surface of an otherwise excellent thrown bowl in Fig. 8.

A fourth example will pick up the fictive example of the bowls above. In Kempraten, a large quantity of bowls was found in the *vicus* as well as in the surrounding area of the pottery kilns of 'Area Fluh' (Fig. 9). This vessel shape, combined a whole range of marks belonging to a value system still valid today: a massive rim, an inward-looking inclination of the rim, wide flared straight walls and a small base. All these characteristics are challenging for a potter and have been explicitly taught up until the present day. To manage these characteristics is a sign of achieving professionalism (Botwid 2013, 39; unpublished interviews: S. Pflugk, 4. 5. 2015; J. Wiener, 13. 7. 2015; J. Fritz, 5. 12. 2015). In Kempraten, these bowls show a high variability in the shaping of the rim or the angle of the walls. Moreover, wavy rims, tension cracks, rim cracks and voids often occur. With the knowledge described in the chapters above, it is possible to recognize a positively canonical vessel for the learning processes of the pottery craft. The broad variability, along with the other 'faults' could tell us that this vessel type was produced by many persons who had not trained their body memory to perfection. In this spirit, as archaeologists we should count all variations as one type representing a value

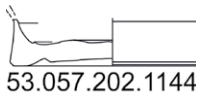

Figure 6. Base of a storage vessel: very thin change from base to wall (Archaeological Service of Canton of St. Gallen, Inv. no. as indicated (figure: N. Melko).

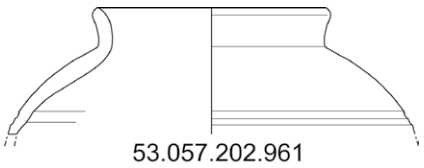

Figure 7. Storage vessel with unequally massive shoulder (Archaeological Service of Canton of St. Gallen, Inv. no. as indicated (figure: N. Melko).

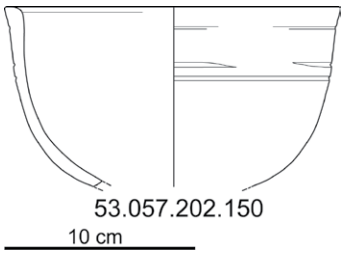

Figure 8. Common ware bowl with poorly made decoration (Archaeological Service of Canton of St. Gallen, Inv. no. as indicated (figure: N. Melko).

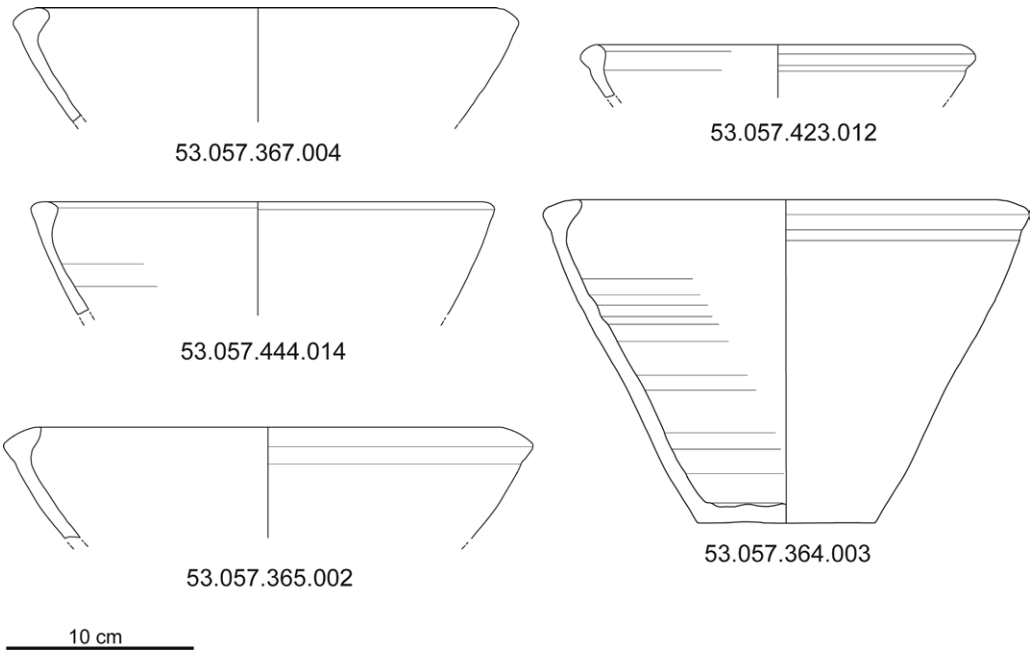

Figure 9. Range of variations for common bowl type with thickened, inclined rim and projecting walls (Archaeological Service of Canton of St. Gallen, Inv. no. as indicated (figure: N. Melko).

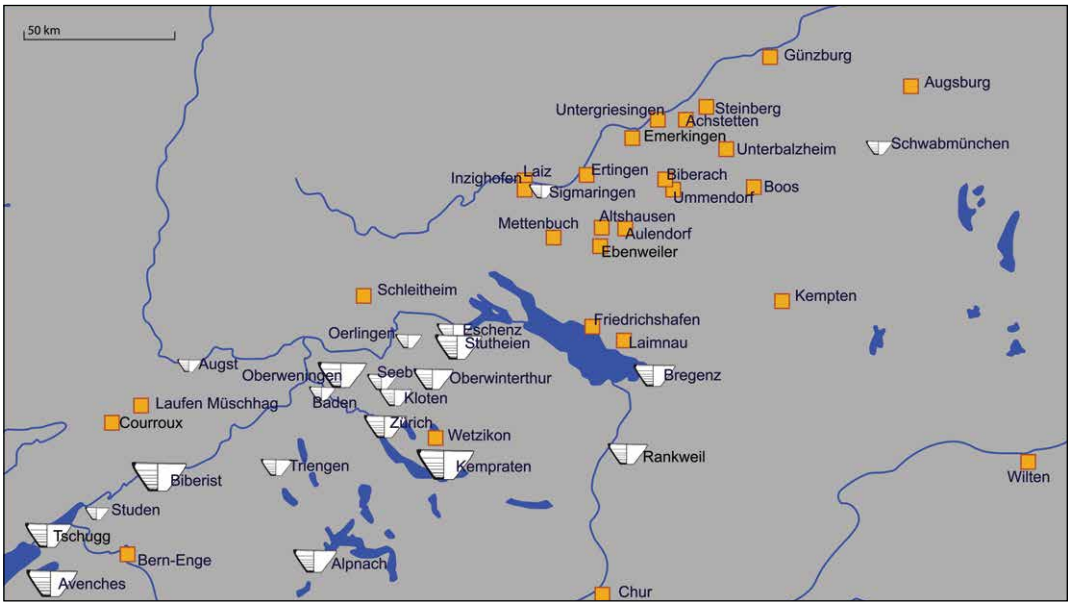

Figure 10. Common ware bowl (see Fig. 9) mapped. The sizes of the symbols are expressing estimated numbers – current state of research 22.12.2016 (figure: N. Melko).

system of the craft. The division into many sub-types could distort distribution patterns and blur the wide-spread mobility of such values transferred in education. The mapping of this superordinate canonical shape, however, revealed a connected area from Bregenz (AT) to Avenches (Canton of Vaud, CH), which shows the region of production and demand for this vessel idea (Fig. 10, current state of research of my PhD thesis).

Summary

In this article I gave a short preview of a concept I am working on. It engages in the perception of the craftsperson as a source for refining archaeological typologies. An important role is played by the verbalisation of implicit knowledge to make it available as a data resource for pottery studies. It was described how implicit knowledge is developed during apprenticeship and how it contains certain values transferred from master to pupil. The training within a craft education affects the body physically and creates a body memory. This step by step transformation is visible in the produced objects as a process of acquisition. The ability to recognise these processes subsequently avoids a generation of distribution patterns divided into too small sections and it also avoids a rather unintentional display of individual potters rather than the mobility of form ideas. On the contrary it will concentrate on superordinate ideas of a vessel's shape. I have also mentioned which problems could occur regarding the communication with today's craftspersons and how to avoid misunderstandings in interviews.

At the end of the paper, a few examples of the pottery site in the Roman *vicus* of Kempraten-Area Fluh, are presented to show how to apply the concept of including the potter's perception of his craft with the help of very common vessel types, which are often treated with little attention, for an overall picture.

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Practice, social cohesion and identity in pottery production in the Balearic Islands (1500-500 BC)

Daniel Albero Santacreu

Abstract

The practices that potters carry out go beyond the mere technical processes and the success of their vessels in meeting certain biological needs. In this chapter we approach, by means of several archaeometrical methods, certain technological choices regarding paste recipes and firing procedures developed by potters from the Balearic Islands (ESP) during the Bronze Age and the Early Iron Age. The existence of shared technological choices and potters' skills allow us to propose the existence of certain communities of practice within the islands that were connected by means of certain mobility dynamics. These practices and technological choices can be associated with specific learning strategies, degrees of expertise, perception of the vessels and the emergence of social cohesion strategies and a common identity among the potters, both within the members of each community and between the different communities of the archipelago. The maintenance of identity ties and a specific technological tradition through several centuries has to be explained by a shared habitus among the individuals and the existence of social strategies aimed at community cohesion. It will be highlighted how these cohesion strategies are also seen in other dimensions of material culture on the basis of fractal-like models.

Keywords: *technology, habitus, Bronze Age, Iron Age, Social Theory, community of practice*

Introduction

Pottery is an integral part of people's daily lives, either individually or collectively, and is a key element in a wide range of activities. Thus, human communities create, use and discard ceramics that are strongly related to the values, social needs, norms and beliefs of the groups. As concerns pottery production, it must be considered that, regardless of the influence of the natural environment on the actions and products made by people, individuals always have the possibility of making

alternative technological choices (Lemonnier 1993). These choices are dynamic and are related to certain technical procedures, *savoir faire* and social knowledge that only make sense within a given social and symbolic context. Thus, technological choices are closely determined by the capacity of individuals for perception, communication and expression and their interaction through materiality. Hence, rather than obeying natural parameters, technological choices permit the organisation of society and the reproduction of the world in which people live. In short, the features of the pottery are intimately connected to certain socio-cultural needs and the technological traditions used in its manufacture, use, maintenance and deposition provides a socio-technological framework where people can organise themselves in social terms (Dietler and Herbich 1998; Dobres 2000; Dobres and Hoffman 1994; Lemonnier 1986; Pfaffenberger 1992).

There is an intense interaction between people in a given social and natural context in which they create, use, exchange, maintain and deposit their artefacts. These interactions are embedded in certain social common practices that enable the cohesion of society (Bourdieu 1977). In this sense, pottery goes beyond the everyday experience of the individual and is engaged in the structures that organise society. Thus, the characteristics of materials can reflect, for instance, the kind of relationships that the individuals establish between themselves (Dobres and Hoffman 1994) and the way they are socially organised in certain communities of practice (Albero *et al.* forthcoming). Following this, the technological actions of the individuals are placed in a social context of acceptance / reluctance in which the *habitus* generates and regulates their life, from the individuals' worldviews to the relationships they establish with the system. Thus, through daily practice, a series of cultural representations and perceptions about the limitations and possibilities of individuals' choices and agency are developed that, in the case of pottery production, are reproduced in the social sphere of the techniques.

Following these lines of thought, in this chapter we will address certain aspects of the production of hand-made pottery carried out by the local communities of the Balearic Islands during the Middle / Late Bronze Age (*i.e.* 'Naviform culture', *c.* 1550 / 850 BCE) and the Early Iron Age (*i.e.* 'Talayotic culture', *c.* 850-500 BCE). Up to now, the interpretation of the raw materials, techniques and productive strategies used by the potters of these periods has been centred on two aspects: on the one hand, researchers have addressed by means of 'ceramic ecology' (Andreu *et al.* 2007; Lull *et al.* 2008; Waldren 1982) and functionalist (Palomar 2005) viewpoints the reasons why certain tempers and firing strategies were acquired by local potters. On the other hand, most scholars have also tried to determine the degree of specialisation of the pottery production, pointing to the existence of groups of relatively specialised potters that managed a significant part of the production (Andreu *et al.* 2007; Lull *et al.* 2008; Risch and Gómez-Gras 2003).

The explanatory models currently applied were aimed at explaining the emergence of certain techniques and materials, as well as identifying the existence of a specialised pottery production. Nevertheless, they have not yet fully addressed the social role that the technological choices and the dynamics of organisation of production might have played in structuring the societies that used the vessels in daily life. No attention has been paid, for instance, to the social and identity significance

embedded in the pottery production (Costin 1998) or the knowledge transmission systems. Moreover, the former interpretations have not taken into account the particular social dynamics that characterised the local communities of the archipelago when dealing with the significance of the raw materials, techniques and features of the pottery. It is important to consider all these aspects in our explanations, since ethnographic and archaeological works demonstrate that in many cases the use of mineral resources and techniques is closely related to cultural and social factors (Boivin 2004; Miller 1985), even when the potters themselves explain their actions according to a functionalist rationale (Dietler and Herbich 1998).

The aim of this chapter is to review some features of the ceramic production carried out in these periods as well as to reinterpret some of their technological choices and characteristics (*i.e.* the use of certain tempers and firing strategies, the degree of variability of the production and the emergence of certain communities of practice) from the viewpoint of the 'anthropology of techniques' and the 'social theory of technology'. Therefore, the reasons why certain materials and techniques were assimilated by potter communities will not be addressed in this chapter. In contrast, we will focus on the social role that these technological choices might have played within the indigenous societies and how issues such as the '*habitus*' or the materialisation of identity and social cohesion promoted a wide spatial and temporal dispersion of a specific pottery tradition in the prehistory of the Balearic Islands. To this end, we will complement this theoretical framework with a contextual approach to pottery production by means of a fractal-like model (Brown *et al.* 2005). This procedure permits us to consider pottery production in a broader archaeological context that promotes the interpretation of technology according to the particular social dynamics of the Bronze and Iron Age communities that produced and used the vessels.

Archaeological sites under study and methodology

We conducted the archaeometric analysis of 89 pottery samples of different shapes and sizes recovered from diverse archaeological sites of the Balearic Islands (ESP) that were occupied during the 'Naviform' period (Bronze Age) and / or the 'Talayotic' period (Early Iron Age) (Fig. 1). Among the materials studied from Mallorca, we must highlight a set of 14 samples of Puig de Sa Morisca related to Late Bronze Age and Early Iron Age ('Talayotic') levels (Albero 2011; Guerrero *et al.* 2002), 10 vessels from the staggered barrow of Son Ferrer (Garcia Rosselló *et al.* 2015; Albero 2011), 14 pottery samples of Closos de Can Gaià from the Middle and Late Bronze Age levels of the 'Navetiform I' (Albero 2011; Javaloyas *et al.* 2007) and 28 vessels associated with Late Bronze Age levels of Illot des Porros (Hernandez-Gasch *et al.* 1998). Moreover, we have also considered 23 Bronze Age ceramics recovered from 'Area 9' of the 'navetiform' village of Cap de Barbaria II located in the island of Formentera (Sureda *et al.* 2013; Sureda *et al.* 2017).

In addition, we also included in this chapter all the information available from previous archaeometric studies centred on the analysis of 'Naviform' and 'Talayotic' pottery from the Balearic Islands. This strategy enables us to significantly expand the number of samples related to multiple shapes and sizes as well as to include archaeological sites associated with different functions *i.e.* habitat, ritual

and funerary. Furthermore, this strategy allows us to encompass a wider geographical area that comprises the entire archipelago, thus providing a greater scope and significance to our study (see Fig. 1). As regards to Mallorca, we have considered the analyses conducted by W. Waldren on Bronze and Iron Age pottery from the sites of Son Ferrandell-Oleza and Son Matge (Waldren 1982 and 1991), as well as other studies performed on materials recovered from the 'Talayotic' archaeological sites of Son Fornés (Lull *et al.* 2008) and Puig Morter (Risch and Gómez-Gras 2003). As regards to Menorca, there have been published analyses of the Bronze Age pottery from the sites of Cova des Carritx (Gómez-Gras and Risch 1999) and Cap de Forma (Plantalamor *et al.* 1999). Also highlighted should be the works of J. García Orellana, which comprise 112 Bronze Age vessels from many archaeological sites of Menorca: Cala Blanca, Son Mercer de Baix, Cala Morell, Trebalúger, Sa Torreta, Ses Roques Llises and Biniac l'Argentina (García Orellana 1998; García Orellana *et al.* 2001). In addition, a few samples from the sites of Cova des Mussol, Torrepetxina, Es Forat de Ses Aritges and Mongofre were analysed (Andreu *et al.* 2007). Finally, Waldren also conducted some calcimetries on vessels from the site of Torralba d'en Salord (Waldren 1991).

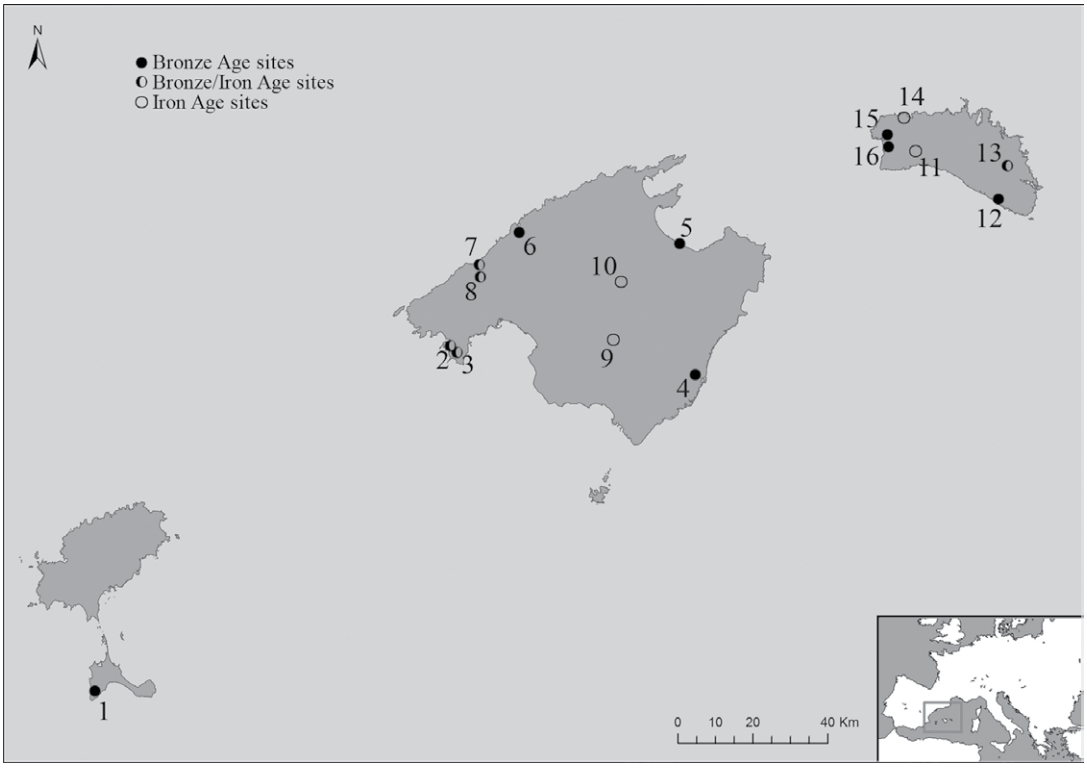


Figure 1. Map of the Balearic Islands showing the location of some archaeological sites cited in the text: (1) Cap de Barbaria II; (2) Puig de Sa Morisca; (3) Staggered Barrow of Son Ferrer; (4) Closos de Can Gaià; (5) Illot des Porros; (6) Son Muleta; (7) Son Ferrandell; (8) Son Matge; (9) Son Fornés; (10) Son Ferragut; (11) Talaia de Torrepetxina; (12) Cap de Forma; (13) Torralba; (14) Cala Morell; (15) Cova des Carritx; (16) Cala Blanca (figure: D. Albero Santacreu).

These studies applied different methods and techniques for studying the pottery. The most common has been the analysis of pottery thin sections by optical microscopy in combination with other techniques, usually X-ray powder diffraction (XRPD) or X-ray fluorescence (XRF), though in the first studies some scholars conducted calcimetries. In our case, we prioritised the optical analysis of the pottery with petrographic and / or binocular microscopes in order to facilitate the comparison of our samples with the published data. The degree of correspondence of the features of the paste using both techniques has enabled us to determine the use of certain tempers from the examination of the samples with the binocular microscope combined with other methods such as XRPD and / or XRF (see Albero 2014*b* for details of the procedure). When the binocular microscope was used, the texture of the paste was quantitatively determined by image analysis (Albero 2016). Finally, we used the scanning electron microscope (SEM) to study the microstructure of some pottery samples and the firing strategy. The results of these studies, the description of the instruments and the analytical protocols used were published elsewhere (Albero 2011; 2016; Albero and Cau 2017; Albero and Mateu 2012; Albero *et al.* 2014; Sureda *et al.* 2017); only the most relevant information is included here for a correct interpretation of the technological choices observed during the 'Naviform' and 'Talayotic' periods.

Materials and techniques in 'Naviform' and 'Talayotic' pottery productions

Several archaeometric studies point to substantial changes in pottery production during the Bronze Age, which are clearly noticeable in the 'Naviform' period (Albero 2011; García Orellana *et al.* 2001; Goméz-Gras and Risch 1999; Waldren 1982). The changes include the addition of significant amounts of spathic calcite as temper, the homogenisation of the firing temperatures and the emergence and generalisation of experienced potters. These features cannot be observed in the first Bronze Age pottery traditions, which are rooted in the Chalcolithic and the 'Bell Beaker' period. Such new technological choices reflect a new way of making pottery that is embodied in a new fabric, which largely predominates in the ceramic assemblages of the 'Naviform' period and whose predominance continued until the end of the 'Talayotic' period. In the following sections, we will approach these technological changes and their consequences in more detail.

Addition of spathic calcite temper

The petrographic analysis conducted evidences the introduction of large amounts of spathic calcite crystals (25-50%) in the paste during the Bronze Age 'Naviform' period (Fig. 2). The calcite temper was crushed and the grain-size homogenised, thus determining the texture of the vessels. Although there is some textural variability, the addition of this temper promoted coarse / medium-textured pastes in 75% of the samples studied. These are characterised by a high number of angular grains above 800 μm in length and abundant mineral temper (12-28% in volume) well-sorted in a polymodal distribution. Closely related to this technological choice, chemical analyses of 'Naviform' pottery show a significant increase in the CaO concentrations (average = 36.4%), providing extremely calcareous pastes.

The increased CaO concentrations are in agreement with the presence of calcite peaks of high intensity in XRPD analysis. The amount of spathic calcite added to the paste is quite standardised. This aspect is clearly reflected in the low coefficient of variation (c.v.) observed in the percentage of CaO (c.v. = 0.15) as well as calcite (c.v. = 0.15) detected by means of XRF and XRPD, thus indicating a significant normalisation in these variables. In agreement with our results, CaO concentrations in pottery from Menorca dated between 1400 / 1000 BCE are also statistically homogeneous and normalised (average = 38.4% ± 7.1; c.v. = 0.18) regardless of the archaeological site analysed (García Orellana *et al.* 2001, 46-47).

There is also a high degree of standardisation in the amount of calcite temper added to the vessels during the 'Talayotic' period which is observed both in X-ray powder diffraction (c.v. = 0.11) and the amount of CaO (c.v. = 0.12). As occurred in the 'Naviform' period, the addition of abundant calcite crystals promoted coarse-textured and highly calcareous products (CaO average = 37%). These are coarse / medium-textured vessels with most of the particles exceeding 800 µm in length and abundant mineral temper (15-20% in volume) sorted in a polymodal distribution. However, medium grain-size vessels with a lower amount of mineral temper (7-10% in volume) are also observed in this Iron Age period. The

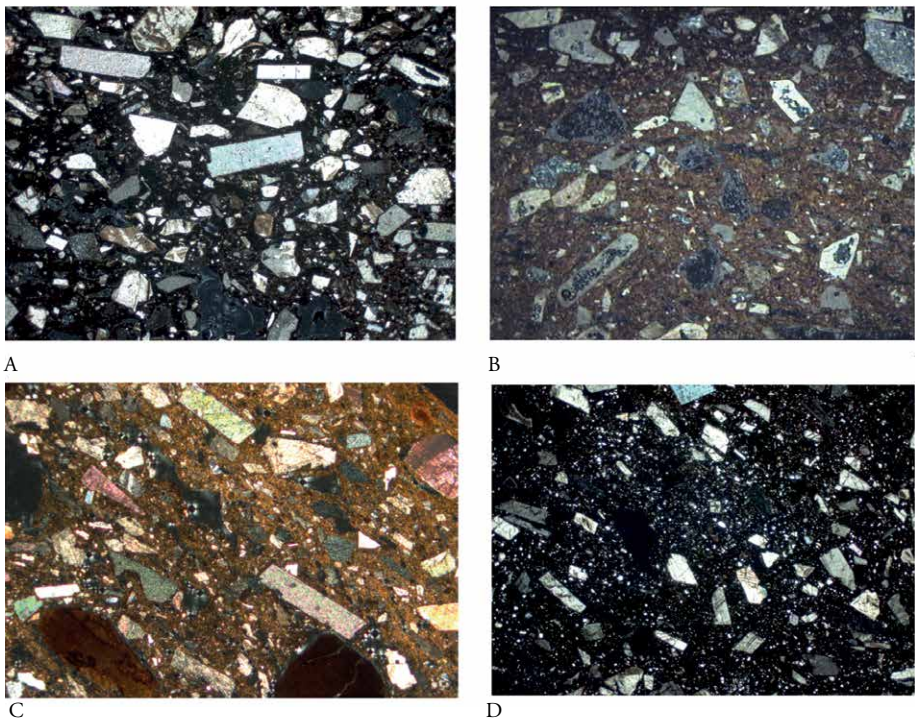


Figure 2. Thin section photomicrographs taken in cross-polarised light showing spathic calcite temper in Bronze Age pottery from different archaeological sites. (A) Illot des Porros (Sample: IP79-28bis; Image width = 3.4 mm); (B) Closos de can Gaià (Sample: CLG-1233; Image width = 4.7 mm); (C) Puig de Sa Morisca (sample: SM-473; Image width = 2.7 mm); (D) Cap de Barbaria II (Sample: CB231; Image width = 3.4 mm) (figure: D. Albero Santacreu).

use of this temper is confirmed at many 'Talayotic' archaeological sites on the Balearic Islands: Son Ferrandell-Oleza, Son Matge, Son Ferrer, Son Fornés, Puig de Sa Morisca, Puig Morter de Son Ferragut, Torralba d'en Salord, Sa Talaia and Cap Forma (Albero 2011; Albero and Cau 2017; Albero and Mateu 2012; Andreu *et al.* 2007; Gómez-Gras and Risch 1999; Lull *et al.* 2008, 135; Palomar 2005; Plantalamor *et al.* 1999; Risch and Gómez-Gras 2003; Waldren 1982; 1991).

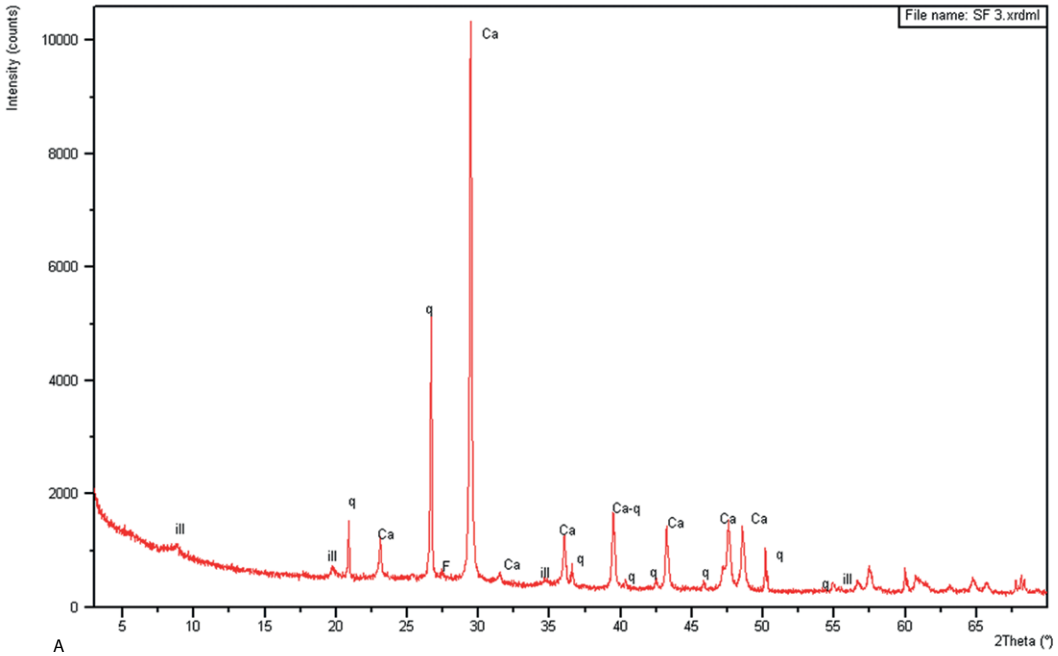
The use of spathic calcite temper has been very common in the Mediterranean basin since the Neolithic (see Albero 2011, 1115). In the Balearic Islands its use could have begun in certain areas in the 'Bell Beaker' period or the Early Bronze Age (Albero 2011; Marlasca *et al.* 2013). However, it is later, in the 'Naviform' period, that a widespread use of this temper is observed. Thus, the addition of significant amounts of spathic calcite crystals is evident from the Middle Bronze Age (1500 / 1400 BCE) at archaeological sites such as Closos de Can Gaià, Cova des Carritx, Cala Blanca, Biniac l'Argentina, Son Ferrandell, Son Muleta, Son Matge and Cap de Barbaria II (Albero 2011; Andreu *et al.* 2007; García Orellana 1998; García Orellana *et al.* 2001; Gómez-Gras and Risch 1999; Sureda *et al.* 2017; Waldren 1982; 1991).

Many of these studies point to an overlap – and perhaps a brief coexistence – of two different traditions regarding the kind of temper added to the paste, with a breakpoint around the Middle Bronze Age (*c.* 1500 BCE). J. García Orellana notes, that the introduction of this temper took place in both habitat and funerary contexts from Menorca (García Orellana 1998, 55, 65). At the site of Son Mercer de Baix (Menorca) L. Plantalamor and M. Rita documented a change in the ceramic record around 1450 BCE (Plantalamor and Rita 1984). While former vessels were very compact, fine-textured and basically related to spherical shapes, the pottery that appeared from this date had coarse-textured pastes associated with the introduction of new forms in the ceramic repertoire. W. Waldren also observed that the calcimetries conducted on pottery from Mallorca showed low amounts of $CaCO_3$ in the vessels before 1500 BCE (Waldren 1991). After this date, there was a significant development of highly calcareous pastes that is clearly related to the addition of calcite temper in all the sites studied. This is, therefore, a phenomenon that occurred synchronously in the archipelago, was strongly introduced and acquired a long-lasting nature.

Firing strategy

The firing strategy observed in 'Naviform' and 'Talayotic' pottery production significantly differs from the one observed in the preceding period of the Early Bronze Age (Albero 2011). The estimated firing temperature is lower in these latter periods and there is also a homogenisation of the firing temperature of the ceramic assemblage, which is in agreement with the standardisation observed on the pastes.

There are no high temperature mineral phases in the X-ray diffractograms, but the presence of very intense peaks of calcite (Fig. 3: A). The clay matrix does not show signs of vitrification in the SEM analysis and is optically active in all the cases studied with petrographic microscope (Albero 2011; Albero *et al.* 2014). Furthermore, spathic calcite crystals are usually well preserved in thin sections, although in some cases they show some thermal alterations (Fig. 3: B), evidencing



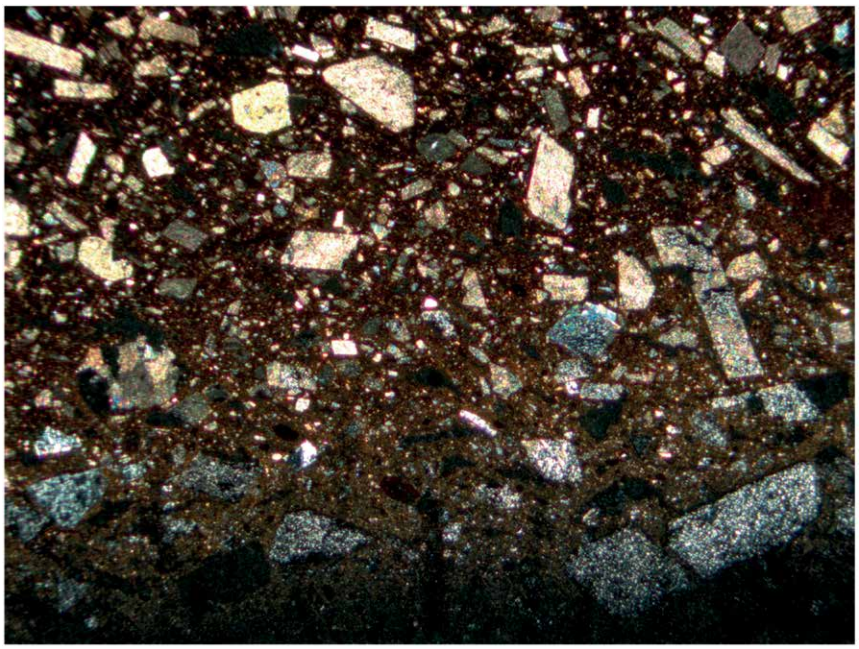


Figure 3. (A) XRD diffractogram showing the main mineralogical phases documented in the pottery studied (staggered barrow of Son Ferrer, 'Talayotic' period, sample TSF-1090). Note the absence of high-temperature minerals (ill = illite-muscovite; Ca = calcite; q = quartz; F = feldspar); (B) Thin section photomicrograph taken with cross polarised light showing calcite crystals supra-altered in the external margin of the vessel and altered crystals in the core of the section (Puig de Sa Morisca, 'Talayotic' period, sample: SM-1351; Image width = 2.7 mm) (figure: D. Albero Santacreu).

that the vessels were exposed to the maximum temperature before the decomposition of the carbonates. All this data suggests an estimated firing temperature below 800 / 850 ºC. However, the predominance of reduced cores and the compactness and low porosity of the fabric suggest the use of a relatively long exposure to the higher temperatures.

Even though the estimated firing temperature was relatively standardised, most authors remark that the firing atmosphere was highly variable (*e.g.* Plantalamor *et al.* 1999, 107). Despite this, there is a clear predominance of reduced cores and, therefore, a preference for using reducing atmospheres (Fig. 4). Also, completely oxidised vessels can be observed (see Fig. 2). The use of a reduced firing strategy, although heterogeneous, was also found in the ceramic record of Menorca. The variability observed in the firing atmosphere of the pottery from Menorca was related to the arrangement of the vessels within the firing structure instead of the firing temperature reached or the duration of the process (García Orellana *et al.* 2001, 71). The larger vessels (Fig. 5) would have been placed at the bottom of the firing structures and were thus more isolated from the external atmosphere. The smaller pottery would have been located in the upper part, being more exposed to irregular atmospheres, especially in the last moments of the firing process, when there is more air circulation within the structure. Such an arrangement results in the presence of heterogeneous pottery surfaces within the same batch and even in the same vessel. In addition, it should be considered that the presence of oxidised surfaces and margins in the ceramics can also be related to the difficulty of achieving a completely reduced atmosphere during the whole firing process (see Albero 2014*a*, 104-105).

Figure 4. 'Talayotic' pottery set found in the ritual area of the staggered barrow of Son Ferrer. Note the presence of blackish surfaces evidencing the use of reduced firing conditions (Source: ArqueoUIB Research Group, figure: D. Albero Santacreu).

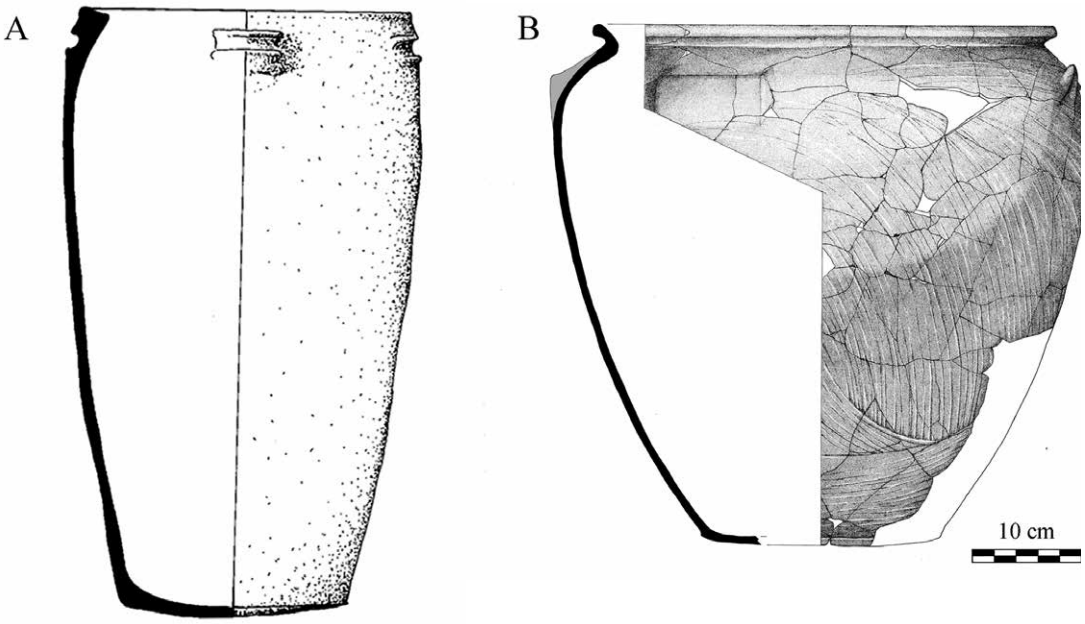


Figure 5. (A) Large storage pot from the Bronze 'Naviform' period (Hospitalet Vell); (B) Large storage pot from the 'Talayotic' period (Puig de Sa Morisca-Tower III) (figure: D. Albero Santacreu; A: Guerrero et al. 2007; B: ArqueoUIB Research Group).

Despite the fact that the firing atmosphere of the vessels was highly variable, a relatively homogeneous firing strategy could also be observed in the 'Talayotic' pottery from the sites of Son Fornés (Lull *et al.* 2008, 140), Puig Morter (Risch and Gómez-Gras 2003) and Sa Talaia de Torrepetxina (Andreu *et al.* 2007). Furthermore, the use of low firing temperatures was also proposed in ceramics from Cap de Forma (Plantalamor *et al.* 1999, 68) and Cova des Carritx (Gómez-Gras and Risch 1999). The latter authors also documented the absence of high-temperature minerals in the XRPD analysis and the presence of only occasionally thermally altered calcite crystals in the thin sections, thus confirming an estimated firing temperature below 800 °C, and most likely 700 °C. In short, coinciding with the introduction of a new temper was the regularisation of the firing strategy of highly calcareous pastes.

Potters' expertise

Observations by means of optical microscopy of voids, inclusions and temper orientation represent a clear index of the pressure applied by the potters when modelling and joining the coils. Thus, the features of the 'Naviform' and 'Talayotic' pastes evidence that potters made a great effort at coiling, strongly pressing the walls and promoting the orientation of temper parallel to the surface (see Fig. 2: C). Moreover, potters thoroughly mixed the temper with the clays and prepared the pastes with care. Consequently, they succeeded in accurately distributing the calcite temper in a polymodal grain-size distribution within the groundmass. In addition, we can state that there was in these periods a total control of the fir-

ing temperature and, to lesser extent, the atmosphere. Regardless of the cultural parameters that can determine the firing strategy and the potter's skills, there are certain technical and physical limitations of the materials that affect the firing process and demand potters with experienced profiles. The main technical handicap of the pottery under study is associated with the firing of highly calcareous pastes, largely determined by the addition of spathic calcite. In this kind of paste the amount of calcium carbonate ($CaCO_3$) is significant and its presence in the paste can greatly increase the degree of porosity of the vessels during the firing. The increment in the degree of porosity occurs, depending on the particle grain-size, when the pottery is exposed to temperatures above 750 / 800 °C. Calcite stability is a complex problem in ceramics, since an unstable phase known as calcium oxide appears when the calcium carbonate is heated to decomposition. This change of phase generates great stress in the vessel, thus creating fractures. Moreover, calcium oxide is hygroscopic and absorbs humidity giving place to its hydrated form ($Ca(OH_2)$). This hydration, which takes place immediately, involves an increase in volume of the crystals, which eventually causes cracks in the ceramic. If the firing temperature is high enough and is maintained for enough time, the calcite will react completely and the vessel will collapse. The larger the grain size of the calcite crystals the more damaging is this process (Gibson and Woods 1990, 197; Hoard *et al.* 1995; Rye 1976).

In short, the production of highly calcareous ceramics requires certain technical knowledge regarding firing temperatures, time of exposure and firing atmosphere in order to successfully fire the vessels. It is very difficult to know if the ancient potters were aware of all these complex physicochemical changes, but they probably developed some kind of wisdom to effectively succeed in pottery production and obtain a durable product. In this regard, it should be noted that the preference for using reducing atmospheres would have promoted well-fired calcareous ceramics avoiding most of the problems outlined above. The use of a reducing environment increases the reaction temperature of the components of the paste by 50 ºC (Maritan *et al.* 2006). Thus, at least some potters would have had a high level of expertise on this stage of the '*chaîne opératoire* (operational sequence)' in order to generate reducing environments and to reach the maximum temperature, preventing the decomposition of calcite.

In short, the features of the pastes indicate that the potters of these periods had a significant expertise and increased their efforts and dedicated more time and resources to their task with the aim of homogenising the technical process. As well as effort in terms of energy, the proper working of the clay and the control of the firing would imply a more complex organisation of the activity. Such efforts produced ceramic vessels with consistent characteristics and good qualities (Albero 2011).

Degree of variability of the ceramic record

The low degree of variability observed in the paste recipes and firing strategies of the pottery from the 'Naviform' and 'Talayotic' periods resulted in a high homogeneity of the final products and their physicochemical properties. The homogeneity recorded is related to the exploitation of the same raw material as temper and

the use of a particular paste recipe with well stipulated amounts of temper. Since the vessels were tempered and fired following the same strategy, the technological features of the ceramic assemblage are very homogeneous. Thus, virtually all the pottery of these periods can be associated with a single fabric.

If we consider all the samples analysed by XRF and classified in this fabric, we can see that the concentrations of CaO (c.v. = 0.15, n = 47) are normalised regardless of the periods traditionally taken into account in the prehistory of the Balearic Islands. The same degree of standardisation is seen in the percentages of calcite recorded in the pottery analysed by XRPD (c.v. = 0.14, n = 40).

Except at the site of Cap de Barbaria II (Sureda *et al.* 2017), the petrographic and mineralogical studies carried out indicate the use of highly plastic marly clays with only a very low amount (<3%) of monocrystalline quartz and very fine feldspar (Albero 2011; Albero and Mateu 2012). The selection of clays with such characteristics also favored the production of vessels very similar to each other. It seems that – according to the results reported by other studies – clay and calcite temper were prepared separately and subsequently temper and water were added to the clay in order to make the paste (Gomez-Gras and Risch 1999; Lull *et al.* 2008, 138; Risch and Gomez-Gras 2003). According to the estimations made at the site of Son Fornés (Lull *et al.* 2008, 138), the addition of temper to the mass of clay would have been of about 2 / 3 in volume or 1:1 in weight. Thus, the potters' technological choice consisted in the addition of this temper to the paste, even though coarser clays or other tempers were available to make the pottery. This temper was added in large quantities, even in vessels that technically did not require coarse textures to be modeled because of their small size (Albero 2011). Coinciding with other studies (Lull *et al.* 2008, 138; Risch and Gomez-Gras 2003), we noted that this fabric was used regardless of the firing atmosphere, or the size or shape of the vessels. On the other hand, the size of the calcite crystals added into the paste – crushed primarily in a coarse sand fraction (0.5-2 mm) – is another aspect that is proved to be quite standardised in the ceramic assemblage studied. This same feature was observed in the ceramic record of other archaeological sites from Mallorca and Menorca. The predominant grain-size is estimated between 0.6 and 1.6 mm (García Orellana *et al.* 2001; Lull *et al.* 2008; Risch and Gómez-Gras 2003; Waldren 1982; 1991).

We have calculated the coefficient of variation from the percentages of $CaCO_3$ (in total weight) recorded by Waldren (Waldren 1991) in pottery samples from diverse archaeological sites in order to check if the degree of standardisation observed in our ceramic assemblage is also present in other areas of the islands. We are able to confirm that the pottery classified into this fabric recovered from the sites of Son Ferrandell-Oleza, Son Matge or Torralba d'en Salord also shows a standardised behavior. The amounts of $CaCO_3$ perfectly fit a normal distribution curve and the coefficient of variation is 0.20 (n = 132). This assumption is in agreement with the chemical data of pottery from diverse sites of Menorca such as Cala Blanca, Biniac l'Argentina, Cala Morell, Trebalúger, Son Mercer de Baix or Sa Torreta de Tramuntana (García Orellana *et al.* 2001), whose coefficient of variation regarding the variable % CaO was also very low (c.v. = 0.18, n = 32). Also, the petrological analysis of 11 samples conducted in Cap de Forma revealed the homogeneity of

the pottery pastes found at this site (Plantalamor *et al.* 1999, 107). In addition, the coefficient of variation established by means of petrographical analysis for 13 ceramics of this fabric from the site of Son Fornés – estimated by counting three hundred points per thin section – showed a high degree of standardisation regarding the amount of spathic calcite added to the paste (Lull *et al.* 2008, 138). Finally, the petrographic study of 24 pottery samples from Puig Morter de Son Ferragut also evidenced a high degree of standardisation in this variable (Risch and Gómez Gras 2003).

If we consider the around three hundred pottery samples analysed up to now in the Balearic Islands dated between 1550-550 BCE (*i.e.* including the samples studied by the existing literature and our own research), we can affirm that there is a low coefficient of variation in those variables that are clearly related to the calcareous nature of the pastes. This feature of the ceramic record is apparently always associated with the addition of high amounts of spathic calcite temper. When it has been calculated, the coefficient of variation has proven to be below 0.20, thus evidencing the normalisation of the potters' technological choices regarding paste preparation and the procurement of certain raw materials that greatly determined the properties of the final products. Such technological choices lasted for a long time in the Balearic Islands, in multiple geographical areas and are documented in all the archaeological contexts (*i.e.* habitat, funerary and ritual).

These technological choices became widespread since their emergence in the Early and Middle Bronze Age (*c.* 1750-1550 BCE) and lasted until the end of the 'Talayotic' period in the Early Iron Age (*c.* 550 / 500 BCE) and even in the 'Postalayotic' period (Albero and Cau 2017; Albero *et al.* 2014; Palomar 2005), being virtually the only temper used in the periods under study. Some scholars argued that it was in the 'Talayotic' period that the maximum development of this fabric took place. In this regard, Waldren noted an increase of 17% in the amount of $CaCO_3$ in the ceramic assemblage of the area of Valldemossa in the 'Talayotic' period (Waldren 1991).

Finally, it should be noted that – unlike subsequent phases of the prehistory of the Balearic Islands (see Albero *et al.* in press) – the potter's profile was also normalised in these periods. The more or less specialised skills of the craftspeople are related to the regularity with which they apply certain technical procedures (Costin and Hagstrum 1995). Thus, very homogeneous productions regarding the use of certain raw materials, techniques and shapes in pottery production are usually linked to relatively experienced potters with some technical expertise. Such homogeneity is also detected in other phases of the *chaîne opératoire*, for instance in the vessel formation and surface treatment of 'Talayotic' pottery from diverse archaeological sites on the Balearic Islands (*e.g.* Es Pedregar, Son Fornés, Son Serralta, Els Antigors, Ses Talayes de Can Jordi, Son Oms, Pula), thus evidencing a high degree of normalisation in certain technical actions (Lull *et al.* 2008, 153).

Archaeological context

We have tackled the paste recipes, firing strategies, potters' skills and the degree of variability associated with the pottery produced during the 'Naviform' and 'Talayotic' periods. However, the interpretation of the technological choices iden-

tified, taking into account the potters' social context, remains pending. Such an interpretation requires a contextual approach to the archaeological record and the main features of the 'Naviform' and 'Talayotic' social dynamics in order to properly contextualise the ceramic technology and avoid essentialist and universalist explanatory models.

'Naviform' period

Coinciding with the emergence of this pottery tradition in the Balearic Islands between *c.* 1600-1500 BCE, the adoption of a cyclopean monumental architecture in the domestic realm took place at the beginning of the 'Naviform' period (Guerrero *et al.* 2007; Lull *et al.* 1999). This type of architecture had ideological and symbolic functions for the communities of the islands, since there are no other structures exclusively dedicated to these functions (Fornés *et al.* 2009). A new lifestyle characterised by intensification and greater centralisation of most productive activities – which were located in the public domain – appeared during the 'Naviform' period. This is a feature that was later enhanced in the 'Talayotic culture' (Salvà and Hernandez 2009). The evidence suggests that some activities were carried out in contexts that went beyond the domestic units. Thus, the groups that inhabited the 'navetiform' structures (*i.e.* boat-shaped structures) developed cooperative relationships in actions such as the erection of architectural constructions, the procurement of raw materials or the care of the cattle and the fields (Lull *et al.* 1999, 57; Lull *et al.* 2004, 142-143).

Therefore, scholars point to a communal organisation of production directed towards certain specialisation of the productive work, among which we must also include pottery production. Such specialisation is observed, for instance, in the breeding and consumption patterns of livestock (Belenguer and Matas 2005). In addition, the presence of complex firing structures at several archaeological sites (*e.g.* Canyamel, Son Oms, Hospitalet Vell) and certain spaces delimited by wall structures that separate large areas in some 'navetiform' villages (*e.g.* Closos de Can Gaià, Son Mercer de Baix) appear to be associated with the specialisation of certain production activities. These areas and firing structures – which were in use around 1300 BCE – have been related to the production and management of surpluses. Finally, it should be noted that a high concentration of bone awls was recorded in certain areas of the site of Sa Marina de sa Punta. These findings also point to the existence of communal spaces dedicated to relatively specialised activities (Calvo *et al.* 2001; Guerrero *et al.* 2007; Lull *et al.* 1999, 57; Plantalamor and Rita 1984; Rosselló 1993).

'Talayotic' period

The transition between the 'Naviform' and 'Talayotic cultures' (*c.* 1000 / 800 BCE) was characterised by the abandonment, both in Mallorca and Menorca, of the 'navetiform' villages and the creation of new enclosed sites. In these new villages, the structures were organised around certain monumental architectural elements such as mounds, towers and even the walls of the sites themselves. The use of a monumental cyclopean architecture in domestic contexts was discarded and applied only to the construction of new communal structures (*i.e.* talayots, turriform

structures). Nevertheless, as occurred in the previous period, there seems to be a close relationship between the role of cyclopean architecture, social cohesion and certain symbolic dynamics (Castro *et al.* 1997; Guerrero 1999, 32, 41; Guerrero *et al.* 2007; Lull *et al.* 1999, 59). In this sense, some 'Talayotic' villages were constructed over 'navetiform' structures in some places (*e.g.* Son Oms, S'Illot, Son Mercer, Es Figueral de Son Real), though the inhabitants adjusted the configuration of the sites to the new architectural schemes that characterised the 'Talayotic' period (Calvo and Salvá 1997, 56; Calvo *et al.* 2001, 52; Guerrero *et al.* 2006, 18-25; Lull *et al.* 1999, 59, 61). This fact suggests the persistence, use and reinterpretation of certain rationale schemes rooted in the Late Bronze Age societies, which would have been direct ancestors of the 'Talayotic' communities of the Early Iron Age (Lull *et al.* 1999, 61).

Many productive activities developed in the 'Talayotic' period also appear to be related to forms of collective or public organisation, since at least certain phases of the production process were managed by specialised craftspeople who were following redistributive strategies. Such statements have been proved, for instance, in the sharing activities related to meat processing identified in the 'Talayot 1' of Son Fornés (Gasull *et al.* 1984). The existence of redistributive systems under symmetrical social relations explains the degree of homogenisation observed in the material culture (*e.g.* pottery production) of this period as well as the regularisation of the phenomena associated with such materiality. Portable artefacts also show a clear regional uniformity, thus indicating the existence of specialised productions that went beyond family and local spheres. In this sense, many technologies (*e.g.* cyclopean architecture, metallurgy, pottery production, lithic and bone industry) did not experience substantial changes between the Late Bronze Age and the Early Iron Age (Plantalamor 1997; Andreu *et al.* 2007). This indicates the persistence of certain systems of organisation of production that remained relatively unaltered between both periods. Moreover, although some new rituals appeared (*e.g.* the use of quick lime in funerary contexts), it is also documented how collective burials remained the predominant pattern in the 'Talayotic' period (Guerrero *et al.* 2006). Collective strategies were intensified in this period, being also evident in the way that the communities conceptualised the landscape (Calvo 2009). While the territoriality was hardly perceptible in the 'Naviform' period, in the 'Talayotic' period an intense demarcation of the catchment area through the creation of networks of symbolic sites is documented (*i.e.* turriform structures, staggered platforms and talayots) strategically distributed through the territory. These networks of sites were aimed at creating visual connections that demarcate the social space of the entire community.

In short, the social inertia recorded between the 'Naviform' and 'Talayotic' periods is reflected, among many other aspects, in the perpetuation of collective monumental cyclopean architecture, the predominance of collective burials – which included new strategies to eradicate social inequalities in life (*e.g.* quick lime burials) – or the technological persistence observed in the production of a wide variety of objects, including pottery. On the other hand, several studies remark on a partial centralisation of certain products (*e.g.* meat), at least in some stages of their production. These products were later redistributed among the population, so that

the inequalities that might have arisen within the community were minimised. In addition, we must consider that the 'Talayotic' communities constructed their social environment from the previous structures available. While some evidence of hierarchisation is detected in the 'Talayotic' period – *e.g.* the presence of some individuals with weapons buried in the necropolis of Son Real (Hernández-Gasch 1998) or the beginning of the use of wooden coffins (Guerrero *et al.* 2006) – diverse community strategies are documented. In this sense, many authors consider the 'Talayotic culture' as a continuation of the 'Naviform' society, as another phase of development of the same social and economic formation (Guerrero *et al.* 2007, 341; Lull *et al.* 1999, 58). Thus, there are cases (Mannoni 2007) in which potters' skills and profiles remain unaltered regarding certain ways of making pottery and the use of specific techniques and raw materials, even when significant cultural changes occur. In these situations, potters usually readjust their knowledge and forms of organisation to the new situation.

Interpreting technological choices in pottery production

Once the high homogeneity of the ceramic record in the studied periods has been ascertained, we must address the significance of the technological choices observed within the potter communities and craftspeople who made the vessels. The use of spathic calcite temper and the control of firing temperatures are aspects that have been already treated in previous studies, though the efforts were mainly focused on explaining the causes of their emergence rather than the role that these technological choices might have played in the 'Naviform' and 'Talayotic' societies. On the one hand, interpretative viewpoints related to 'ceramic ecology' (see Albero 2014*a*, 129-145) were proposed in the 1980's (Waldren 1982), and are currently being considered by many scholars (Andreu *et al.* 2007; Lull *et al.* 2008). Thus, Waldren explained these technological choices by arguing that their adoption promoted a more efficient and sustainable relationship with the natural environment in a context of demographic pressure (Waldren 1982). On the other hand, most of these authors also applied a material-science approach (Albero 2014*a*, 146-193) and a functionalist background to explain the use of calcite temper (Lull *et al.* 2008, 140; Palomar 2005; Waldren 1982; Waldren 1991). These works interpret pottery technology mainly by means of traditional positions in which ecological, technical and economic factors determine the technological choices. Thus, the significance of social and cultural factors has not yet been fully considered (Albero 2014*a*, 194-244). However, it must be assumed that pottery can be made following certain technical procedures that aim to reinforce principles of social structure (Pfaffenberger 1992; Sterner 1989). In this sense, ethnographic works demonstrate the relevance that cultural tradition can play in most phases of the *chaîne opératoire*, such as the preparation of the paste (Barley 1994, 115). Cultural tradition greatly influences the manufacturing process and involves the use of certain raw materials, paste recipes, techniques and fabrics that are shared by the potters for a long time in certain geographical areas.

In the following sections, we will interpret the technological choices recorded using the principles of the 'anthropology of techniques' and the 'social theory of technology'. Thus, we will consider how knowledge was transmitted among the

individuals and how this materiality was related to the emergence of certain communities of practice and a shared *habitus* associated with the creation of identity and social bonds in the specific cultural context of the Balearic Islands. We are aware of the significant differences existing between the 'Naviform' and 'Talayotic cultures', which in the case of the pottery are reflected, for instance, in substantial typological changes between both periods (see Fig. 5) (Guerrero *et al.* 2007; Lull *et al.* 2008, 165). However, as we pointed out before, common forms of social organisation of production and persistence in many technologies – including ceramic pastes – occurred in both societies. Thus, we opted to jointly address the possible social significance that might have had the technological choices in the pottery production of both periods.

Mobility, Knowledge transmission and learning contexts

Knowledge transmission and learning contexts at the local level

The degree of a ceramic assemblages' variability is associated with the existence of certain pottery traditions, knowledge transmission systems, learning contexts and ways of making ceramics. 'Naviform' and 'Talayotic' pottery productions were characterised by a high homogenisation and low variability in the raw materials, techniques and final products. Despite the fact that there are a few exceptions, the degree of uniformity detected in the pottery evidences a manufacturing system very similar among the different production units (Waldren 1991). This homogeneity reveals that the degree of communication and interaction among the artisans was intense – probably related to a small social distance between the individuals – and to the fact that there was widespread access to the knowledge associated with the technological tradition. We have seen that the production of extremely calcareous ceramics requires certain expertise and technical cohesion at different stages of the *chaîne opératoire*. Therefore, stable learning mechanisms and cohesive knowledge transfer systems were necessary for the proper acquisition and perpetuation of the technological practices embedded in the pottery tradition.

An intense interaction and knowledge transmission between the artisans would have been far easier in collective or public contexts of production and learning, rather than in private spaces. Unfortunately, we have no direct evidence of the existence of collective spaces associated with pottery production during the 'Naviform' period. Only indirect data related to the features of the pottery fabrics and the existence of other collective productions organised in public spaces (Salvà and Hernandez 2009) are currently available. In any case, there is evidence of collective strategies in pottery production during the 'Talayotic' period. Such collective strategies would have favored the homogeneity observed in the ceramic record as well as the existence of certain potters' profiles. Thus, in the sites of Son Fornés (Lull *et al.* 2008, 153) and Puig Morter (Risch and Gómez-Gras 2003) researchers pointed to a division of pottery production in different spaces on the basis of the forming methods and surface treatments recorded, as well as from the association of tools and raw materials related to pottery production recovered in domestic spaces. These authors claimed that the organisation of pottery production in the

'Talayotic' period was characterised by the presence of a limited number of experienced and highly-skilled potters who were able to manufacture all kinds of vessels (especially those of higher technical complexity). Alongside this highly-skilled production, other individuals would have occasionally developed a small-scale production of vessels in the domestic realm, sharing the materials and main technical routines with the experienced potters (Lull *et al.* 2008, 153).

The 'Talayotic' firing structures found in the sites of Sa Talaia de Torrepetxina (Menorca, ESP) and the west enclosure of Son Matge (Mallorca, ESP) (Waldren 1982), point to the existence of collective firings. These productive contexts can be related to specialised areas in which this phase of the production process was developed at a supra-household level (Lull *et al.* 2008, 165). The features of the firing structure observed in Torrepetxina evidence that the production far exceeded the needs of a single household (Andreu *et al.* 2007). The presence of highly-skilled potters in this phase of the *chaîne opératoire* would have favored the success of the firing. Experienced potters would have been able to overcome any difficulty related to the use of extremely calcareous pastes, long times of exposure and reducing atmospheres by means of a constant practice and a deep knowledge of the firing process. Subsequently, the pottery produced could have been redistributed among all the potters involved in the procedure. The use of the same paste recipe by all the potters is crucial in such collective firings, since a different thermal behavior among the vessels – related to differing physicochemical properties present in different materials – compromises the entire batch.

This production strategy would have promoted significant ties between the diverse production units. On the one hand, certain phases of the *chaîne opératoire* – *e.g.* the procurement of raw materials (clay, temper and fuel, see Albero 2017) and the firing process – were probably developed collectively in public spaces. On the other hand, potters were compelled to use the same technological choices in order to get vessels with similar qualities and pastes that favored the success of the production. This organisation of production, in which public and private spaces were combined, is consistent with the archaeological record. Beyond the two firing structures stated above, there are no workshops or specialised areas dedicated to pottery production in the archaeological record. Furthermore, the degree of homogeneity observed in the ceramic assemblage would have been difficult to achieve if the production had been entirely developed by productive units totally disconnected from each other during the production and learning processes. This kind of relatively standardised production could have been developed by a high number of artisans thanks to the use of certain common areas of production as well as an efficient transmission of the *savoir faire*. Most of the knowledge transfer would have taken place in such collective and fluid spaces, in a learning context without restrictions in terms of access to the raw materials and the knowledge related to the techniques.

The degree of homogeneity observed in the 'Naviform' and 'Talayotic' periods requires tightly regulated knowledge transmission systems in order to avoid the development of technological innovations and maintain the tradition. Thus, ethnography shows that it is common to find situations of a master's strong control over the apprentices, so that the capacity for action by the learners is mini-

mised through mechanisms such as age, experience or social prohibitions (Barley 1994, 76). Apprentices are warned through these mechanisms about the limits of their technological choices in the different phases of the *chaîne opératoire*. Thus, they are informed about when their actions represent a point of breakdown of the social order (Dietler and Herbich 1998). In conclusion, it is the emergence of certain transmission knowledge systems and learning contexts that allows the existence of a specific technological tradition. In consequence, such knowledge transfer systems and learning contexts are usually well established and very difficult to change (Vidal and García 2009).

Knowledge transmission at the regional and archipelago level

There are different scales of knowledge transfer that act on the basis of social gravitational forces involving sociocultural flows related to more or less close entities, such as individuals, families, groups or regions (Albero 2014*a*, 208). The technological choices and the high degree of homogeneity observed in the pottery of the Balearic Islands were implemented at a regional scale, being present in distant geographical areas (including several islands) since the 'Naviform' period. This fact demonstrates the strong acceptance of the technological choices and this paste recipe at the archipelago level.

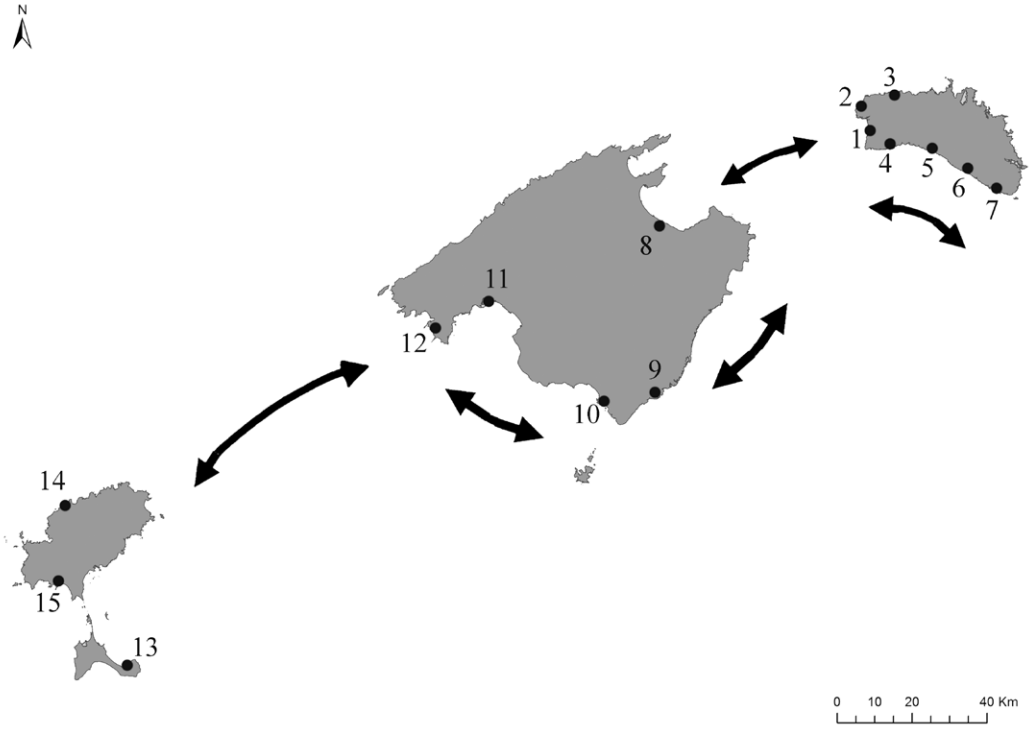


Figure 6. Coastal routes and archaeological sites during Late Bronze Age: (1) Cala Blanca; (2) Pop Mosquer; (3) Cala Morell; (4) Macarella; (5) Llucalari; (6) Calescoves; (7) Cap de Forma; (8) Illot des Porros; (9) S'Almunia; (10) Na Moltona; (11) Na Galera; (12) Puig de Sa Morisca; (13) La Cala; (14) Illa Murada; (15) Punta des Jondal (figure: D. Albero Santacreu, after: Calvo et al. 2011).

Ethnographic research (Gosselain 2008) demonstrates that a low technological variability at the regional level can be related to cyclical or seasonal movements that certain potters perform throughout the territory, thus influencing the choices made by other individuals. By means of this mechanism, productive units of neighboring villages and remote areas are likely to adopt certain technological choices in a process that embodies the interaction developed. In this sense, the features of the pottery from the Balearic Islands must be understood and explained in a broader context characterised by relatively intense and fluid contacts that took place at different levels: among the potters of the same community, among potters of different communities on each island and between potters from different islands.

It is in the 'Naviform' period that a clear cultural uniformity between Mallorca and Menorca (Guerrero *et al.* 2007) and even Formentera (Sureda *et al.* 2013; 2017) is documented. As we have seen, this uniformity is also present in pottery technology, along with a typological homogeneity between the ceramic assemblages of Mallorca and Menorca, both within each archaeological site itself as well as in the diverse communities of the archipelago (Guerrero *et al.* 2007). The existence of similar manufacturing processes suggests the use of the same strategy in the organisation of the production, based on close ties established between individual / group, and the structuration of society on the diverse islands. The regional interaction suggested by the pottery tradition is consistent with the creation of a coastal mobility network formed by several archaeological sites strategically located on the shoreline around *c.* 1300 BCE (Fig. 6). Such coastal infrastructure was intended to facilitate the social interaction at the regional and archipelago level using the sea (Calvo *et al.* 2011).

> *"[..] los grupos que habitaban las estructuras naviformes mantuvieron relaciones de cooperación…Sin duda, dichas relaciones implicaron la movilidad de individuos y la transmisión de conocimientos ya que, en un contexto no centralizado políticamente, sólo constantes contactos inter-grupales aseguran la transmisión del saber social en aspectos tan cotidianos como la tecnología cerámica"*[1], Lull *et al.* 2004, 142-143.

This relatively fluid and intense interaction resulted in a certain *habitus* and common practices among the 'Naviform' communities of the archipelago (Albero *et al.* 2011). Once established, shared and internalised by the islander human groups, the techniques and raw materials used in pottery production remained stable for a long period – being present in Menorca and Mallorca during most of the Iron Age (Albero 2011; Albero and Cau 2017; Albero *et al.* 2014). Once assimilated by the diverse communities, the maintenance of the technological tradition through time and space could be done without the need for intense and fluid contacts by means of the *habitus* as well as the existence of well-established learning contexts and mechanisms to prevent any deviation from tradition. Moreover, the

1 Quote in English: "The groups which inhabited Naviform structures maintained cooperative relations…. Certainly, these relationships involved mobility of individuals and the transmission of knowledge because, in a context not centralised politically, only constant inter-group contacts ensure transmission of knowledge in such everyday social aspects such as ceramic technology" (translated by the editor).

social role embedded with the technological choices implemented would have also minimised the alteration of certain phases of the manufacturing process.

Communities of practice, social cohesion, habitus and identity

What part might social role have played in the development and persistence of a stable ceramic production shared by the vast majority of potters? The development of a pottery production organised around a high level of interaction, shared practices and potters with similar skills would have favored a common perception of the social order, thus promoting social cohesion between the diverse members of the community, helping to keep the social balance and the reproduction of the social order.

The transfer of knowledge among individuals promoted the emergence of potters' communities of practice related to certain ways of making, involving individuals with a similar technical profile. Potters belonging to the same community of practice perceived, conceptualised and gave meaning and value to the pottery following the same criteria (Albero *et al.* forthcoming). We must consider, therefore, that pottery played a significant collective social role, at least for the members of the community of practice who produced the vessels. Moreover, the interaction and generation of common technological practices would have resulted in the acquisition of a shared *habitus* among the artisans of the same community and between the potters of diverse groups. This means that the social role of these practices, technological choices and final products were internalised and naturalised by the individuals. Thus, potters could have put in practice certain paste recipes, *chaînes opératoires* and social practices acquired in the learning contexts without being fully aware of the technical, social and symbolic connotations embedded in their actions or without having a critical attitude towards their technological choices.

In any case, such common practices would have promoted the sense of unity, community and group identity among the potters. This is an aspect that, as we explained before, is essential in the social structures of the 'Naviform' and 'Talayotic' societies, being materialised in the construction of the landscape, settlement patterns, monumental architecture, burial rituals or homogenisation of the non-metal items, among many other aspects. In short, there is evidence of long-lasting shared practices, which were highly visible in the material culture produced in the Balearic Islands during these periods. In this sense, collective strategies strengthened the social cohesion within the indigenous communities, making less evident the social differentiation observed, for instance, in the last moments of the 'Naviform' period or in the 'Talayotic' period (Calvo *et al.* 2012).

If it is assumed that identity largely involves a lived and practiced phenomenon rather than actions that are consciously developed (Tilley 2006), we can consider that pottery and the technological choices associated with its manufacture also play a key role in the materialisation of social practices and the generation of a relational identity (Hernando 2002). In a relational identity, the bonds existing between the individuals who belong to a given social group – in our case to a potters' community of practice and, more generally, to a particular society – act as a central element of their existence. The ceramic record suggests that these mechanisms of

social cohesion and materialisation of the relational identity through pottery production began at the start of the 'Naviform' period, when there was a widespread development of the technological choices recorded. These organisational strategies were developed during the Late Bronze Age and Early Iron Age thanks to the existence of well-established knowledge transfer systems, a shared *habitus* and field homologies (Albero 2014*a*, 223) within the indigenous communities. At the same time, the cohesive social role of the technological practices and the generation of a relational identity could have promoted the stability of the pottery tradition itself.

Conclusions

We have addressed certain technological choices related to paste preparation and pottery firing strategies implemented by potters from the Balearic Islands during the Bronze Age and Early Iron Age. The analysis of the ceramic record shows the use of relatively standardised paste recipes and firing procedures as well as the same potters' skills between the different production units. In consequence, potters produced vessels with similar characteristics.

The analysis of the features of the pottery pastes – together with a contextual approach to the social dynamics that characterised the 'Naviform' and 'Talayotic cultures' – allow us to point to the development of common practices associated with the existence of well-established knowledge transfer systems and learning contexts. The direct and indirect evidence that is available suggests that this knowledge transfer took place in collective or public contexts, at least in some phases of the production process, such as the procurement of raw materials or the pottery firing. This fluid and continuous interaction was developed at different scales: among members of the same community, between different communities of the island, and between communities from different islands of the archipelago.

These shared practices – once internalised by the individuals and giving place to a certain technological *habitus* – promoted the social cohesion of the islander groups. Moreover, these practices led to a potters' community of practice related to a specific *savoir faire* and potters' skills that used the same rationale schemes to load with meaning the pottery and the practices involved in its production. These technological choices materialised and structured the relational identity bonds existing among the individuals living in these communities. In addition, in agreement with the phenomena observed in other dimensions of material culture, such practices participated in the maintenance and reproduction of the social order.

Finally, it should be highlighted that the continuities observed in the pottery production of the two periods studied represent a proper framework to address how certain social structures were reused and reinterpreted in time and space. The diachronic analysis conducted evidences that the technological choices were not limited to any one of the archaeological cultures studied. On the contrary, such practices – which were related to a certain *habitus*, ways of organizing the production and structure of the society – were present over a long period of time in the Balearic Islands.

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Making things, being mobile: Pottery as intertwined histories of humans and materials

Caroline Heitz

"*Making is a journey; the maker a journeyman.*", Ingold, 2013, 45.

Abstract

In this essay, I question current models of central European Neolithic societies that are informed by concepts of sedentarism and cultural homogeneity. Based on pottery styles, they miss out two fundamental conditions of human life: the constant oscillation between movement and stasis and the on-going engagement with materials. Drawing on T. Ingold's thoughts on the 'making' of things and P. Bourdieu's habitus-theory, I argue that everyday human action like the making of a pot (1), unfolds in spatially and temporally bounded movements and mobilities and (2), emerges from an engagement of humans with their material and social landscapes. Hence, the features of pottery vessels comprise histories of their becoming that intertwine the itineraries of geological materials and their human makers. Some vessels are made and used at the same place ('local vessels'), others are transported over various distances ('translocal vessels'). When humans and things are on the move, encounters with otherness can trigger creative processes, which might also become materialised in pottery ('inbetween vessels'): the appropriation of new materials, different techniques, styles etc. To follow the itineraries of things thus offers an entry point to a deeper understanding of past peoples' mobilities and the negotiation and transformation of temporarily stable cultural forms. I will develop my approach on the pottery of the Neolithic settlement of Hornstaad-Hörnle IA at Lake Constance (DE) (3918-3902 BC).

Keywords: *movement, mobility, making, appropriation, pottery, Neolithic*

Introduction, or from cultural homogeneity to stylistic plurality

Let us start with an archaeological example that challenges common notions of static, disparate, homogeneous Neolithic cultural groups and proves them to be empirically untenable. Located at western part of Lake Constance (DE), the Neolithic settlement of Hornstaad-Hörnle IA[1] provides us with such a case (Fig. 1). Thanks to the waterlogged preservation conditions, the wooden remains of the pile dwelling allow us to reconstruct its history[2] in much detail (Billamboz 2006, 297-414; Billamboz *et al.* 2006, 415-418; Dieckmann *et al.* 2006; Matuschik 2011, 16-39). As dendrochronological analyses revealed, the settlement lasted only for about sixteen years. In the excavated part, settlers started to erect the first wooden houses with stilts in 3918 BC, probably reusing piles from an older, unknown part of the same or a different settlement (Fig. 1: A; Dieckmann *et al.* 2006, 233; Matuschik 2011, 16). From this first settlement phase α, about 45 fragmented pottery vessels are preserved (Matuschik 2011, 45, 106-107, 66-98). In 3909 BC, most of the houses burnt down during a blaze (Matuschik 2011, 17). Out of the layers with fire debris over two hundred pottery vessels were recovered (Matuschik 2011, 114). The most abundant basic shapes were cooking and storing pots, followed by jars and bottles, while bottle-like pots, hanging vessels, mugs as well as deep and shallow bowls were found in smaller numbers (Dieckmann *et al.* 2016, 80-85; Matuschik 2011, 198, 317, Fig. 141) (Fig. 2: above). Immediately after the blaze, the settlement was rebuilt and lasted for another seven years or so (Matuschik 2011, 18; Fig. 1: B). The pottery belonging to this second settlement phase β is barely different compared to phase α (Matuschik 2011, 45). Finally, in 3902 / 3901 BC the settlement was abandoned, most likely due to the rising level of Lake Constance (Dieckmann *et al.* 2006, 116-118; Dieckmann *et al.* 2016, 80, 226-227; Matuschik 2011, 37-38). Without serious issues on dating or stratigraphy clouding the view, the settlement's pottery provides an ideal case example to outline my theoretical approach on the movements and mobilities of humans, materials and things in past societies.[3]

In such a settlement one might expect the pottery to be rather uniform, belonging to one single local pottery style. Was it not made by a sedentary subsistence-based farming community during a very short period of time? Far from it – the settlement's pottery has a surprising stylistic variety. Indeed, most of the vessels were made in the typical local 'Hornstaad'-style[4], including some of the slightly older local 'Lutzengüetle'-style. But there is also a considerable number of vessels made in pottery styles that are well known from adjacent regions (see Fig. 2: below) (Matuschik 2011, 210-252, 318; Schlichtherle 1990, 143-148): some of

1 The settlement structures and pottery vessels were published by H. Schlichtherle, I. Matuschik, A. Billamboz and B. Dieckmann in their seminal publications (Schlichtherle 1990; Billamboz 2006; Dieckmann 2006; Matuschik 2011) on which I will draw in this paper.

2 At least for half of the settlement's estimated area of 7500 m^2 that was excavated.

3 I am about to develop these thoughts for my PhD-thesis and the research project 'Mobilities, entanglements and transformations in Neolithic wetland sites of the Swiss Plateau (3900-3500 BC)', managed by Prof. A. Hafner at the Institute of Archaeological Sciences (Prehistory) at the University of Bern, Switzerland.

4 In fact, it was on the basis of this settlement's material culture – and not least the pottery – that the so-called 'Hornstaad' cultural group was defined.

them have obvious 'Schussenried'-shapes and decorations, which are characteristic for Upper Swabia and the Neckar region (DE). There are also little bottles peculiar to the 'Polling' in Upper Bavaria (DE). A few further vessels are similar to the 'Michelsberg'-style[5] of south-western Germany while others show features of the so-called 'Cortaillod'-style[6] of the Lake Zurich region (CH). The latter include also traits of the NMB[7]-style that is even known from eastern France.

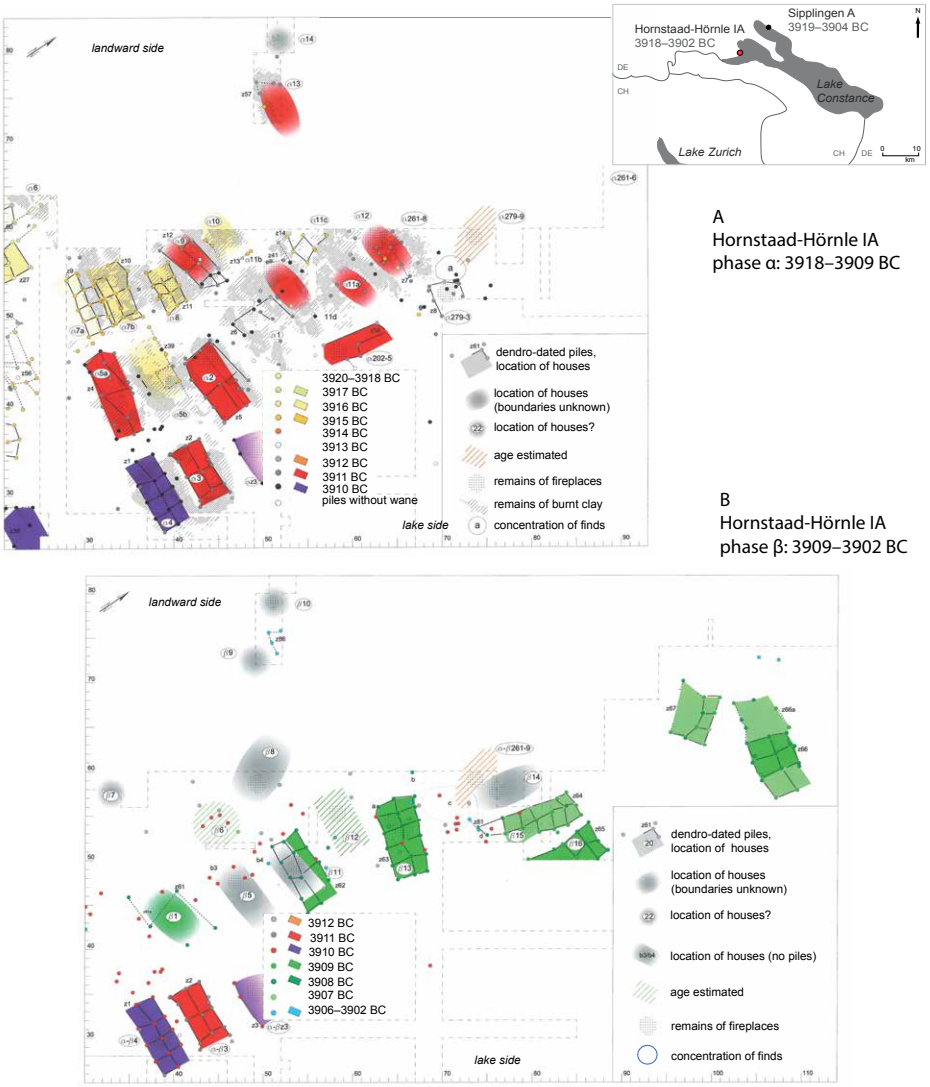

Figure 1. The Neolithic wetland site of Hornstaad-Hörnle IA at Lake Constance (DE) and its settlement history, based on dendrochronological analyses (figure: C. Heitz; after: Matuschik 2011).

5 See Seidel in this volume.
6 See Stapfer in this volume.
7 NMB: *Néolithique Moyen Bourguignon*, see Stapfer as well as Jammet-Reynal in this volume.

Such a stylistic plurality may be quite astonishing – but only if a subliminal though rather common basic assumption is made. I call it the 'one settlement-one culture-model'. Lacking scientific dating methods, pottery was used for decades to establish chronological units, resulting in spatial and chronological schemes of 'cultures', to which newly excavated artefacts could be assigned and thus dated relatively (Hafner 2003; Hafner *et al.* 2016; Doppler and Heitz in prep.). Hence, the research's focus was on the quantitatively predominant main characteristics of pottery. Perhaps unintentionally, this practice of research fostered the notion of cul-

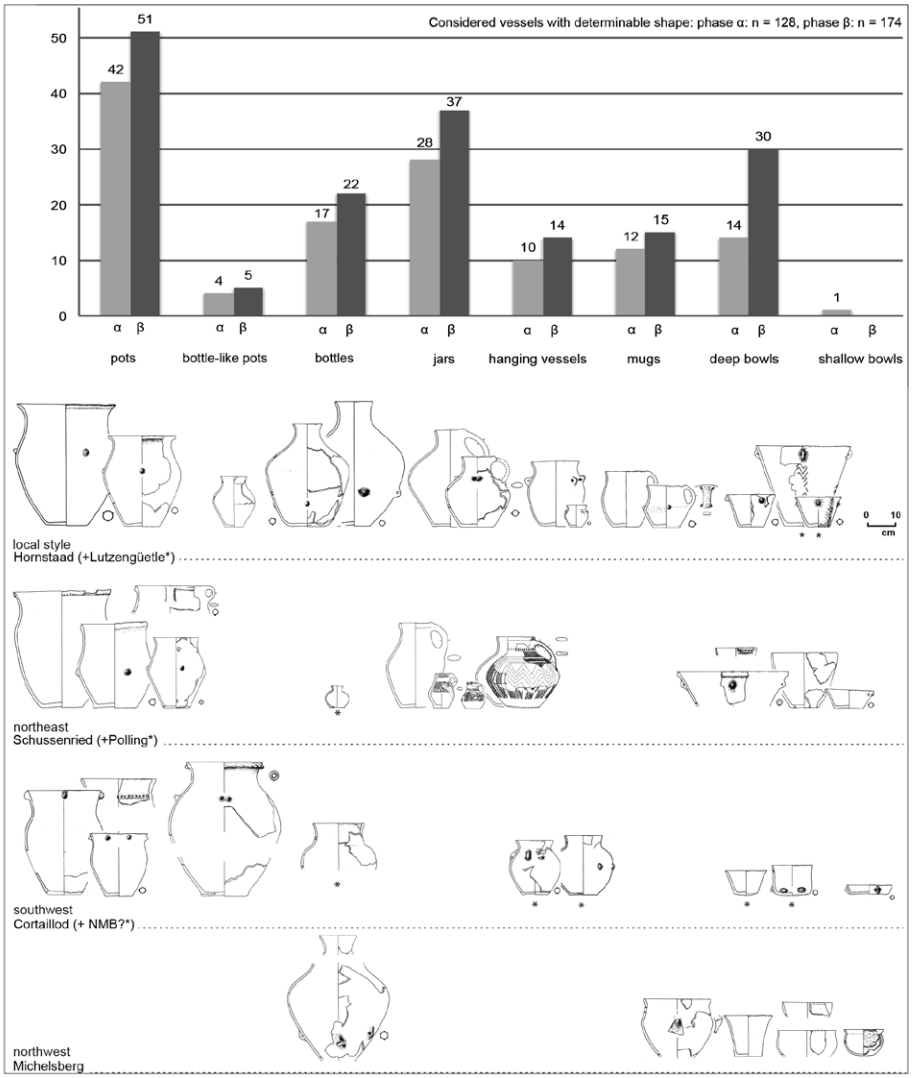

Figure 2. The pottery from the Neolithic wetland site of Hornstaad-Hörnle IA (DE): basic shapes of the typical local 'Hornstaad' and 'Lutzengüetle' styles and their frequency in the two settlement phases as well as vessels with similarities to other styles (figure: C. Heitz; data source and drawings: Matuschik 2011; Schlichtherle 1990).

tural homogeneity. It went hand in hand with an understanding of Neolithic societies as being inherently sedentary. Thus, cultural homogeneity, sedentariness and spatial boundedness were taken as the starting point for all further considerations.

A closer look at the pottery of contemporaneous and neighbouring settlements to the one of Hornstaad-Hörnle IA is quite revealing: stylistic pluralism is actually not the exception but the rule (Fig. 3).[8] This even accounts for the whole first half of the 4th millennium BC in the Alpine Foreland as recent studies have shown (Heitz and Stapfer forthcoming; 2016; Burri 2007; Pétrequin and Pétrequin 2015; Schlenker 1998). These findings raise the question of how sedentary – or in other words – how mobile those communities actually were.

Mobility has rarely been addressed in this field of research (Burri 2007), and if so, it was mostly done indirectly. Adduced concepts to explain observed stylistic ties like 'cultural kin' and 'exterior relations' (*e.g.* Lüning 1967, 135-178; Winiger 1971, 101-122), 'cultural contacts' and 'acculturation' (*e.g.* Schlichtherle 1998, 175; Suter 1987, 192) might indicate such attempts. Efforts were also made to differentiate stylistically 'foreign pots' into 'imports', 'imitations', 'derivates' *etc.* by analysing the provenance of the clays and tempering materials used (*e.g.* Burri 2007; Scharff 2011; Schlenker 1998). But even those barely lead to deeper discussion on mobility-related phenomena as such and their impact on pottery making. Indeed, scientific methods like thin section and X-ray fluorescence analyses are crucial to figure out if pottery was made from locally available materials or not (see Hafner *et al.* 2016; see Stapfer in this volume). But what about the pots' styles? How can we differentiate typically local from non-local ones? Why do different pottery styles even exist? And what is a 'style' anyway? Of course, the styles – like the vessels themselves – do not just *exist*, they are *made*. Consequently, what we need is a deeper understanding of the making of things. This will carry us away from archaeology at its 'purest' to more anthropological and philosophical topics in the following.

Thus, the objective of this essay is threefold: the aim of the first and lengthiest part is to conceptualise 'making' as a mutual relation between maker and material. While the term 'design' will be proposed for the potter's imagination of the intended-thing-to-make, it is only through his engagement with materials and his habitual 'style of action' that a pot takes shape and receives its characteristics, referred to as 'material style'. The social dimension of the making will be addressed by the concept of '*habitus*'. Thus, the relation between the practices of making and using pottery – most obvious in the iteration of design-sets – can be approached. The second part of the essay aims at theorizing 'movement' and 'mobility'. 'Movement' and '*stasis*' are uncovered as basic conditions of human life, shaping everyday practices like pottery making. 'Mobility' then is understood as movement between different (social, spatial or mental) units of a context. These three spheres of mobility, the 'spatial', 'mental' or 'social', often coincide.

8 During the workshop, I. Matuschik had mentioned differences between the pottery styles in Hornstaad-Hörnle IA and Sipplingen A too.

In the third part the relation between 'mobility' and 'making' will be examined. Pottery vessels are taken as representations of intertwined histories of materials and humans. Arguing from a settlement's perspective, 'local vessels' were made and used in one and the same social and material landscape. In contrast, 'translocal vessels' where made elsewhere by a different *habitus*-group and then brought to the settlement by mobile humans. The spatial mobility of pots, potters and pottery mongers and users inevitably leads to encounters of 'otherness'. It will be shown how appropriations and transformations triggered by such encounters can also be recognised archaeologically in so-called 'inbetween vessels'.

settlements	age BC		considered vessels
1a. Hornstaad-Hörnle IA, phase α	**3918–3909** (dendro)		n = 128
1b. Hornstaad-Hörnle IA, phase β	**3909–3902** (dendro)		n = 174
2. Sipplingen A	**3919–3904** (dendro)		n = 45
3. Eschenz-Werd A	*ca.* **3900** (typo)		n = 43
4. Alleshausen-Hartöschle	**3920–3916** (dendro)		n = 30
5. Ehrenstein III	*after* **3955** (typo)	dendro of older phase Ib: 3955	n = 60
6. Zurich-Kleiner Hafner 4D	*between* **4000–3900** (typo)	mixing of finds with older layer likely	n = 29
7. Zurich-Mozartstrasse 6u (section 1)	**3913–3901** (dendro)	attribution of dates unsure	n = 40

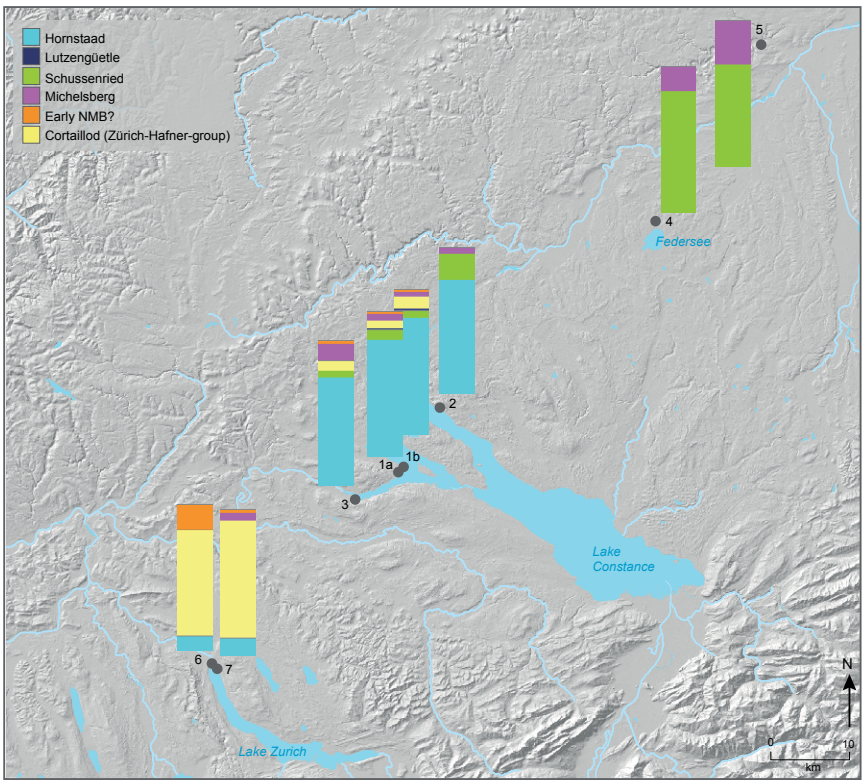

Figure 3. Semiquantitative tendencies (!) of stylistic plurality in the pottery of wetland sites in north-eastern Switzerland and southern Germany at around 3900 BC (figure: C. Heitz, C. Cattaneo; data source: Ebersbach et al. 2015; Gross et al. 1992; Hasenfratz 1985; Lüning 1997; Matuschik 2011; Stöckli 2009; Suter 1987).

Crafting a pot

As stated above, things like pots and their styles, should not be taken for granted. They not just *are,* they are *made*. This calls for an action-centred perspective that shifts the focus from stylistic pattern retained in a vessel to the process of its becoming. By making things, craftspeople act in mutual relations with both: namely, the materials they work with – as described by T. Ingold (2013) – and the community they live in – approached by P. Bourdieu (2007; 2009; 2014) in his *habitus*-theory. Hence, I would like to draw on the thoughts of both scholars in the following.

Corresponding with materials: making things with T. Ingold

In his book entitled 'Making: anthropology, archaeology, art and architecture' (2013) Ingold has criticised views that implicate a unilateral human-thing-relation – or a unilateral human-material-relation when it comes to the process of making. In such perspectives, he argues, the maker is forcing his culturally shaped ideas upon the natural inert and passive substances of matter. Formerly natural 'raw materials' become packed up in 'cultural things' according to the maker's will (Ingold 2007, 5; Ingold 2013, 37-38). In such a 'hylomorphic model' (Ingold 2013, 1, 20-21, 37-38, 45) 'nature' is sharply separated from 'culture' as well as 'mind' from 'matter' and the world is seen as a mosaic of disparate stable entities.

Taking a process-philosophical point of view, he argues, it is more truthful to understand the world as a constant flow of ever transforming matter, as a current of life (Ingold 2013, 17, 19, 25-26). Therein things and beings get caught up alike. Thus, not just things, but also organisms and the whole world are matter and energy, substances and forces (Ingold 2013, 93-95). In order to persist, organisms as well as things need maintenance (Ingold 2013, 95): *e.g.* pots tend to weather, to erode, to break or fall apart over time if not taken care of; (human) bodies will die if prevented from the needed regular intake of energy. It is not stability that should be taken for granted but transformation, as the world is full of histories of becoming (Ingold 2013, 81, 87). In consequence, Ingold has stated, we should be more concerned with 'ontogenies' than 'ontologies' (Ingold 2013, 3, 10-11)[9] and thus the histories of becoming.

What then is *making* in a world full of ever transforming materials with their own histories of becoming? It means intervening this flow by engaging with the materials. Practitioners like potters are "itinerants, wayfarers, whose task is to enter the grain of the world's becoming and bend it to an evolving purpose" (Ingold 2013, 25-26). Hence it is not in the maker's mind that the form takes shape. Rather the form emerges during the very process of making itself, involving different materials and their properties in a surrounding world of physical forces.

A potter, for instance, does not just take his raw materials and model whatever form he has in mind, executing a preconceived step by step plan until the pot is finished. For one thing, the clay is not raw. 'Having been dug out from beneath the

9 As well as in a lecture that I attended at the University of Basel (CH) in March 2016. https://ethnologie.unibas.ch/fileadmin/ethnologie/user_upload/redaktion/Research/Publications/JJB_Bachofen_No2_Ingold.pdf [30.11.2016].

topsoil', it has to be prepared mostly by sieving unwanted components out of it, by adding the required tempering material as well as water only to be 'exhaustively kneaded before it is ready for use' (Ingold 2013, 25). Potters might choose materials in their surroundings that they can best (or have learned to) work *with* – as the example of Hornstaad-Hörnle IA shows.

The geologist W. Scharff has analysed[10] the sediments from the surroundings of Hornstaad-Hörnle IA that could possibly have been used for pottery making, as well as 34 pottery sherds (Scharff 2011, 373-384, Tab. 1-4). The clay marl of the Upper Freshwater Molasse,[11] deposited by rivers about 16 to 5 million years ago, turned out to be too sandy for pottery making. Also, a grey silty clay sediment in the lake and an un-weathered silty till deposited by moraines of the Rhine glacier reaching from the central Alps to Lake Constance are lacking the needed plasticity. The latter two also had higher concentrations of carbonate than attested in the pottery sherds (Scharff 2011, Tab. 6). The Neolithic potters seem to have dug weathered and thus less carbonate layers of these two clays occurring just beyond the topsoil (Matuschik 2011, 51; Scharff 2011, 374). They were sufficiently malleable and easily accessible. For making pots[12], the clays then were habitually tempered with crystalline rocks that can be found in the gravels of local moraines. Cataclastic granites, originating from the Aaremassif in the central Alps, were preferred because they could be crushed more easily, having already a cracked natural structure (Scharff 2011, 379). Furthermore, the mica that is abundant in those granites gives the pottery a glittering surface, reflecting the light of the sun. Thus, for making pots, materials were selected that corresponded best with the potter's own objectives, skills and bodily forces.

The shaping of a pot then also means not working on but *with* the materials. Thereby the potter has to feel the materials and to *correspond* with them in order for things to turn out well. For example, has the clay the right wetness and plasticity? How much pressure can I apply and the clay take while moulding it? How can one balance the forces in the vessel's growing body and the increasing weight of its walls? How hard does the tool need to be and how dry the clay in order to burnish the pot's surface, *etc.* Thus the "bodily kinaesthesia interweaves contrapuntally with the flux of materials within an encompassing, morphogenetic field of forces" (Ingold 2013, 101). Some of the gestures involved in making the vessels resulted in traces that still can be observed on the vessels, even more than 5000 years later.

The typical pots in Hornstaad-Hörnle IA, for instance, were made by using coiling-techniques (Matuschik 2011, 53; Schlichtherle 1990, 92). I have examined such 'Hornstaad'-pots from the neighbouring site of Sipplingen A (see Fig. 1).[13] For making the pot no. 293, the potter most likely started by moulding the base with his thumbs out of a ball of clay (Fig. 4). The flat bowl-like shaped piece

10 From all samples, mineralogical-petrographic analyses of thin section under different microscopes were conducted, whereas 3 clay samples and 18 sherds were additionally analysed by means of XRF (see Scharff 2011, 374).

11 German*: Obere Süsswassermolasse.*

12 For bottles and some other vessel shapes different clay recipes were prepared.

13 I have the chance to analyse some vessels from Sipplingen A in cooperation with I. Matuschik who is currently working on the publication of the structures and the pottery from this settlement.

then was put on a supporting substitute. By using one hand for resistance at the exterior side of the pot, a first coil was attached at the inner side of the growing vessel's body. The clay was carefully smeared downwards and inwards over the upper side of the base to conjoin the two pieces of clay. Then, to shape the opened truncated cone of the pot's lower part, two or three further coils were attached in the same manner, again at the *inner* side. Meanwhile, on the exterior side, the clay was smeared regularly upwards. This procedure has two advantages: it results in a strong joint without trapped air in between that could make the vessel break during firing. It also means using the clay's tension as well as gravity to hold the

Figure 4. Working with materials: traces from the making process recaptured in a 'Hornstaad'-styled pot no. 293 from Sipplingen A (DE) (figure, photos and drawing of traces: C. Heitz; drawing of pot: I. Matuschik).

conical shape of the vessel in place, preventing the vessel walls from becoming too wide. Interestingly, to mould the upper part of the pots the coils were attached in the opposite way to achieve a narrowing shape. The rim's band was made by folding an extended coil towards the exterior side that then was pressed on, leaving round impressions, before being conjoined with the pot's wall. In a next step the knobs were added at the vessel's shoulder by pressing and conjoining small balls of soft clay to it. Most likely, after having been air-dried to a leather-hard condition the pot was put on its orifice and on its base another coil was added to form a kind of foot rim. The vessel's exterior surface was carefully wiped off with water, resulting in a fine self-slip covering the temper. After having dried a little longer the surfaces were smoothed with a hard tool, leaving characteristic fine elongated traces. This orientated the leaves of the clay's mica parallel to the surface, making them reflect the light. Finally, the pot was fired in reduction.

Hence, crafting a pot is not about forcing a 'cultural' idea on an inert 'natural' substance, it is not the imposition of form onto matter. Rather, it is the contraposition of equal and opposed forces immanent in the potter's whole body, the potter's clay, his tools, the substitute he works with, the use of the drying air and the heat of the flames. Making means to correspond with physical forces and the "bringing forth of potentials immanent in a world of becoming" (Ingold 2013, 25-26, 31). It is a 'gestural dance' of the craftsperson's body moving while engaging with the materials in the process of making (Ingold 2013, 101).

'Objects in series' and serial making

Having understood that form grows out of the process of making – in October 2016 I visited an exhibition in Basel's Museum of Cultures[14], which was entitled: 'Staying in line: single objects in series'.[15] What I came across there were very similar, but not totally equal, things lined up on tables, hanging down from the ceiling or carefully arranged in vitrines.

There was, for instance, a series of wooden hooks made in Papua New Guinea in the 1950s and 1970s. They were used there in ritual houses by the Itamul to hang up food (Fig. 5: A). Each of the hooks was a little different, depicting another ancestor (Buri 2016, 14-15). But overall they looked to me like variations of the same, because they shared some formal conventions. Their makers were apparently following those while carving. Thus, although form itself grows out of the process of making, the carvers were not just waiting for things to happen. They had an intention, a purpose, an image in mind. Ingold refers to such anticipated images of things as 'designs' (Ingold 2013, 62-71). The intentional prefiguration of the design continues into the making, like the mind extends to the gestures of the skilled hands in the timely process of that very making (Ingold 2013, 69-70). A design should not be understood as a strict plan that will be carried out. It is rather "a path and improvising a passage" (Ingold 2013, 69), "in which every step grows from the one before and into the one following, on an itinerary that always overshoots its destinations" (Ingold 2013, 45). Thus, the design imagined by the Itamul carvers

14 German: *Museum der Kulturen.*

15 http://www.mkb.ch/en/programme/events/2016/Staying-in-Line.html [30.11.2016].

contributed to the similarity of the hook's form – but so did the wood itself: it gave them the elongated, slightly curved basic shape that recalls the form of a timber beam. The carver had to follow it and correspond his gestures with the hardness of the wood, 'feeling his way forward' while carving (Ingold 2013, 2).

A

B

Figure 5. Things in series: (A) wooden hooks of the Itamul and (B) fulani calabash vessels arranged for the exhibition 'Staying in line: single objects in series' in the Museum der Kulturen Basel (figure A: C. Heitz; B: © Museum der Kulturen Basel).

The correspondence between maker and material was even more striking when I looked at the series of decorated West African Fulani calabash vessels (Fig. 5: B). The basic form of the spherical round-based containers is defined only by the of the calabash fruits. The decorations, which were burnt onto the surface with a hot metal tool and then coloured, show different combinations of motifs that are similar yet distinctive. In the mid-1920s, these calabashes were prestigious items, given as part of the dowry to brides by their husbands-to-be. With the birth of every child the collection increased. The vessels were used for all sorts of practices around daily food preparation and storing but were also seen as body decoration when carried around on long walks by the Fulani women (Buri 2016, 18-19).

These things were not just made in series, following a predefined formal frame and thus a series of actions in their making. They were also used in serial, habitual actions. On top of that, the things in the exhibition were also set into series by the curating anthropologist, because the similarity of these pieces, which are nevertheless individual, evokes an effect of recognition. As a consequence, design is not only imagined in the mind of the maker but lies also in the eye of the observer! This double effect also comes into play when working on archaeological artefacts. Looking at series of similar pots from the settlement of Hornstaad-Hörnle IA (see Fig. 6) we can "infer that the design once existed, in the mind of the maker" (Ingold 2013, 66) in his "anticipatory reach of imaginative foresight" (Ingold 2013, 72). To classify them according to their designs means to comprehend the designs that past people once had in mind.

To sum up my findings on the making of things in series thanks to the mentioned exhibition:

1. Things made in series are oriented to some formal guidelines, they share a similar design.
2. Thus, designs seem to exceed the moment of engagement between maker and materials.
3. The seriality of things touches also upon human actions: the habitual recurring practices.
4. Thus, seriality and iteration seem to have a social dimension that cannot be ignored.

Making 'one-offs' and 'repeat-ware' with the Leach potters

To understand the latter two points listed in the previous section, it is in my view important to reflect on the difference between making things in series and inventing unique items. Ingold states that making a thing for the first time is entirely different from "the second, third time and so on in the series, for the former is by intelligent design, whereas the latter is by mechanical execution" (Ingold 2013, 64-65). For handmade pottery this opposition seems too blunt.

Before I go further with my line of argument I would like to introduce J. and S. Leach, who are third generation, fulltime wheel-throwing potters of the famous Leach potters from southern England (UK). S. Leach is a very keen YouTuber[16] who shows and explains a lot on their way of pottery-making. Here I would like

16 https://www.youtube.com/user/sleachpots [30.11.2016].

to draw on them because they make both 'one-offs', single vessels for exhibitions and 'repeat-ware'- things in series, so to say – functional wheel-thrown pottery that they sell in their shops. In an interview by T. Flaxton (2012)[17], J. Leach explains the working process of 'repeat-ware' from a potter's perspective as follows:

> *"We have a catalogue [..] which echoes exactly what we've got, up on the website. And those are repeatable items. Take a half-pint mug: twelve ounces of clay, we know the measurements, we've got them all written down, and we throw up and out to the mouth, and that could take one and a half, two minutes."*[18]

To repeat a certain design or shape to the largest possible conformity one needs to be able to repeat both the movements and gestures in order to be 'in control of the clay'[19]; to get maximum control over the materials and thus form itself, as S. Leach puts it. In this case, the process of making is linked to repetitive movements and standardisation. Such a 'characteristic way of doing things' was understood as a 'style of action' by the archaeologists M. Dietler and I. Herbich (Dietler and Herbich 1998, 246). Because all actions of making leave traces in the material of the thing-to-become the style of action contributes to a characteristic 'material style' (Dietler and Herbich 1998, 236, 244-248). This includes all its properties: the clay, the shaping of the pot, the surface-treatment, the decorations, the firing *etc.* While 'design' refers to the initially preconceived, 'style' refers to the configured and thus made thing. In consequence, a 'design' can be realised in different 'styles'. Analytically, however, design and style are never fully separable from each other but are materially intertwined in a thing.

Taking an action-centred perspective by linking design, style of action and material style allows us to encompass two observable phenomena that are characteristic for prehistoric pottery and I thus find it very important to emphasise:

1. Style cuts through both the individual and the social: craftspeople are individuals *and* members of groups, as learning and working happens largely in a social context: be it in different workshop settings (Förster and Kasfir 2013, 12-29) or just more informal 'communities of practice' (Dietler and Herbich 1998, 247, 250-253; Wenger 1998, 149-160; 2010, 197-185).[20] A group of potters working together might thus develop their own 'workshop'- or 'micro-style'. Therefore, styles refer not only to individual habitual actions but also to social practices.
2. Style is not a rigid category but a fluent phenomenon with variations: even in the largely standardised repeat-ware of the Leach potters "each pot is always unique with its own special qualities but sharing a recognisable common design concept".[21] While the potters are feeling their way for-

17 http://www.visualfields.co.uk/MP2John%20Leech.htm (Flaxton, T. 2012. Monumental portraits of the working people in Somerset.) [30.11.2016].

18 http://www.visualfields.co.uk/MP2John%20Leech.htm (03'37"-04'52") [30.11.2016].

19 https://www.youtube.com/watch?v=NqXBvya-JqE (01'10"-01'41") [30.11.2016].

20 The topic of learning and working in groups regarding pottery will be discussed in more detail elsewhere (see Heitz and Stapfer forthcoming).

21 https://www.johnleachpottery.co.uk/content/7-frequently-asked-questions [30.11.2016].

ward by working with the materials, the pots become a little different each time, as "every kind of manual gesture admits infinite variation" (Ingold 2013, 116). As Ingold frames it: "in the practice of drawing or handwriting each of us finds our own way to hold a pen, and every way is a little bit different" (*ibid.*). Styles could thus also encompass individual 'handwritings' that can be recognised, even in archaeological finds (Bolliger Schreyer 2009, 80-86).

Hence, variations and deviations in series of things might be fostered by potters, to make their work recognisable. But with 'handwritings' there is certainly an unintended and uncontrollable side to it.

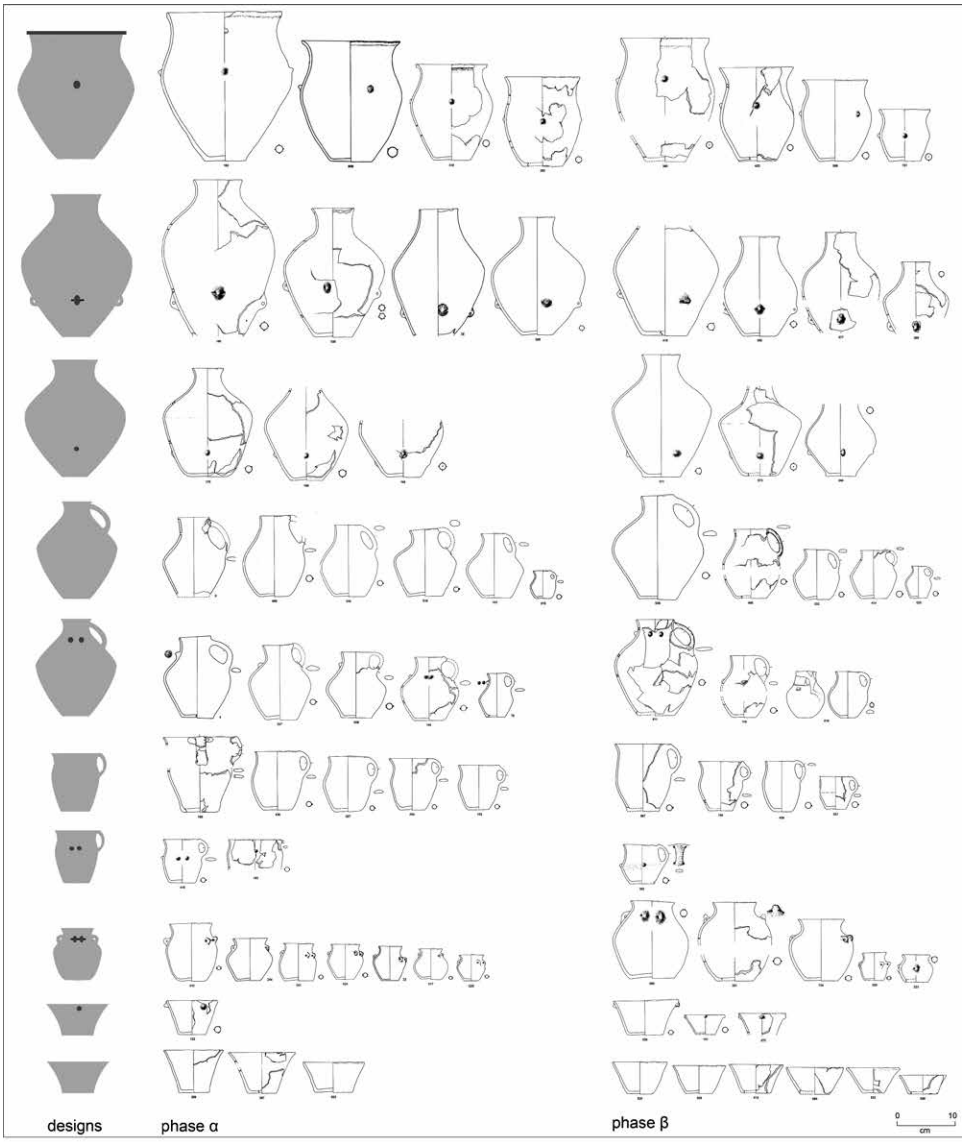

Figure 6. 'Repeat-ware': designs of pottery vessels from Hornstaad-Hörnle IA that were made in series showing the local Hornstaad-style (figure: C. Heitz; drawings: Matuschik 2011 ; Schlichtherle 1990).

The majority of the pottery vessels found at Hornstaad-Hörnle were made in series, following clean-cut designs (Fig. 6). One can even suppose that different categories regarding the size of the vessels existed, which could of course be verified metrically. Nevertheless, there is also some variation in each design-category and it would be interesting to examine those regarding 'micro-styles' or 'handwritings' in future research.[22]

However, why were things made in series at all? S. Leach explains that potters seek "to put pots in the hands of the common people", and this means making 'functional pots'.[23] He thus makes "things that people can use, like drinking vessels, pouring vessels, vessels to put hot food in, vessels that you can eat from, like plates, pitchers […]".[24] What he refers to are different designs that fit the user's habits. With their designs, or their properties to be more precise, things afford us to use them for a range of actions and, by getting used to these, we develop practices. Our bodily movements become interwoven with the properties of things in our practices. Thus, we tend to like (or to hate!) things that we know in daily practice, because they have become easy to use in this very bodily process of incorporation (see Hahn 2004*b*, 219), not to mention the meanings we attribute to them in those various contexts of practices. The making of things in series is thus closely related with habitual serial actions – practices in other words – and cultural meanings.

But what about one-offs? In contrast to repeat-ware, making unique pieces is quite different, as J. Leach explains:

> *"*[..] *you don't make runs of things, which means you do quite a lot of repetitive movements, in a run of 50 mugs or 100 mugs. But you don't if you make one of a kind or one-offs, individual parts, exhibition parts, which* [I] *do as well."*[25]

Hence, the degree to which the actions are shaped by a generative improvisation or by routinised gestures is different. Making one-offs is more guided by "let happen what happen, come what may"[26]. The potter is led more by the flow of skills and feelings and hence the process is more open to the result. The intention is to create something new or unique and driven by another quality of imagination. As the anthropologists T. Förster and S. Littlefield Kasfir have framed it, imagination is a precondition for such creativity:

> *"*[..] *the work of imagination can be understood to be the realization of images in the mind – such as an object that takes a particular shape or style and that differs from other objects that existed before. [..] Imagination in this sense requires distancing oneself from the schemes and styles that existed before. It is by imagining the non-existent that artists can overcome the constraints of past practices.",* Förster and Littlefield Kasfir 2013, 26.

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22 Such an examination, however, would go beyond the scope of this paper.
23 https://www.youtube.com/watch?v=9u_pF6U9Vak (07'01"-07'13") [30.11.2016].
24 https://www.youtube.com/watch?v=9u_pF6U9Vak (08'36"-09'00") [30.11.2016].
25 http://www.visualfields.co.uk/MP2John%20Leech.htm (17'32"-18'16") [30.11.2016].
26 https://www.youtube.com/watch?v=NqXBvya-JqE (1:10-41) [30.11.2016].

Are there one-offs in the pottery of Hornstaad-Hörnle IA? Perhaps. Fig. 7 shows some of the pottery vessels whose designs are only represented a single time within in the ensemble. Singularity is always difficult to prove in archaeology. We never know if it is just one thing of a former series that is preserved. However, the attempt to separate them from those made in series gave me some insights. There are three categories of pottery vessel represented here:

1. Probably true one-offs: the 'Lutzengüetle'-styled bowls no. 34 and 35, are designs that only occur rarely and thus as single vessels in other settlements too (see Matuschik 2011, 244-248, fig. 167-168). But their uniqueness is limited as they could also be seen as a small series that has a high variability. Furthermore, they have some symbolic and formal references in other pottery vessels as well as wall paintings (Schlichtherle 2016, 178-187).

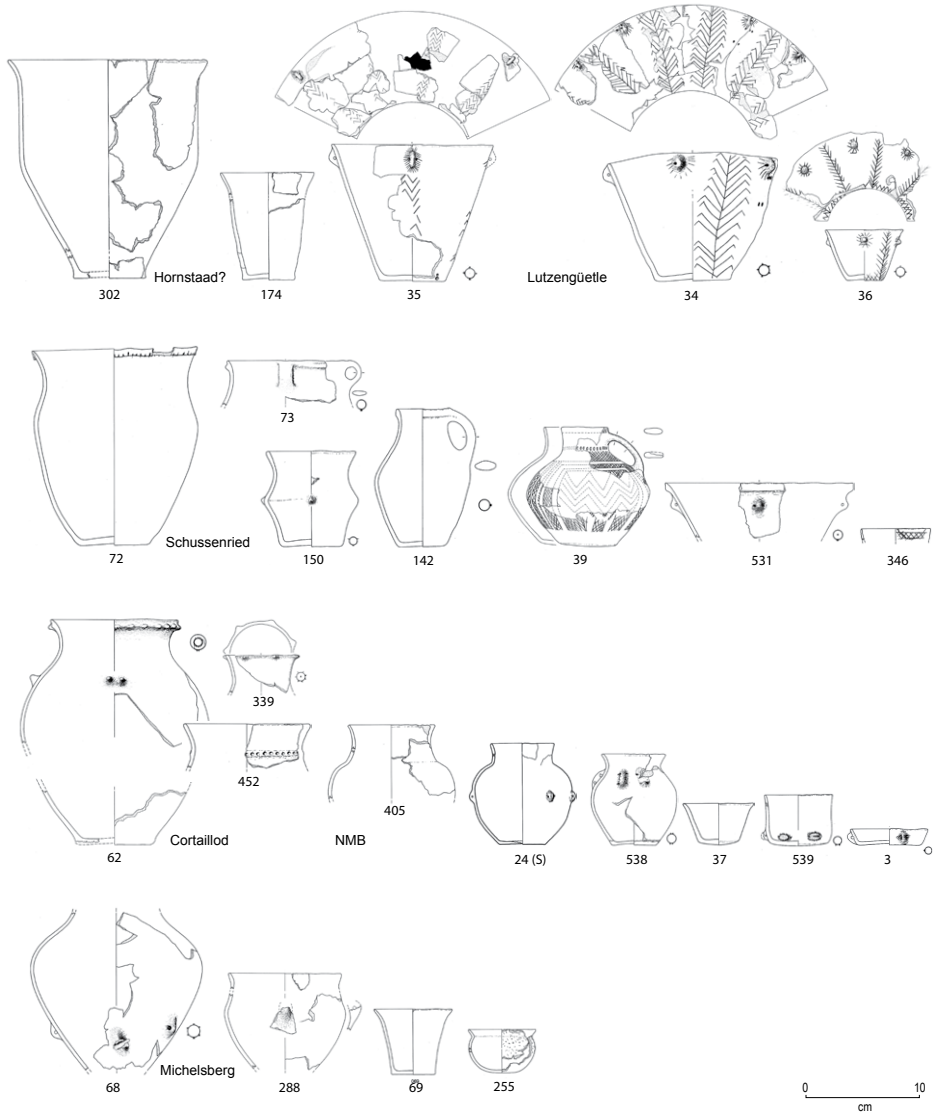

Figure 7. Rare designs of pottery vessels and possibly 'one-offs' from Hornstaad-Hörnle IA (figure: C. Heitz; drawings: Matuschik 2011 ; Schlichtherle 1990).

2. Unconventional versions of repeat-ware, like the pots no. 302 and 174 are rather more or less extreme variants of the 'Hornstaad' pot design and thus could just represent more or less deviating handwritings. This leads us to the third category.
3. Rarely occurring designs that are attested only once in Hornstaad-Hörnle IA but are well known as being made in series in other pottery styles, like the 'Schussenried', 'Cortaillod', NMB and 'Michelsberg'. Thus, they are not truly 'one-offs' but – like representatives of these styles in general – are just rare in Hornstaad-Hörnle IA. They are probably just mobility-related vessels. Before addressing this phenomenon, one last general point on the social dimension of style shall be made in the next section.

To stay in line: P. Bourdieu's habitus-concept

As shown by analysing the seriality and uniqueness of the vessels from Hornstaad, this pottery seems, over all, to have been largely characterised by the serial making of specific designs and styles. This can probably account for Neolithic pottery in general. The making of pottery in a particular style certainly required the learning, working and passing on of the knowledge within social groups. Shared pottery styles thus seem to indicate that some kind of relationship between the actors or social groups existed. To gain a deeper understanding of the social dimensions of pottery styles I find it helpful to draw on Bourdieu's concept of '*habitus*'. To illustrate it, I will present once again an example from the already mentioned exhibition of 'things in series'. There, I came across a wall-filling picture that was composed of many small photographs. They were portraits of ordinary people living today in different countries and cities (Fig. 8). First it seemed to me that every person was photographed twelve times. In fact, they were just stunningly similar looking individuals. They were dressed in the same style but could also have belonged to the same age- or gender-group, sometimes even to the same social milieu or profession. The picture is part of the art project '*exactitudes*' pursued by the Dutch artists A.Versluis and E. Uytenbroek.[27] They observed people in the streets, classified them into groups and asked them to their studio to take their portrait. The crucial point is the people within these groups did not know each other. The anthropologist Bourdieu has theorised such phenomena with the concept of *habitus,* which is key in his 'theory of practice'. I would like to recapitulate some of it briefly.

Styles – be it styles of action, clothing or whole lifestyles – grow out of the mutual relation between individuals and their actions as part of larger social groups and milieus within societies: while growing up and living in social but also material environments, we are learning how to act according to our groups of belonging and the unwritten and sometimes even unspoken and unreflected rules. Thereby, we appropriate 'dispositions' and 'schemes of action' that enable us to act fluently and habitually within the social frame of what is right, purposeful, makeable, acceptable *etc.* (Bourdieu 2009, 159, 199; Bourdieu and Wacquant 2013, 153). This logic of practice becomes not only part of our thinking, taste and desires – our whole worldview in short – but is also incorporated in our bodies (Bourdieu 2014, 167).

27 http://www.exactitudes.com/index.php?/about/ [30.11.2016].

Figure 8. Photos from the art project 'exactitudes' showing people that share the same style of clothes and have overall the same 'habitus' (figures: A. Versluis, E. Uytenbroeck).

Accordingly, potters working in a certain style of action do not necessarily follow sets of strict rules, nor are all aspects of styles any direct subject of learning or teaching. "Rather, potters share a set of learned dispositions, technical and aesthetic tendencies, which guide their perceptions of an acceptable range of variation" through the process of making (Dietler and Herbich 1998, 250). Thus, habitual action touches also upon the making of things. As we live not only in social but also material environments, the *habitus* is informing our actions with those materials. In consequence, the *habitus* also becomes expressed in the material representations of our actions, like styles of clothing or the things we make (Bourdieu and Wacquant 2013, 161). It shapes the way a potter works and becomes materialised in the form of the pot (see also Dietler and Herbich 1998, 244-246). Thus, the *habitus* can be understood as predictive routines that grow out of our experiences and that inform our practices in often unconscious ways and that are incorporated into bodies of humans that have a shared history.

Because the *habitus* informs human actions and is perpetuated though them it is not only shared by members of the social group but can also extend over time. By the iteration of practices, the *habitus* might be carried on over generations, certainly gradually changing in the process (Bourdieu 2014, 101-102; Bourdieu and Wacquant 2013, 158-159). In consequence, pottery made in the same style in several contemporaneous settlements could point to a shared *habitus* and mediated communications within larger communities of practice. But it could also point to ties within a larger meshwork of social relations or even just to a shared lifetime in the past: a shared history. Understanding this is crucial for the next section, which addresses movement and mobility.

Being in motion and on the move

It is obvious that movement plays a crucial role in making, but also in using things. In fact, human life is unthinkable without movement and mobility as I would like to discuss in the following (see also Heitz and Stapfer forthcoming).

Movement and mobility

In relation to humans, 'movement' can be seen as embodied action that happens in a spatial and temporal expansion. It is a physical process, the counterpart of '*stasis*'. There are, however, different scales of movement, which need to be differentiated in order to get an operational concept. I would like to frame 'mobility' as a special kind of movement; one that includes changing between different units of a context (see also Burmeister 2013, 36-37). Notions of such units like 'here' and 'there', 'close' and 'distant', 'self' and 'other', 'foreign' and 'familiar', 'similar' and 'different', 'space' and 'place', 'local' and 'neighbouring' bring out clearly that these categories are constructed and are dependent on different social and cultural perspectives (Frello 2008, 27-32). Moving from 'place' to 'place' is thereby overcoming geographical distances, it is 'spatial mobility'. Like movement in more general terms, spatial mobility is a condition for human life (Burmeister 2013, 36-37; Frello 2008, 26, 28; Glick Schiller and Salazar 2013, 185, 187; Salazar 2016, 1-2; Salazar and Smart 2011, 1-2). Irrespective of whether one lives in a large contemporary mega-city or in a small Neolithic settlement, humans engage

with their environmental spaces in their attempts to make them habitable places. This involves making and moving on pathways, routes, roads, waterways, in and around settlements or on our way to gardens, fields, pastures, hunting and fishing grounds where materials and food can be found. Humans move in, around and between what they consider as places as they organise their lives (Salazar and Smart 2011, 2; Salazar 2013, 553). Thus, living one's life means also carrying on in spaces that become known and meaningful and thus transformed into places. Such an understanding overcomes the dichotomy of sedentary versus mobile communities as well as conceptualising spatial mobility only as one-time far-reaching migrations.

Spatial mobility – to the same degree as making things – means to engage with materials: be it just the ground we walk on or the clothes we wear. Consequently, spatial mobility has a material dimension; it is materially grounded (Salazar 2013, 553; Salazar 2016, 3). To relate these deliberations to making things – and in our case pottery: Beginning with the collection of the required materials for making pottery, tools, pottery vessels themselves or combustible materials for the firing, the potters and their assistants and apprentices overcome spatial distances. Anthropological studies on non-industrial, handmade pottery using clay resources indicate that it might have been necessary to move up to 10 km away from the settlement (*e.g.* Gosselain and Livingstone Smith 2005, 35; Martineau *et al.* 2002, fig. 7). From shaping the vessels to surface treatments and the application of decorations to their bone-dry pre-firing stage, the potters move mainly within or around their settlements and different activity areas. The pottery firing – unless it happens in kilns – is likely to have taken place at the edge of, or just outside, the settlement due to the risk of fire disasters. Pottery-making thus encompasses various actions that involve changing rhythms of movement and spatial mobility in, around and away from the settlement (see Köhler in this volume). Beyond the moment of making, pottery vessels might become involved in a nearly endless variability of possible patterns and rhythms of spatial mobility: from using them within and around settlements to selling or purchasing them to or from other places, giving or accepting them as gifts, taking them along on trips or changes of residences *etc.* (see Bell and Ward 2000, 98-100; Kelly 1992, 44-51, 57). Since there is a material dimension of spatial mobility, there are various ways to approach such phenomena archaeologically. Before outlining such methodological implications for pottery research, two other dimensions of mobility shall first be briefly addressed.

'Spatial', 'social' and 'mental mobility'

Unlike daily small-scale spatial mobility around the settlement and the main place of residence, to leave for other places requires a pre-existing idea of the destination and mental maps of perhaps already-known landscapes along the way. It means to travel there mentally, long before the physical arrival. To imagine travelling means to be mentally mobile. Once arrived at another place, one might relate to the already known but also encounter the unfamiliar and unknown. The latter could be places and things never seen before and / or humans of a social group with a different *habitus etc.* – 'otherness' in short. Engaging with that otherness requires some mental flexibility. It means learning, and learning means being mentally mobile. Hence, spatial mobility means encountering and engaging with sameness *and* oth-

erness, with the familiar and the unknown. Furthermore, having arrived at a new or just a different already-known place, one's social status might be different than it is in the place of origin, being perceived as a foreigner, migrant, traveller, trader, visiting neighbour *etc.* Being spatially mobile in such cases involves overcoming or oscillating between social states and thus social mobility too (*q.v.* Frello 2008, 28-29; Hannam *et al.* 2006, 14). Thereby, questions like adaptation, assimilation and integration into the new community but also segregation or marginalisation might become relevant. However, what I would like to emphasise here is that when facing this intertwining of the material, mental and social it is helpful to think of mobility in three different spheres: 'spatial', 'social' and 'mental mobility' (see Heitz and Stapfer forthcoming). While it is difficult to record mental and social mobility in archaeology directly, indirectly we still might get a glimpse of such phenomena, *e.g.*, by approaching spatial mobility of humans with their knowledge, skills, their whole *habitus* as well as materials and things they take with them or pass on to others. For spatial mobility might lead to encounters with otherness and thus trigger creative processes of transformations that become materialised in things. To examine them means to follow the 'itineraries' of pottery as will be shown in the next section.

'Itineraries' of pottery

As stated already, human spatial mobility is unthinkable without the involvement of materials: from grounds, slopes and beaches, over paths, streets and bridges, to various means of transport, to shoes and clothes as well as containers like bags, baskets and pots – all are conditional for human spatial movements and mobilities. Just as we walk in a world full of materials and are carried by them, so we can also take them along. Being material forms of temporary durability, things can accompany us on our journeys and thus being moved from place to place, put down after a while, get lost, only to be taken up and carried around by us or other beings again. Things too are oscillating between movement and *stasis* over time. If they are materially very resilient, like pottery vessels, they even can transcend decades, centuries and whole ages – even if their meanings might be changed or lost meanwhile. When moved and passed around by humans, things have their own 'biographies', 'trajectories' or 'itineraries' as has been argued (see Appadurai 1986; Hahn and Weiss 2013, 2-6; Kopytoff 1986). Some of their whereabouts might become materialised in their properties. Additionally, things like pottery vessels are material forms that intersect several trajectories (Leary 2014, 8). They unite not only the histories of their materials – conceivable by investigating the geological origin of their mineral composition – but also of the humans who made or used them. The latter can be approached on the basis of their design and style as well as traces of usage and the place where they are eventually found. To follow these various 'itineraries' (Hahn and Weiss 2013, 7-8) and to differentiate them from each other, means to approach mobilities of humans, material and things.

'Local' and 'translocal things'

In order to understand the mobility of materials, potters and pots it is crucial to know where a vessel was made. There are different dimensions that should be separated at an analytical level, even if they are related to each other due to the process of making and thus actually intertwined in a thing (see Dietler and Herbich 1998, 238): its materials, the way in which it was made (techniques, style of action) and its design and material style. This is of particular importance, for how could we otherwise differentiate whether a thing itself was spatially mobile or only its maker and thus the skills of making a particular design and style? Furthermore, we need an archaeological understanding of localness, the familiar and habitual to differentiate it from the non-local, unfamiliar and un-habitual, 'otherness' in short.

So, what is local about a pottery vessel? If we take the perspective of a settlement's community, the potters would collect their materials near their place since sources of natural clays and tempering material are generally abundant. By means of mineralogical, petrographic and chemical analyses of the vessel's material composition, those sources can be circumscribed on the geological map (Stapfer and Heitz forthcoming; Stapfer in this volume). Accordingly, 'local materials' are those whose sources are located only a few kilometres distance from a settlement. If these sources were repeatedly and regularly visited – this can be verified by the quantity of the vessels comprising these materials – and thus constructed as the potters' localities, we can assume that this etic definition might be close to the prehistoric emic ones. The localness of the frequently and rarely reproduced designs, the style, as well as the techniques and the style of action lies in the continuous iteration of a shared pottery production practice by the community of potters and pottery in a settlement. Accordingly, a 'local vessel' is one where the localness of all different dimensions is given and the place of its production coincides with the place of its consumption (Hahn 2004*a*, 83).

The localness of pottery from Hornstaad-Hörnle IA is *e.g.* constituted by the typical 'Hornstaad'-styled vessel designs that were made in series (see Fig. 6) and the three 'Lutzengüetle'-bowls. P-XRF-analyses that I have conducted on some of these pieces showed that they belong to one chemical group (Fig. 9). While the pots are coarse ware, the bottles, jars and bowls are fine ware. Both wares were made of local siliceous clays and tempered with granites or gneisses (Scharff 2011, Tab. 3a – b), of different grain sizes. The fine ware was additionally tempered with grog. While both wares were made by coiling, the surfaces of the fine one were burnished or polished and darker in colour. Some of the pots have charred food residues and thus were used for cooking and needed to sustain thermic shocks by the hearth fires, which explains their coarser ware.

In the case of 'translocal vessels'[28], the place of consumption does not coincide with the place of production. Their materials, their techniques and the style of action through which they were made, as well as their design and style are not local. A translocal vessel has changed between spatial units and units of *habitus*; it was spatially mobile itself by means of humans and therefore is a mobility related thing of the first order.

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28 We would like to thank H. P. Hahn for suggesting this term during the workshop, the contributions from which are published in this edited volume. On the concept of 'translocality' see Hahn and Klute 2006, 12.

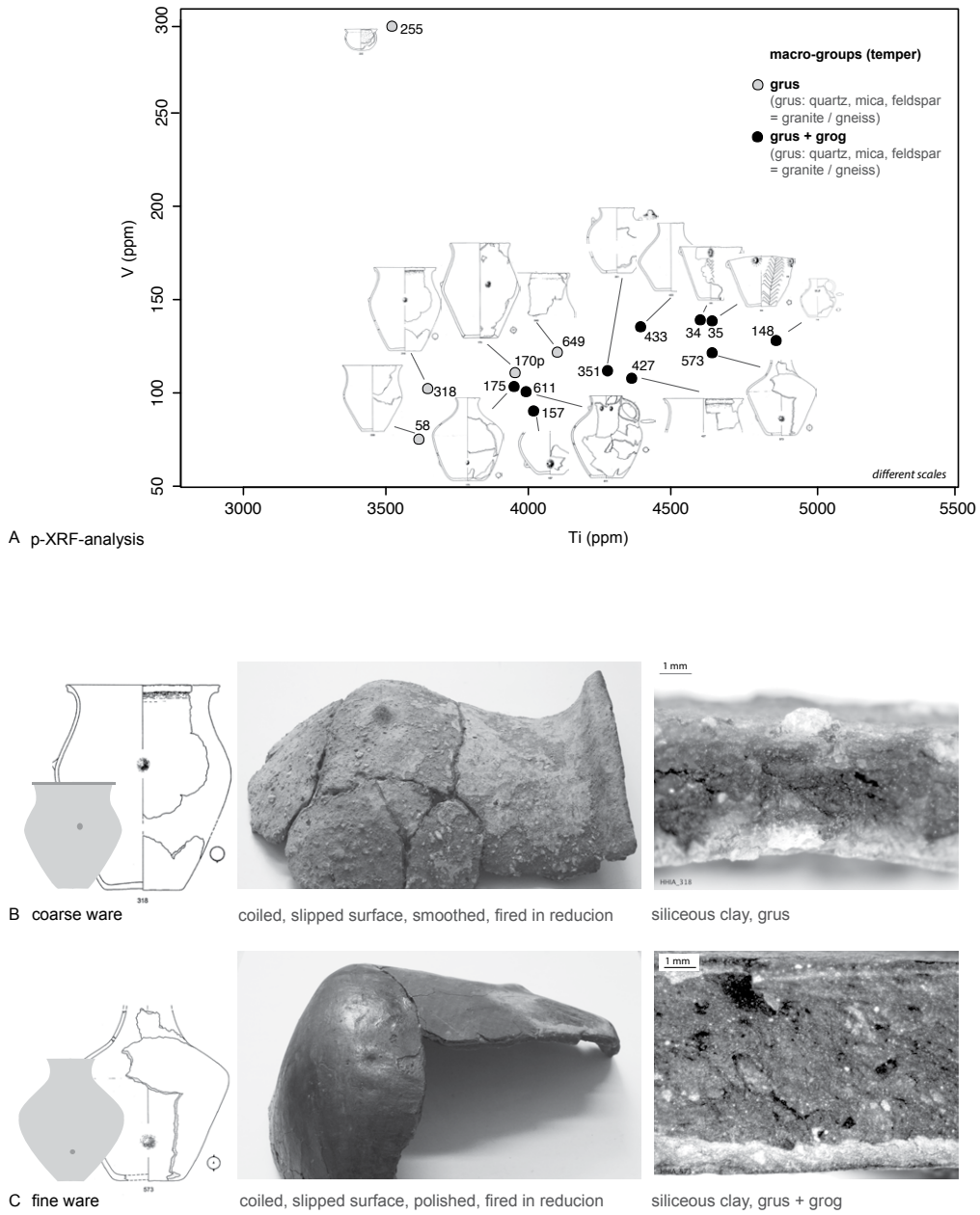

Figure 9. (A) The 'local vessels' of Hornstaad-Hörnle IA: results of portable X-ray fluorescence analysis concerning the vol-% of Ti (titanium) and V (vanadium) and the two different groups of temper or wares; (B) examples of the local coarse ware; (C) the local fine ware (figure, photos and chart: C. Heitz; drawings: Matuschik 2011).

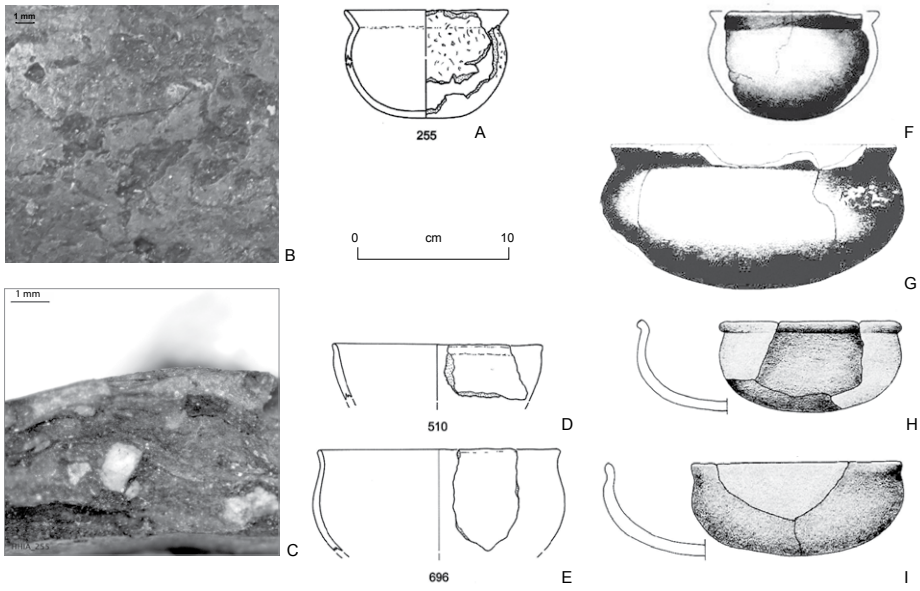

Figure 10. A 'translocal vessel': (A) shape, (B) surface imprints, (C) break of the basin shaped bowl no. 255 as well as basin shaped bowls no. 510 and 696 from Hornstaad-Hörnle IA compared with (F – G) pieces from Bruchsaal-Aue and (H – I) Ehrenstein (figure and photos: C. Heitz; A, D, E: Matuschik 2011; F, G: Stöckli 2009; H, I: Lüning 1997).

In the pottery of Hornstaad-Hörnle IA, one of the singly occurring vessels, no. 255, is very likely to be a 'translocal vessel' (Fig. 10: A; Matuschik 2011, 258, Abb. 172). It has the 'basin shaped bowl' design that is very characteristic for 'Michelsberg' pottery, the predominant style between eastern France and Thuringia at this time. A very similar piece is known from the earthwork of Bruchsaal-Aue (DE) near Karlsruhe (Fig. 10: F-G). In contrast to the vessels made in series at Hornstaad-Hörnle IA, the bowl has a round base and a clearly separated rim. The XRF-analyses have shown that the vessels have considerably higher values of Al_2O_3, V and Zn (see Fig. 9; *q.v.* Matuschik 2011, 258; Scharff 2011, 389-393, Tab. 3a and 6). This makes it very likely that the material used to make the bowl – a kaolinite clay – is of non-local origin. The nearest source of such clays is about 25 to 30 km away from Hornstaad-Hörnle IA, in or near the White Jurassic of the Swabian Jura in southern Germany. In addition, the vessel has some unique technical features too. Its exterior surface is covered with little rounded imprints (Fig. 10: B; Matuschik 2011, 56, 256, 430). The vessels' uniqueness and otherness regarding materials, design and style as well as technical features are strong indications that the bowl was not made at Hornstaad-Hörnle IA but brought to the settlement from elsewhere. The other two 'basin shaped bowls' found at Hornstaad-Hörnle IA, no. 510 and 696, having a slightly differing design, are very similar to pieces known from Ehrenstein (DE), where 'Michelsberg' pottery occurs in the predominant 'Schussenried'-style (Fig. 10: H – I; Fig. 3). While the materials of these two vessels were not analysed, the materials of the other 'Michelsberg'-styled vessels from Hornstaad-Hörnle IA did not show striking differences to the local 'Hornstaad' pottery (*q.v.* Scharff 2011, Tab. 3a – b and 6), but additional analyses are still to come.

'Affordance' and 'appropriation'

Translocal things can challenge humans if they perceive them as new and different from what they already know. Questions might arise as to what a thing is, how it could be named, handled and used, what meaning it could have and if it needed to be modified in order to fit its new user. In this highly creative process a relationship between the person and the new thing evolves, which is again mutual. With its material properties and its shape, a thing offers but also constrains the possibilities of action available to the user. A ceramic jug, for instance, with its narrow orifice, bellied body and its handle, provides the opportunity to grab it with one hand by its grip and carry it around, to fill something in or to pour something out *etc.* – but being a fragile container it is certainly not suitable for everything. In short: things offer us to do certain things with them. These moments of 'affordance' are shaped by the human perception, which is not only individual but also culturally and socially learned (see Gibson and Schmuckler 1989, 23). Affordances are dependent on particular situations in which encounters take place between a perceiving (human) being and a thing's features in a particular environment (Chemero 2003, 184-194; Gibson 1979, 127-143; Knappett 2004, 43-52).

Perception thus plays a central role in the way a new thing is contextualised and incorporated into existing contexts of meaning and practice. The anthropologist H. P. Hahn has approached the latter process with the concept of 'appropriation' (Hahn 2004*b*, 216-227; 2008, 195-199; 2011, 11-15), which had already been convincingly adapted by P. W. Stockhammer for archaeology (Stockhammer 2012*b*, 14-17; 2012*a*, 48; 2013, 16-18). Following these scholars, new things might be seen and used in ways that differ from their spatial and social places of origin (see Hahn in this volume). A jar could be used to handle liquids in one place and as an incense burner in another. Its handle might even be worked off when judged to be unaesthetic, useless or even disturbing (on such phenomena see Stockhammer 2012*b*, 26-31). Hence, things can offer new possibilities of action and thus might trigger changes in existing practices or they might be changed themselves in the process of appropriation. In consequence, the otherness or newness of a translocal thing might be a temporary state from an emic perspective (Stockhammer 2012*a*, 50). Thus, translocal pottery vessels might be perceived as different from others but not necessarily as foreign.[29]

'In-between things'

Accordingly, when dealing with translocal things in an archaeological context, we should keep in mind that affordance and appropriation might have taken place and led to the transformation of things, their meanings and the practices they became involved in. However, not all things of non-local styles found in a settlement are inevitably translocal ones. There are further mobility-related phenomena (*q.v.* Hegmon *et al.* 2000, 218-219). A pottery vessel of non-local style could as well have been made in the settlement where it was found – or near that place. In this case, it would consist of materials that are local in terms of geology. There are different scenarios to explain such a finding:

29 For a critique on the concept of 'foreign pots' see Heitz and Stapfer forthcoming.

1. The vessel could have been made by local potters, taking a translocal pot with its non-local style as model – or they had learned to make pottery in different styles.
2. The vessel was made by non-local potters who had moved to the settlement and started to use locally available materials to make pottery in their own habitual style.

In both scenarios it was not the vessel itself that was on the move. However, the making of it was mobility-related, as it emerged after previous events of spatial mobility that included the transgressing of *habitus*-groups and communities of practice. I comprehend such vessels as mobility-related things of a second order, as 'in-between things'.

There are more phenomena of 'in-betweenness' that can be observed archaeologically. In case of residential mobility beyond the *habitus*-group and community of practice, for instance, very different social processes could follow, like adaptation, rejection, alteration, marginalisation, integration, absorption *etc.* (see Eriksen 2007, 167). The new arrivals not only engage with the local community in some ways, they must cope with their new material environment too: different sources of clays and tempering materials might offer chances or set limitations to the newly arrived potters; Their knowledge and skill might be confronted with those of the local potters too, leading to mutual ignorance, rejections or uni- or multidirectional influences in their pottery production practices. While working together or side-by-side, potters might be informed / shaped through their different skills or inspired by different looking pottery vessels. Such phenomena are referred to in anthropological literature *i.e.* as 'creolisation' or 'syncretism' (see Eriksen 2003, 223-253; 2007, 171-173; Hahn 2004*a*, 88). Both terms address cultural forms that have emerged out of mutual influences, appropriations, alignments and amalgamations of meanings, symbols and practices (Eriksen 2007, 173). They are more than a mixture of two homogeneous or pure entities but are a third, new, cultural form. Regarding such 'in-between vessels', only certain material properties, designs, shapes, decorative and / or functional features or technical solutions can be appropriated, integrated or aligned to the local pottery production practices. This could lead to many different directions of transformation in the pottery making – and thus to the emergence of new local pottery production practices.

There are several examples of 'in-betweeners' in the pottery of Hornstaad-Hörnle IA, already recognised and described by I. Matuschik (2011). I will take some of the jars with complex incised 'Schussenried'-style decorations as examples. The little jug no. 45 has perfectly equal counterparts in the settlement of Ehrenstein (DE), where 'Schussenried' is the predominant pottery style (Fig. 11). Thin-section analyses have shown that it was tempered with grog. The pottery vessel from which the grog was made was tempered with crystalline calcite (Scharff 2011, Tab. 3b). Grog and calcites are a common temper in 'Schussenried' pottery and crystalline calcites do not occur at Lake Constance but in the Swabian Jura (*ibid.*; Matuschik 2011, 257). Having a truly 'Schussenried' decoration and also the typical tempering materials, it is likely that the little jar is a translocal vessel. However, the chemistry of the clay does not differ significantly from the local 'Hornstaad' pottery (Scharff 2011, Tab. 6). The large jar no. 39 is different: while

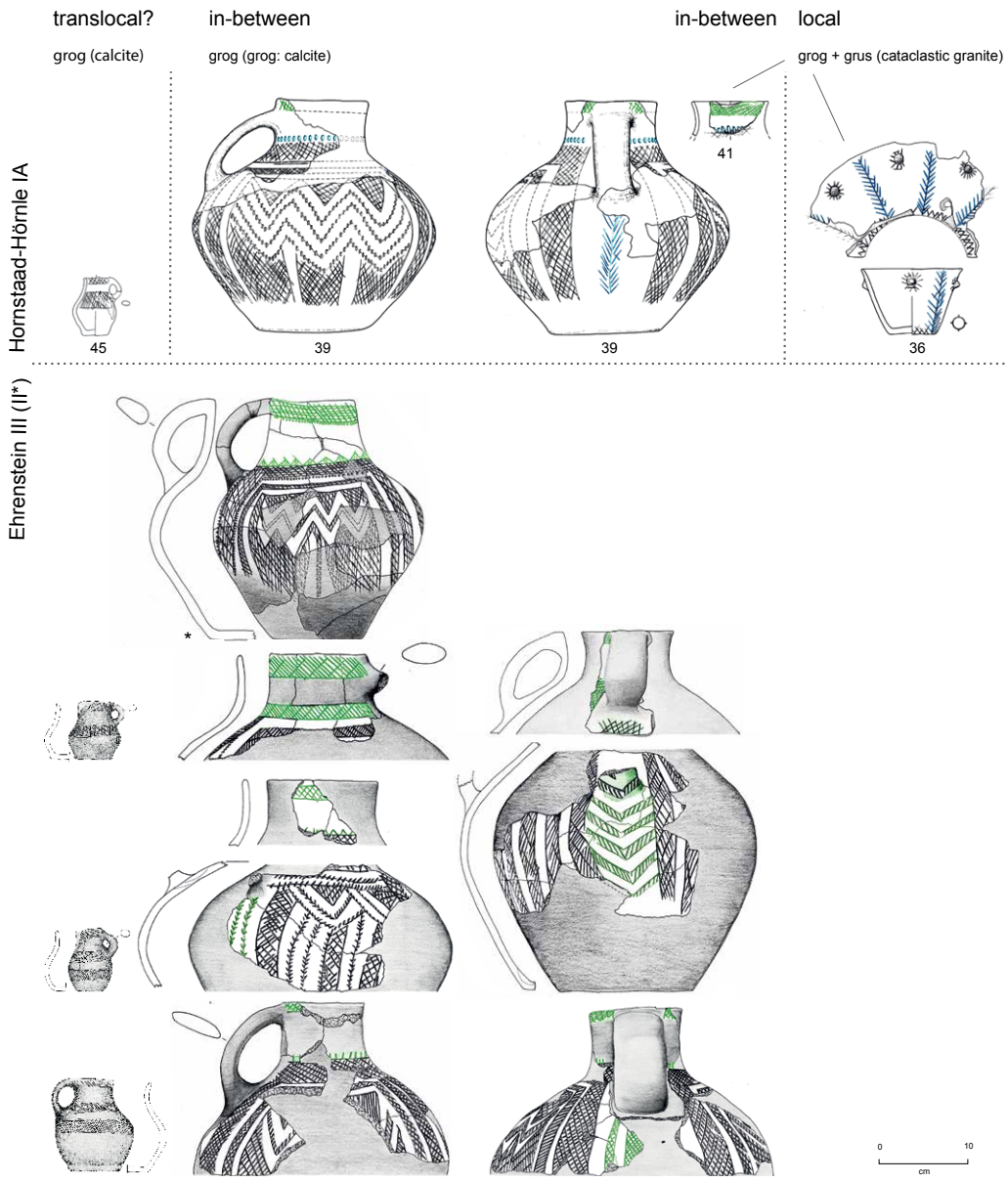

Figure 11. 'In-between vessels': decorated jars from Hornstaad-Hörnle IA compared to pieces from Ehrenstein III and II, showing phenomena of appropriation and creolisation (figure: C. Heitz; drawings of pottery from Hornstaad-Hörnle IA: Matuschik 2011; drawings of pottery from Ehrenstein III (II): Lüning 1997).*

the incised decorations have the same features and arrangement as some of the jars in Ehrenstein, the band of finger impressions on the jar's neck are different. The same is the case for a small rim fragment of no. 41. Typical 'Schussenried' patterns include short incised lines, triangles, or no band at all. In addition, the piled-up v-shaped decoration beneath the jar's handle are not typical for the 'Schussenried'- but the local 'Lutzengüetle'-style (Fig. 11; Matuschik 2011, 80-81, 248-249). The

jars' decoration thus seems to be a combination between these two styles of decoration: the local 'Lutzengüetle' and the non-local 'Schussenried'. The temper of no. 39 consists again of grog that in itself is also tempered with grog. This 'grog in the grog' contains grus of crystalline calcite (Scharff 2011, 381, 381, Tab. 3b). It is likely that this jar was made from a local clay that was tempered with grog of crushed translocal 'Schussenried' vessels. The vessel, probably a one-off[30], is a true 'in-betweener' and a result of appropriation regarding its materials and clay preparation techniques and in its incised decoration. Its overall design, however, is more on the 'Schussenried' side. The making of it certainly required some mental mobility. Interestingly, jar no. 41, like the 'Lutzengüetle' bowl no. 36, was tempered in the typical fine ware manner of the local fine ware: with grog and cataclastic granites (*ibid.*). These examples show clearly the many different creative appropriations and transformations that can be triggered in the context of spatially mobile humans and things.

Preliminary conclusions

The approach that I have proposed in this essay still remains sketchy. Its validity needs to be tested in the upcoming case study analyses of our research project.[31] However, I would like to present some preliminary conclusions.

In this field of research, the Neolithic settlements in the Alpine Foreland between 3950 to 3500 BC, stylistic plurality in pottery seems be the rule rather than the exception. Thus, the 'one-settlement-one-culture' models of these societies – rather linked to archaeological concepts of culture and fostered by typo-chronological dating methods – are empirically untenable. Furthermore, they comprise two latent presumptions: that human beings have a culture that enables them to transform inert natural materials into cultural things by carrying out their preconceived plans of making; that sedentary subsistent based farming communities were making things like pottery vessels only for their own use and thus pots and potters were not very spatially mobile, apart from rare one-time events of migration. I have argued that such notions neglect the constant oscillation between movement and *stasis* and the boundedness of all human actions in an ever-transforming word of materials. Things should not be taken for granted. Rather they emerge in mutual relations and correspondence between social human beings, whose actions are guided by habitual action (design, practices of making, skills *etc.*), the material's potential, its affording and constraining properties and the world's morphogenetic field forces. Things like pottery vessels are thus not only knots that are temporarily binding together on-going histories of materials (geology, taphonomy *etc.*) and humans (biographies). They have their own histories of becoming and their own itineraries through space and time. As such, pottery vessels can travel over shorter or longer distances, being taken or passed on. Thus, things oscillate between *stasis* and mobility just like the makers who make them or the users who use them. In this perspective, the pottery of

30 Of course, a second vessel of this type might have existed, but not found yet and it is always difficult to argue with the absence of things in archaeology.

31 A first empirical attempt was made by Stapfer in this volume, using partially diferring terms and concepts.

(Neolithic) settlements is not an expression of its inhabitants, one and only stable culture. Rather, each vessel has a history of becoming, binding together the histories of humans and materials in its temporarily material form. Thus, the histories of materials, humans and things can be approached by examining archaeological artefacts.

Pottery vessels that have locally enmeshed histories regarding the place where they were found are referred to as 'local vessels': 1, their materials are local, since they could be found in the settlements' surroundings and this could be checked using geological provenance of the clays and temper. 2, They were made in typical local styles and thus the intended designs as well as the habitual style of action reflects local pottery production practices. The latter might include more or less standardised ways of making, resulting in 'repeat-ware' and thus series of things or more unique 'one-offs'. Furthermore, local vessels can show 'handwritings' of individual potters or 'micro-styles' of communities of practice. Such differences can be approached by conducting qualitative observations and quantitative analyses of pottery features. All of this can also apply to 'translocal' vessels with the difference that they are not 'local' to the place where they were found. Their spatial mobility reached beyond geological regions and / or *habitus*-groups. Thus, they are mobility-related things of the first order because they were spatially mobile themselves, although by means of humans.

If potters with their knowledge and skills are mobile they might encounter new social, cultural and material landscapes. Many of the possible creative and mutual processes – appropriations, rejections, alignments, creolisations *etc.* – that such encounters with otherness can trigger, might become materialised in pottery vessels too. I framed the term 'in-between vessels' for all of these because they are material forms of different histories of becoming, unifying local and non-local ones. Close examination of the materials' provenance, material choices, used gestures, designs and decorative features might reveal such phenomena if compared within a wider spatial frame. Such 'in-betweeners' might offer unique entry points to a deeper understanding of the social negotiation of cultural forms and practices and, the transformation of existing or the formation of new pottery styles in context of mobility. Beyond that, it is only because those things made in the past reach materially into the present, because their itineraries crossed ours and became intertwined for a little while, that we are able to tell some of their (hi)stories.

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Pots on the move become different: Emplacement and mobility of pottery, specific properties of pots and their contexts of use

Hans Peter Hahn

Abstract

Ethnic and cultural heterogeneity in spatially limited areas does not always go along with a sharp delimitation in material culture between respective ethnic groups. The manufacture and spread of pottery products can differ considerably from the ethnic affiliation of the households in question. Wide areas of overlapping distribution zones indicate that, in every household, pottery of different ethnic 'styles' do co-exist. Differences in origin are known, but are related to special uses and interpretations. Regional trade in ceramics plays an important role for such extended distribution patterns, although the prices are considerably higher at larger distances from the place of production. Despite this, there are often very precisely defined fields of professional and everyday use that explain why specific forms or models of a particular 'ethnic style' are held in high esteem. Generally speaking, the travelling ceramic vessels are less 'multi-purpose', but much appreciated for specific and highly demanding usages.

Based on the author's own ethnographic fieldwork, the particular situation in Northern Togo is presented here as an example. Although one cannot generalize from this case study, it might serve as an indicator of the complex relations between the ethnic identity and material culture of a particular 'ethnic style'. General assumptions about congruent distribution areas are thereby questioned. It is shown how meanings and modes of use of the very same form of a pot can change from one place to the other, very often without the users' knowledge about such differences.

Keywords: *mobility of things, ceramics, interethnic relations, crafts*

Introduction

In her seminal book entitled 'Ulysses' Sail', M. Helms (Helms 1988) refers to numerous examples of how things move from one place to another, and simultaneously receive particular awareness, appreciation and evaluation. Helms' book raises awareness about the materiality of cultural relations, and about material links across cultural (and ethnic) boundaries. Her work is a substantial contribution to the readjustment of the study of cultures, overcoming the focus on the local transmission of forms and values, and instead looking more closely at transnational relations.

The following is inspired by Helms' key argument, although the context I refer to in this chapter is neither about long distance trade, nor about the prestige and high appreciation of particular and outstanding artefacts. Instead this article argues in favour of a look at the short-distance mobility of things, and about the dynamics of different meanings and usages in neighbouring communities.

In my contribution, the 'changeability' of things is considered through the lens of the phenomena of their mobility. This also affects the materiality of these objects, as well as their functions and contexts. It is of central importance to consider these aspects of material culture as interrelated topics. There is some literature on this subject dealing with the changes of things through mobility where, very much in line with Helms, the authors argue in favour of a fundamental re-evaluation (*i.e.* 'sacralisation', Kohl 2001). In contrast to such approaches, the case study presented here will show the fragmentary and sometimes contradictory character of such evaluations of mobile things. There is neither a consistent category of 'foreign things' in the local range of appreciation, nor is there a consensus within the groups of users about the use or the value of mobility.

The diffusion of ceramic recipients beyond the boundaries of the settlement area of an ethnically defined population is the result of dynamic processes that depend on the opportunities available (transport, markets, prices) as well as on other, more specific considerations of everyday use. In contrast to this pragmatic approach, focusing primarily on 'meanings' (David *et al.* 1988) leads to a problematic bias, suggesting an unsatisfying uniformity in the 'reading' of such objects. A look at the possibilities offered and the diverse usages, on the other hand, allows a special openness to refer to the different spheres of men and women and of communities of practice. A further aspect of this pragmatically motivated diversity of usages relates to the specificity of knowledge. Even though, in many cases, mobile ceramic recipients are particularly suited to certain highly specific usages, like beer brewing or food serving, they very often do not meet the common expectations of multiple use.

Negotiations about revaluations are not so much the question of whether these imports are used at all, but rather whether different users (*e.g.* men and women) equally appreciate such pots. An alternative would be to bring restrictions on usage into effect. In one sentence: at the destination of their itinerary, such ceramic items are – at least in many cases – rather 'specialists' in usage than universalists; they are contested items rather than unquestioningly adopted devices.

Background: Why mobile things are a challenge for material culture studies

Since the adoption of the turn 150 years ago, material culture was centred on the direct involvement of production, distribution and consumption. It was believed that a holistic picture of cultural patterns about an object form could only be achieved if all aspects were illuminated from the perspective of a 'biography' of an object. This ideal, at least in the nineteenth century, had been *de rigueur* when establishing archaeological and ethnographical collections at that time.

It was only during the last thirty years that it became clear why such an ideal cannot provide a sensitive description of cultures. This is due to the fact that, in history and in the present, a large part of the material goods has been travelling from one place to another, and therefore the knowledge about its use and production was fragmentary if not entirely lacking. Many people do not know where the objects they use in their life-worlds come from. On the other hand, there are many craftsmen who make things with no knowledge of how and where these objects are used.

It is only recently that the recognition of the fragmented nature of knowledge about culture has been conceptually implemented in cultural sciences. It was recognised that the spatial unity of production, distribution and use is a somehow artifical bundling. The abandonment of this link led very quickly to a new field of research, namely the study of the social and cultural dimensions of consumption. Consumer research is innovative in this respect because it recognizes the specificity of a partial access to material objects, *i.e.* consumer goods. Everyday use and high-frequency use along with a quite limited knowledge about the objects is constitutive for the everyday life of many societies; it is not an exception, but should always be taken into account in the description of any culture.

Therefore, research within the framework of 'consumption' has become an important paradigm that counteracts the problematic emphasis on the link between production and consumption. More particularly, consumer research is a useful concept when it comes to the mobility of material goods only if the concept of consumption is not reduced to the moment of acquisition, that is, to the 'consumer act' in the strict sense of the term. Rather, it is of great importance to combine this concept with all aspects of everyday dealing, changing usages within other cultural contexts, and finally of the end of use, *i.e.* discarding things. This applies to both anthropological and archaeological approaches (Greene 2008; Mullins 2011; Smith 2007; Steel 2013; Wengrow 2008).

In the context of the increasing interest in understanding of globalisation, the studies of the mobility of things have developed from a marginal phenomenon to an important trend. Various consumer goods and, in particular, certain technical devices can be viewed as the central driving forces of globalisation in the course of the past thirty years. This includes mobile telephones and all devices connected to the Internet. Examples of mobile consumer goods with more historical depth are alcoholic beverages and cotton (Ertl 2008).

In his book 'Traveling cultures', J. Clifford (Clifford 1992; 1997) has drawn attention to the importance of these phenomena. In this work, which received an outstanding response after publication, Clifford focuses on the often overlooked

or neglected aspects of mobility in everyday culture. As a matter of fact, many goods, institutions, norms and symbols are products of mobility, without the owners and users of the culture concerned being aware of the fact. Ignorance about origin is sometimes obscured by constructions of local-specific cultural genealogies. Therefore, it is often appropriate to pay more attention to the results of the migration, transfer, and material transformation of widely diffused cultural forms.

Material mobility should be considered as a key to cultural exchange. Especially in the field of material culture, it is far more common to identify links between different local cultures than is expressed in the everyday assessment of these objects. In many cases, mobility is dwarfed by ignorance. Although things carry traces of their mobility within them, people evaluate these objects differently, for example by bluffing or negating the mobile object itineraries (Hahn and Weiss 2013).

Two fields of cultural practices should be mentioned here in order to illustrate the tacit underrating of material mobility. These are, firstly, the museums. Whether we look at archaeological or ethnographic museums, the fact that the collections managed in these institutions are a compilation of extraordinarily mobile objects is quite often neglected. One might call museums 'object diasporas' (Harris 2013, 127). The hypermobile museum things are transferred by the museum principles into the status of a temporally unlimited desuetude. In museum exhibitions, the traces of travelling are erased and things are portrayed as permanent and stable representatives of a 'foreign culture'.

The second example concerns the places of mobility in modern consumerist societies. Hotels, airports and stations, as well as the equipment of the people in these places, such as luggage bags and travel tools, as well as souvenirs like postcards and other gadgets, are an experience of mobility (Hahn 2013*b*). At the same time, of course, these are the dedicated places of intended mobility for the individuals who are staying there (Urry 2007).

The materiality of mobility has been addressed in recent years in handbook articles (Adey 2014, 265-343) and in special issues of journals (Basu and Coleman 2008), as well as at conferences[1]. The new focus on the spatial movements of things has led to a paradigm shift in the overall concept of culture. The recognition of the numerous mobile things in everyday life has relativised the importance of local rootedness and the local transmission of cultural phenomena. Simultaneously, more attention has been paid to the specificities of material mobility.

As early as the nineteenth century, cultural theories like diffusionism assumed that there are world-wide migrations of cultural elements. The authors in this framework suggested that cultural elements from one group would simply be taken over in others. They failed with this approach, precisely because the diffusion of cultural features also requires a reflection about the modalities. It is not enough to say that things coming from a particular (and distant) place are accepted and used at another place, in a different culture. If one intends to avoid the mistakes of the old diffusionist theories, it is necessary to explain how things change when moving from one place to another (Hahn 2008).

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1 'Material-mobilities' http://www.c-mus.aau.dk/digitalAssets/226/226873_material-mobilities-conference-programme-20160927.pdf.

What then is the specific contribution of a study of mobile ceramics in a particular region in this important field of material culture studies? In contrast to the above-mentioned examples (brandy, cotton, mobile phones) and to numerous studies, such as the 'global jeans' (Miller and Woodward 2012) or the spread of automobiles (Rieger 2013), ceramics are not associated with a massive spread over long distances. Apart from a few exceptions (*amphorae* as transport vessels, Abdelhamid 2013), ceramic objects appear to be connected predominantly to local production and use in a geographically limited space.

Because this group of things has so far been underestimated, studies on the mobility of ceramics are quite important. But there are other aspects that make ceramics appear attractive. This includes in particular the broad spectrum of uses. Hardly any other group of objects unites so many domains of everyday life, including recipients of different types, used in the kitchen and for handling liquids. Ceramic is an important material for storage and transportation. For the case study presented in the following, some ceramic vessels also have a sacred meaning and play a role in corresponding religious actions.

The ethnic patchwork in Northern Togo

In Northern Togo, there are about a dozen ethnic groups in an area of about 400 x 100 km. The different sizes of the settlement areas and their complex spatial distribution give the impression of a spatial patchwork. The population figures of individual groups range from a few thousand to more than half a million. The latter is the demographic indicator for the Kabyè, whose language and culture is also common in the press, radio and television in Togo. At the other end of the spectrum are the Sola with no more than five thousand members.

This ethnic patchwork can be structured very roughly by the groups' languages. These languages are part of one of the two language branches of the Oti-Volta family (Manessy 1981), represented in the region. For the present case study, four larger groups were selected: two from each language group and two each from mountain settlements and plains settlements (Hahn 1993). In Northern Togo, these are the Bassar and their Northern neighbours, the Konkomba, whose languages are part of the Gurma group. The two other selected groups are the Kabyè and their Northern neighbours, the Lamba, both of which settle on the eastern part of Northern Togo and whose language is assigned to the Gurunsi group. These four groups will form the basis of the following discussion (Fig. 1, Fig. 2).

It is possible to relate the linguistic and cultural heterogeneity of this region with its environmental conditions. While the eastern groups (Kabyè and Lamba) originate probably from the South-East (today's South Nigeria) and from the West African rainforest regions; the western groups (Bassar and Konkomba) show many similarities with other cultures much farther to North (Frobenius 1909). The environmental conditions in the North, and in the Sudan and Sahel zones, is marked by a sharp division between dry and wet phases, which have much influence on agriculture there. In contrast, in the South-East, as in the rainforest-dominated coastal zone of West Africa in general, precipitation occurs all year round. However, endemic diseases and the impossibility of keeping large cattle are limiting factors for local subsistence. Compared to the differences of environmental conditions in the

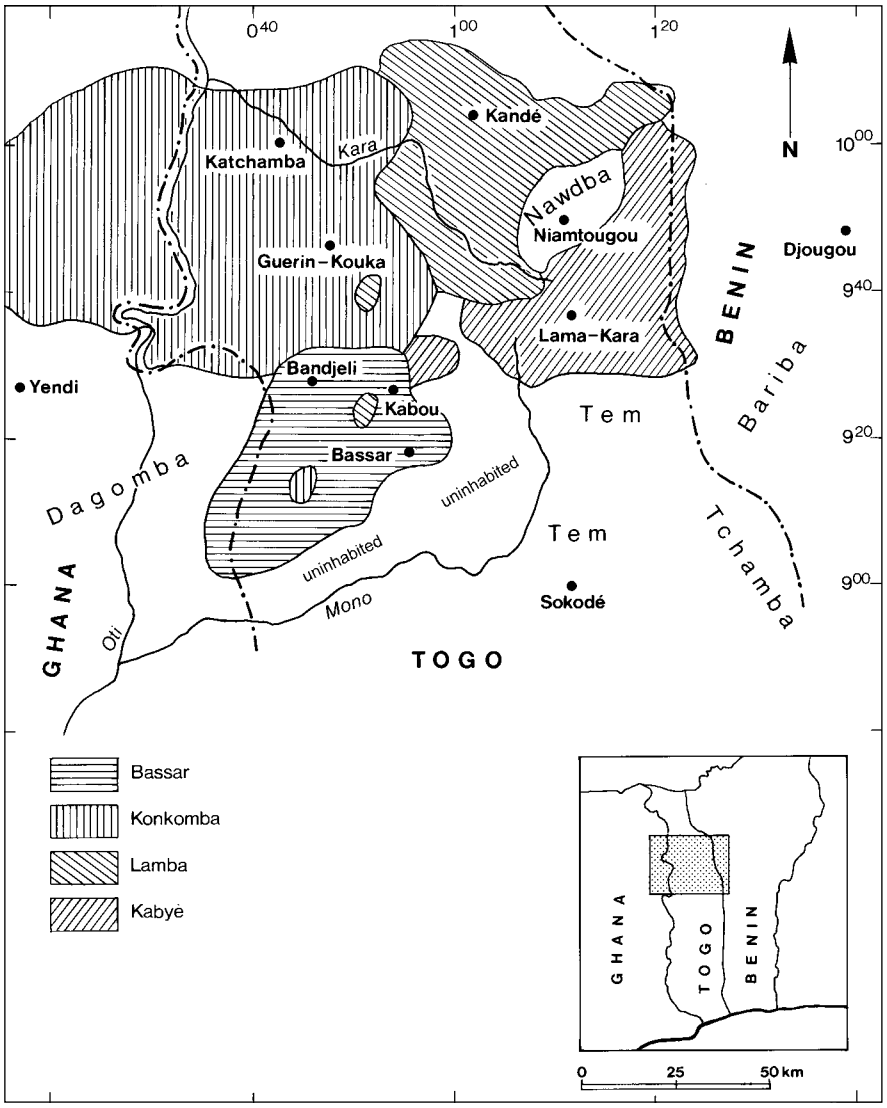

Figure 1. Map of the ethnic groups in Northern Togo included in this case study. A complete ethnic map would be much more complex, including more than a dozen ethnic groups (figure: H. P. Hahn).

regions of origin, the economies of the selected groups within northern Togo are quite similar. Despite a considerable cultural heterogeneity, which might be explained through these historical factors, at least in some domains, there is a significant similarity in material culture (Hahn 1996*a*).

This includes, in particular, items from the domains of clothing and jewellery. Everywhere in northern Togo, men wear the same or similar clothing. This also applies to the elaborate jewellery of the elderly and wealthy women. As we know from the first years of colonial times, woven cotton clothing and jewellery were among the goods sold at the markets by mobile merchants (Hupfeld 1904). These

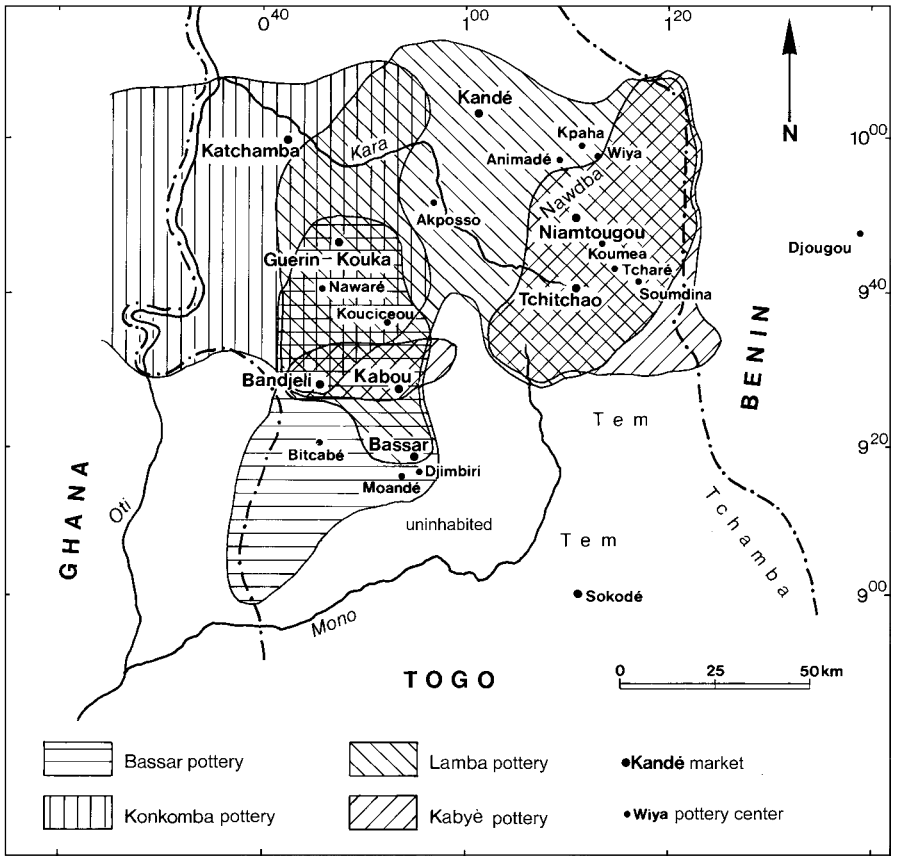

Figure 2. Map of the diffusion of ceramics according to 'ethnic styles' in Northern Togo. Overlapping areas dominate, indicating the pragmatic approach to pottery use (figure: H. P. Hahn).

items were either not produced in the region at all or they were products of specialised craftsmen.

Valuable items of personal adornment such as hand-woven heavy clothes and brass jewellery are appreciated by the wealthy owners, mostly older men, probably because they are an expression of social messages that can be recognised across ethnic boundaries. In a context where interethnic marriages occur frequently, these paraphernalia constitute a medium that makes social status recognisable beyond language boundaries. The wearers of these clothes therefore constitute a social group or status group.

By no means should the communication of status differences across ethnic boundaries be equated with a fusion or homogenisation of cultural differences. However, due to the intensive exchange at the regional markets, it can be safely assumed that there is a widespread ability to recognize the differences between material possessions in the settlements. Most people know about the culture of a neighbour, without consequently fusing with it. The homogeneous domains, like clothing and jewellery, should therefore be seen in context with the social order, which is quite similar in all groups.

Ceramic forms in Northern Togo

The situation is much more diverse for the forms of ceramic recipients in northern Togo. Centres of pottery production exist in all four groups studied. Everywhere, the female potters produce the same basic categories of forms as defined by proportion and function. Beer transport vessels and those for storing water are used all over the region, and the forms suitable for these tasks are produced by all the potters in the region. Depending on the place of manufacture, however, the vessels differ markedly in formal details and decor. Decor, and its techniques, as well as some structural elements of the form, such as the width of the vessel's rim, and the index of the size of the vessel and thickness of the wall, are specific features of the ceramics of each individual ethnic group. Due to these similarities, vessels can be easily assigned to a 'style' and, in extension of this, to an ethnic group.

Each ethnic ceramic style comprises approximately a dozen types of vessels that differ in their basic forms and functions, but together form an 'ethnic style group' (Hahn 1991). The differentiation of the four ethnic groups' pottery into different basic forms with a specific purpose is linked to certain aspects of everyday tasks: everywhere water must be stored and kept cool (Fig. 6); vessels are needed everywhere for serving and measuring beer (Fig. 3; Fig. 5). In all households of the area one can find bowls (Fig. 4). Similarly, everyday routines, such as food preparation, are obvious explanations for functional equivalents.

While style groups comprise similarly decorated items of very different function and size, the functional categories are the same throughout the region. Based on this spatial and stylistic structure, it would be easy to draw a map showing the spread of ceramics, associating the population area with the area of usage of a particular style group. Surprisingly, drawing such a map proves to be much more difficult since the spatial distribution of the ceramics does not coincide with the settlements of the ethnic groups (see Fig. 2).

Generally speaking, zones of use are much more extensive than the settlements. There are considerable areas of overlap, that is, areas where ceramics of different styles occur in parallel. The overlapping zones and (smaller) areas, where only one ceramic style is used, are thus located side by side in northern Togo. This means in detail for the ethnic-style groups:

1. Ceramics of the Kabyè potters from the craft centres of Koumea, Tcharé and Soumdina are in use far to the southwest and well beyond the Kabyè settlement area. Some (smaller) recipients are also traded beyond the area covered by the map. They are used throughout Togo in everyday *cuisine*. This relates in particular to two forms of eating bowls.
2. The diffusion of the Lamba pottery is even more extensive. Vessels from the manufacturing centres of Animadé, Kpaha and Wiya can be found almost everywhere in North Togo. The outstanding popularity of this style is focused on the large beer cooking pots, a technically demanding ceramic form with a quite specific use.

Figure 3. Drawings of beer pots from the four different ethnic styles. From top left clockwise: Konkomba, Lamba, Kabyè, Bassar. Size: ↑ 80 cm to 50 cm (figure: H. P. Hahn).

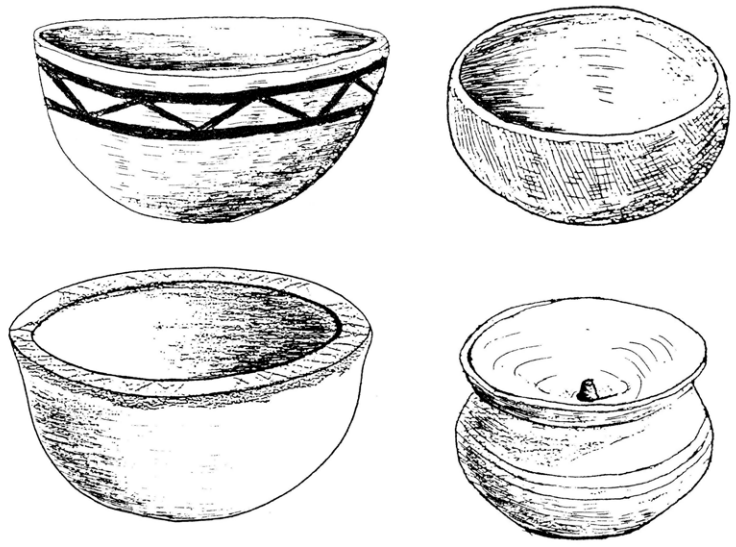

Figure 4. Drawings of bowls from the four different ethnic styles. From top left clockwise: Konkomba, Lamba, Kabyè, Bassar. Size: ø 40 cm to 25 cm (figure: H. P. Hahn).

Figure 5. Drawings of small pots for serving beer from the four different ethnic styles. From top left clockwise: Konkomba, Lamba, Kabyè, Bassar. Size: ↑ 30 cm to 20 cm (figure: H. P. Hahn).

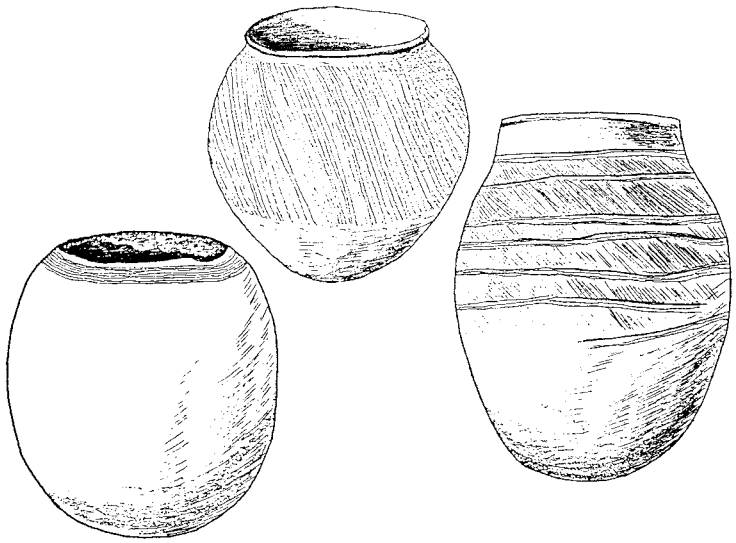

Figure 6. Drawings of water jars from the three different ethnic styles. From left to the right: Konkomba, Lamba, Kabyè. Size: ↑ 90 cm to 70 cm (figure: H. P. Hahn).

3. The areas of use for the pottery of the Bassar (pottery centres: Djimbiri and Nawaré) and the settlement areas are roughly congruent. Beyond the settlement area, Bassar-pottery has diffused northwards into parts of the settlement area of the Konkomba.
4. Finally, the ceramics of the Konkomba, with respect to the size of the settlement area, have the smallest area of diffusion. This style can be found in most households with members of this ethnic group, but nowhere else are pots with this style used in the households. Furthermore, there are hardly any Konkomba households where Konkomba ceramics are used exclusively. Almost everywhere in these households, the observer can find pots with different styles.

Based on these distribution and diffusion patterns, it is possible to divide the ceramics in northern Togo into two groups: on the one hand, there are styles whose dissemination area largely coincides with the settlement area of the ethnic group (Bassar and Konkomba). On the other hand, there are ceramic style groups with a dissemination exceeding the settlement area by far (Kabyè and Lamba). Similarly, as described by N. David and I. Herbich and M. Dietler in their case studies in North Cameroon and Kenya, some ceramics are traded across large distances across the region (David 1991; Herbich and Dietler 1991) with the help of intermediary salespeople and traders. The price of the vessels is doubled for each intermediate sale. Thus, a large Lamba-style beer vessel costs four times the selling price at Bassar market, about 100 km from the place of production, compared to the price at the pottery village.

Selling pots out of necessity

Everywhere in northern Togo, pottery is a female activity and, as a rule, it is women who bring their pots to the nearest markets to sell them there (Fig. 7). On the consumption side the situation is similar: in everyday use, it is predominantly women who use these different kinds of recipients. This is accompanied by a significant contempt for this craft in the patriarchal society and the ambivalent or even derogative rating is also articulated by the potters themselves. This detail is by itself not decisive for the following remarks. Nevertheless, it is mentioned here because there is a first indication that the ceramics, stigmatised in this way, are hardly suitable as bearers of ethnic identity, nor are they emblematic.

As a matter of fact, the wide diffusion of the Lamba-style is causally linked with an astonishing contempt for pottery. Especially in the pottery centres of the Lamba, we can assume that pottery is important despite this craftsmanship being held in low esteem. If one takes into account the rocky soils with little fertility, and the resulting precarious conditions for agriculture, it can explain how the revenues from pottery are considered as a compensation for the low level of productivity in agriculture. The diligence in crafting pots, the care and the skillful technical execution are prerequisites for their economic success.

Every year in February, when it is still more than half a year to the next harvest but the many of the village's grain stores are already empty, the Lamba potters leave their compounds loaded with some tightly attached vessels on their search for buyers (Fig. 8). The direct exchange against natural goods dominates. The value of a

Figure 7. Huge water jars being offered at Niamtougou market (figure: H. P. Hahn).

Figure 8. Women from a Lamba pottery center leave with heavy headloads in order to sell or exchange their products (figure: H. P. Hahn).

Figure 9. Beer transporting pot shown with its equivalent in millet (figure: H. P. Hahn).

Figure 10. Medium-sized pots from a Lamba pottery center waiting to be transported by a lorry (figure: H. P. Hahn).

Figure 11. Pots from a Lamba pottery center loaded on top of a lorry (figure: H. P. Hahn).

vessel corresponds to its volume of non-threshed millet (Fig. 9). The millet they receive is carried back in the unsold vessels or in large plastic bags. The women could sell the same vessels at the nearest market, as they do the rest of the year. As a principle, the women consider the revenue in cash as lower in value, compared with the quantity of cereals they receive in direct exchange. There are also some professional traders of ceramic products, transporting the pots by lorry (Fig. 10, Fig. 11).

As the potters admit, it is economic necessity that obliges them to work more and produce with more skill and care compared to the craftspeople of other places. This statement is in line with the assumption that the women report about the particular challenges of this craft, which addresses the unpleasant odours of the clay, the cold and wet hands, and the effort to carry heavy loads over long distances.

Pottery and technology

Some characteristics of the special quality of the Lamba pottery can be explained by considering the outstanding skill exercised in the process of producing these pots (Fig. 12). These include in particular the reduced thickness of the wall and the uniformity of the processing, but also special care in firing the pots (Fig. 13). These specific characteristics are also highlighted by the users everywhere in northern Togo. For users, the superior quality is more important than the decor. Even if the location of the production is not known at the places of usage, at a distance of more than 100 km, the women who brew beer with such pots or keep water in them know that these vessels are Lamba-style-products. Especially with regards to the widespread beer brewing pots, the women emphasize that the higher price is more than balanced by the savings in firewood. The emphasis on the technical characteristics of these pots illustrates the complementary character of visible features ('style') and the relevant technical features ('thin walls').

There is another example that underlines the necessary distinction between the perception of an 'ethnic style' and the knowledge of special technical characteristics. This regards food serving bowls produced by the female Kabyè potters in Koumea and Pya. Here again, the decor and details of the form clearly distinguish this bowl from similar bowls of other ethnic styles. However, the most important function of this recipient is to serve food, and again there is a particular technical feature that is much more important for the users than the outer appearance.

The specificity of this dinnerware has to do with the interior; the treatment of the surface inside the pot, which is coated with a graphite layer. In order to apply this layer, the bowls are placed before the firing pots on a small smouldering fire with the edge downwards. After some minutes a shiny layer appears on the inner wall, which is then polished with a pebble stone. Through this polishing, the graphite, or carbon black, is amalgamated with the unhardened clay. This unusual coating results in a very smooth surface; in the eyes of the users in northern Togo, this special coating is the reason why the food stays warm longer, and tastes better.

Figure 12. Making of the large water jars at a Lamba pottery center (figure: H. P. Hahn).

Figure 13. Preparing the firing of the large water jars at a Lamba pottery center (figure: H. P. Hahn).

Pottery and identity

However, the specific qualities of ceramic forms that travel across ethnic boundaries are only one aspect of the knowledge of things. In addition, and complementary to this, the ethnic classification may receive higher awareness, for example, in the case of sacrifices, as has been shown by S. Dugast (Dugast 1996) for the town of Bassar. This particular context is relevant at specific, spiritually laden moments, when the elderly men of a clan appear as experts for the execution of a ritual. They act as ceremonial masters and define the modalities of the sacrifices. Under such circumstances, it is possible that an elder man can send back a woman, who brings a sacrificial meal in a 'wrong' bowl, with the request to use a corresponding bowl of their own ceramic style instead of the Kabyè earthenware bowl.

Although Kabyè dinnerware is preferred in everyday life by all parties involved, these bowls are still considered as 'foreign ceramics' in the specific context of ritual activity. Everyday use and ritual use in sacrifices are carefully distinguished – at least by the old men. Paradoxically, the men who appear here as actors are precisely that group that has already been mentioned. These older men attach great importance to the fact that their personal attire is similar or even undistinguishable throughout northern Togo and across ethnic territories.

From the perspective of an ethnic interpretation, a contradiction seems to emerge. On the one hand, there is an obvious and well-reasoned high appreciation for the foreign ceramics, especially by the women who organize its everyday use. On the other hand, there is the act of exclusion for the very same category of things, because it is considered 'foreign' in a ritual context. However, this is not a contradiction in practice; rather, the problem is a creation of the interpreter who overestimates the 'meaning'. This contradiction simply does not exist in practice; it only emerges because of an essentialist view of ethnicity. It is true that there exists a level of meaning in the pots and bowls, including an exclusive assignment to one ethnic group; in the eyes of the elderly men, ceramics are markers of boundaries. However, as the everyday context of the users shows, we can assume the meaninglessness of such symbolic delimitations. Highly frequent practices have the power to reverse an apparent hierarchy of identification only if the mobile objects are considered as being particularly suited to everyday use.

Competing interpretations of the 'meaning' of pots and globalisation

Two interpretations are opposed to each other: the first focuses on the women who use these mobile pots without restriction because they recognize the technical advantages. The second focuses on the older men and their rejection of the use of ceramics from other parts of northern Togo in a ritual context. The pots and bowls are simultaneously products with a particular everyday life as well as part of a strategy of ethnic interpretation. The importance of the 'ethnic style' is not hidden, it is visible in every context, from the pottery centre to the marketplace, for the female use of this pottery and the men, who insist on a particular form.

The correct interpretative solution to the problem of different registers evoked by these pots is a greater openness to complementary explanations: several meanings are present and co-exist. Each of them is to be acknowledged as a possibility.

The relevance of each interpretation depends on the use and the perspective of the users. The pots have the capacity to bundle these possibilities together without contradiction.

The observations and interpretations presented here may at first glance appear to be very specific considerations that are only relevant in a quite particular context, which is the context of complex interethnic relations in northern Togo. However, they have broader relevance, as they can also be applied to modern goods in the present world, in the context of global circulation. Then they might reveal some basic, very widespread conditions of dealing with material goods. In general, there is a lack of clear embeddings for the mobile objects. It is possible that selected objects are much more important for the identity of certain social groups than for the ethnic group as a whole. By emphasizing the polysemic character of material culture in anthropology and archaeology, the case study can provide a valuable contribution that undermines the idea of immutable cultures based solely on their own, local traditions.

Ethnic identity is always only one possible element of the configuration of social groups, as well as other forms of social identity (gender, professionalism, religion). When and by which groups cultural norms are claimed as a proxy can only be identified in individual cases (Barth 2002). In the case of North Togo, this affects different ethnic and social identities. With regard to mobile pots, three groups (and meanings) have been mentioned. Their identity is associated with the use of this ceramic. The three groups are:

1. Female potters, for whom a clear idea of the superiority of their own forms and techniques exists.
2. Users, who have at hand a broad range of different ceramics from different places of origin. The users also know about form and technical characteristics, but they are not interested in ethnic classification.
3. Male actors in ritual contexts, whose concept of ethnic difference is very abstract but ultimately works on the basis of clear boundaries.

As this case study highlights, the multiple and differentiated embeddings of ceramics and the restrictive use of the concept of ethnic identity appears to be a wise strategy for anthropologists as well as for archaeologists. In particular, ethnicity should not be overemphasised when it comes to the re-contextualisation of things that travel between cultures and societies (Jones 1997). The historical established concept of ethnic groups as spatially clearly distinguishable units derived mainly from a specific tradition, which dates back to the 19th century and has by now become rather a hindrance for more complex models (Hahn 2013*a*; 2017). Careful studies on the internal structure of ethnic groups today, as well as of fields of practice must always ensure that the co-existence of different group structures is adequately observed (Brather 2004). In the case of the study on pottery in northern Togo, for example, professional skills, gender and religious experts, each circumscribe a different social group.

Conclusion

With regard to a specific range of selected material objects, it is a particular epistemic tradition in anthropology, as well as in archaeology, to document a variety of uses and embeddings based on direct observation or by the analysis of traces (Hahn 2007; 2011). However, such observations and descriptions are usually fragmentary. The claim of a complete description of the material culture of whatever location or ethnic group must remain an illusion in archaeology as well as in anthropology. Keeping this epistemological limitation in mind, generalisations may only be applied with the greatest caution. This holds true in particular to everyday objects with transcultural mobility. These things – much like the pots in northern Togo – move through space and across language and cultural boundaries. In many cases, the manufacturers do not know who is using these objects in which places, and the users do not know where the objects they use come from (Hahn 1996*b*). This 'ignorance' is a part of a cultural practice in a framework that might simultaneously include a strong consciousness about cultural differences.

Nevertheless, and to some extent opposed to this 'ignorance' about origins, there is also quite a lot of knowledge about the functional qualities of the objects. The potters of one group produce a particularly thin-walled quality of beer cooking pots, and, consequently, the beer brewers as users appreciate this particular kind because of this property of the form. Therefore, it is rather pragmatic considerations that put these pots into motion. Although the 'style' of a group is always recognisable, in everyday life, there is no great importance in this (Cruz 2011).

To describe the use of ceramics just as part of a 'community of practice' (Wenger 1998) would fall short of the specific case of pots with transcultural mobility. Obviously, the vessels have characteristics that give them different meanings in different groups. This changeability is a challenge for such approaches, which intend to assign one specific meaning to an object. There is not 'one' community of practice; rather, there are several interrelated communities, among which the interfaces – *i.e.* handing over the pot – are a matter of negotiation. Describing the dynamics of different embeddings has been shown here in one case study, *i.e.* northern Togo in different locations. Considering multiple embeddings on a more general level will open new opportunities to explain the multi-level approach to material culture. By focusing on the contextual and functional change along the path between manufacturing, trade and users we will find a differentiated field of different ways of dealing (Logan and Cruz 2014).

The question of whether these are a spectrum of uses and meanings contained 'in' the pot, or rather uses and meanings that were later on associated with the vessel, appears to be of little relevance. It is much more important to acknowledge the variability of the uses of these pots, as well as the fact that such vessels are viewed at the destination from a very different angle, compared to the place of production. The different perspectives on the same material object are the clearest indication of the potentials of such mobile objects. Via their material structure they connect cultures and societies with each other, without eradicating the differences.

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Afterword: The pot and the archaeologist – changing each other in an (un-)happy marriage?

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An outstanding pottery specialist told me some time ago that once in a dream she was lying in her bed when she suddenly realised that a ceramic bowl (a Late Helladic IIIC monochrome deep bowl with a reserved zone between the handles) was looming over her in a threatening fashion. She woke up horrified and was worried about what effect pottery and the study of it may have had on her. Are we archaeologists mad for, or getting mad from, pottery? For some archaeologists, it seems that life without pottery is almost impossible and that they should thank past potters for all their efforts to supply us with such a rich corpus of a fragmented past. Generations of archaeologists have classified vessels, sorted them by type, given them names, were inspired to think about complex systems of symbolic communication and were worried how to store or where to dispose of the large amounts of potsherds found during a usual excavation. It is not my aim to enumerate all possible potentials that the study of pottery generates, as this has been extensively demonstrated by the contributions to this volume, even though they concentrate on crucial aspects of pottery – namely its production and the subsequent transport of the products by humans.

In their introduction, C. Heitz and R. Stapfer argue for an innovative approach to the study of pottery that learns from, and at the same time goes beyond, past approaches and which should be inspired by current theories in material culture studies and the practice turn. It goes without saying that it is much more difficult to apply these ambitious theories to the archaeological record than it is to take them as a cautionary tale. However, I am convinced that many current approaches still lack a sufficient understanding of the potential of things.[1]

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The respective works have long been overshadowed by rather fruitless discussions of whether things have agency or not (*cf.* Emirbayer and Mische 1998; Knappett 2005; Knappett and Malafouris 2008).

A. Hafner states in his contribution to this volume that there is still a lack of collaboration between archaeology and anthropology (at least in Central Europe, where both disciplines are clearly separated at universities). I think that one of the reasons for this problem is that anthropologists, and also archaeologists, generally apply terms and concepts developed for the analyses of living beings to the study of things, whereas a thing-specific vocabulary is still missing. I think that it is necessary to develop a thing-specific terminology that does not borrow too much from human-related concepts like 'agency' or 'biography' (see Van Oyen this volume). In accordance with Heitz (in this volume), I follow *e.g.* the efforts of H. P. Hahn and H. Weiss (2013; Hahn in this volume) in using 'itinerary' instead of 'biography' in order to describe the mobility of things. I would like to further develop this line of thinking by introducing the terms 'changeability' and 'effectancy' of things, whereby the effectancy of things relies on their changeabilities (*cf.* Stockhammer 2015; 'changeability' is also used by Hahn in this volume).

My understanding of changeability and effectancy first requires a definition of the 'substance(s)' and 'materialities' of an object. Being aware of the multitude of understandings of 'substance' (Olsen 2010) and synonymous terms like 'materials' (*cf.* Ingold 2010; 2012; *cf.* also Heitz in this volume), my definition follows Hahn and Soentgen (2011; *cf.* also Weismantel and Meskell 2014): substance is the physical and chemical quality of a thing or of part of a thing. Substances can be natural (like water, stone, clay, metals) or produced by humans (like alloys, rubber; *cf.* Soentgen 2015). They are shaped into materiality by cultural practices (Thomas 2007, 15), whereby different substances are very often combined. Such a process is most obvious when a potter takes clay and temper and shapes these substances into a particular vessel shape (*cf.* Melko as well as Heitz in this volume, both describe the practice of potting as an integrated bodily and mental process; *cf.* also Albero Santacreu as well as Hahn in this volume). Materiality is defined by me as the physical presence of an object within the material world, which is perceived by a human individual at a particular moment. Therefore, materiality is inseparably connected to perception and, especially, our perception of things.

When we think about things or interact with them, we regularly perceive them as stable and static. As our perception of objects is always changing, the object changes in itself – even if just in our own perception (*cf.* Merleau-Ponty 1966; Olsen 2006). I would like to call this phenomenon the 'first changeability' of the object, which is not related to a change in the physical or chemical constitution of an object, but only refers to the perception of it, *i.e.* its perceived materiality. The definition of the first changeability is, of course, also inspired by J. Gibson's (1979; *cf.* also Heitz in this volume) 'affordance'; 'changeability', however, further enforces the dynamic of perception and the momentary relatedness of any 'affordance'. The potential of the first changeability becomes very evident in the standard archaeological practice of evaluating pottery: even if archaeologists possess more or less sophisticated systems of classification for vessels, they do not reflect on the particularity of an individual pot in the first moment of encounter, but they just

see the type or category to which they attribute the object (for an instructive example *cf.* Holtorf 2002, 57-58). In a next step, we adorn each pottery shape or type with a particular name, which often already communicates a particular function and / or meaning of the vessel. If we name a vessel a 'cooking pot', function and meaning are inseparably connected with the object in its designation. Through repetitive designation of an object as a cooking pot, this interpretation becomes so natural and self-explanatory that we do not reflect further about a possibly much broader range of additional functions and meanings in archaeology, whereas ethnographers are very aware of this fact (*cf.* also Köhler as well as Hahn in this volume). The object's designation becomes part of our life world (Habermas 1981; Schütz and Luckmann 1979). By using function- and / or meaning-specific categories, we ignore the fact that functions and meanings are processes rather than states and are only constituted through social practices with the object. If we find that an already-classified vessel does not fit into the respective category, we are puzzled, sometimes even angry and we are often reluctant to accept this change of perception. The vessel irritates and affects us; it has an effect. The same is true on a higher level of abstraction, *i.e.* the selection of names for an 'archaeological culture'. In her contribution to this volume, E. Gross convincingly demonstrates the problem these terms have caused in past research through their unreflected use and the fact that archaeologists tended to understand their 'cultures' as pure and homogenous containers, whereas intercultural contact was seen as the exception rather than the norm. Once these categories are created, they haunt us and it is most difficult to get rid of them afterwards, even if their unsuitability for research becomes most obvious. The consideration of the first changeability might also be relevant when thinking about the use of pottery of different stylistic traditions in the same household as described for the Neolithic in western Switzerland. What kind of practices, what kind of handling was necessary to perceive, feel or hide stylistic differences and how could their presence have influenced different kinds of usage?

During the itinerary of an object, its shape and substance can also change without any human interference (*cf.* Ingold 2010; 2012). I call this phenomenon the 'second changeability' of the object: with time, the substance(s) and features of an object change, get lost or are added. Food deteriorates and changes its quality – becomes inedible, sometimes even poisonous, or acquires a unique taste or alcoholic component. Liquid permeates through the wall of a vessel or the resin coat on the inside of the vessel changes the taste of the food or drink inside over time without any additional human practice. The second changeability is not a virtual changeability like the first one. The object changes in its materiality and / or substance. It forces us to care for it, it has an effect and evokes practices and emotions.

Whereas time is the crucial factor for the second changeability, human practice is the same for the 'third changeability', which I define as the transformation of objects in the course of human practices with the objects. Objects wear; they bear traces of their use. Pots show manifold kinds of use-wear ranging from very fine scratches to very obvious cracks, spallings, holes or other markers of their use. In her contribution to this volume, I. Hohle also reflects on such use-wear on pottery – in her case on vessels of the 'Linearbandkeramik'. Although I do not agree with her wording (she speaks of a 'new life' of the vessels), she is very right in pointing

out the transformations of meanings that could arise during their itinerary. The ethnographic work of I. Köhler in northern Côte d'Ivoire gives another example, as she mentions and illustrates new ways of using pots after their partial breakage (*cf.* Köhler in this volume, Fig. 5-6). Like the second changeability, the third one is not a perspective change of the object, but a real one. These traces of use can become witnesses of past times and anchors of memory, which become the basis for the creation of meanings and histories. At the same time, use-wear also forces us to act: we polish scratches, we mend holes or cracks and take care of objects. Again, objects have an effect on us, they possess an effectancy. Having in mind the use of pottery of different stylistic traditions in the same household as exemplified in Stapfer's contribution, I would now be most interested to hear more about whether vessels of similar shape (but of different stylistic tradition) show similar traces of use-wear or not.

I have just defined three different changeabilities of the objects: first, based on the continuously changing perception of the objects; second, the change of objects through time without human interference; third, the transformations of objects due to human practices. All three changeabilities are entangled with each other because the relevant factors for their transformation – *i.e.* perception, time and practice – depend on each other. All three changeabilities can force humans to act. They constitute an object's effectancy. Objects have an effect on us and we do not have to associate their potential with any kind of intentionality, which again is integral for agency.

In archaeology in general and in the study of past (and also present) pottery in particular, the introduction of the changeabilities and their integration in the already established protocols for the evaluation of finds forces us to, first, always reflect on our own categorisation of the artefacts and the implications that we create by applying a specific term. The acknowledgement of the first changeability should be an incentive to avoid use-specific nomenclature like 'cooking pot' or 'fruit stand' and, therefore, the hasty attribution of a specific function or meaning to an object. This would also instigate us to further reflect on the third changeability and the related dynamics of functions and meanings and their permanent creation in the framework of human practices. The second changeability in the archaeological analysis sharpens our focus on the inherent dynamics of a thing and its changes over time, which is crucial for the momentary perception and appropriation of it. The second changeability emphasizes that such processes of transformation are not only a post-depositional phenomenon, but are already of crucial relevance during its previous itineraries. The third changeability aims to strengthen our interest in the micro-remains in / on a thing, (micro) traces of its former use and modifications of the materiality and / or substance in the framework of past human practices. Even though the study of micro-remains, use-wear and related traces of human practices with the object have recently found increasing interest in archaeology, we are far from establishing a standard protocol for their analysis, and they are still overlooked and / or neglected most of the time.

To sum up: pots are much more dynamic than we archaeologists often think. Their three changeabilities reveal the potential of their effectancy, of which understanding is so necessary when thinking about human-thing entanglements. Be they actors in the past, in present-day Africa or the authors of this volume: there is no doubt that pottery has an enormous effect on us humans – and not only in our dreams!

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Mobility and Pottery Production

For many past and present societies, pottery forms an integral part of material culture and everyday practice. This makes it a promising case example to address human-thing-relations on a more general level, as well as social life itself. Humans organise their lives not only by engaging with materials and things but also by oscillating between movement and *stasis*. In these various rhythms of mobility – from daily subsistence-based movements to long-term migrations – things like ceramic vessels are crafted, but also act as consumer goods. From their production until their deposition as waste, grave-goods, collectibles etc. pottery vessels can move with their owners or be passed on and may thus shift between spatial, temporal, social, economic and cultural contexts.

This volume unites contributions addressing such phenomena from archaeological and anthropological perspectives. Evolved from an interdisciplinary workshop held at the Institute of Archaeological Sciences (University of Bern) in 2015, the aim is not to promote one single epistemic approach or any elaborated empirical findings but to trigger thoughts and foster discussions.

While the first part of the book contains introductory texts, the second part includes archaeological contributions that address mobility and social ties by focussing on variability in pottery production within, as well as between, settlements and regions. Taking a more object-centred perspective, they comprise attempts to think beyond established concepts of 'archaeological cultures' and chronological issues. The third part unites anthropological and archaeological texts that take more actor-centred perspectives of making, distributing and using pottery. These texts examine how humans and things are intertwined though practices and various rhythms of movement and mobility. Thereby it can be shown how cultural forms are reproduced but also transformed by humans and things, like pots, potters, pottery mongers and pottery users that are intermittently on the move.

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