

# The deposition of bronzes at Swiss lakeshore settlements: new investigations

Viktoria Fischer\*



*The famous lakeside sites of Switzerland have long been known for their pile dwellings and their massive quantities of Late Bronze Age metalwork. On the most recent excavations, the bronzes have been mapped in situ, allowing comparison with assemblages from dryland sites and rivers, as well as providing a context for the nineteenth-century collections. The pile dwellings emerge as special places where depositions of selected bronze objects in groups or as single discards, comparable to those usually found in dryland deposits or in rivers, accumulated in the shallow water during a unique 250-year spell of ritual practice.*

*Keywords:* Switzerland, eleventh–ninth centuries BC, Late Bronze Age, Hallstatt B, ritual, bronze artefacts, pile dwellings

## Introduction

Since 1854, prehistoric pile dwellings in Switzerland have generated very rich collections of artefacts, currently distributed in various Swiss and European museums (Van Muyden & Colomb 1896). Thousands of bronze objects have been found on the lakeshores within the perimeter of settlements of pile dwellings, challenging the earliest archaeologists and subsequently giving rise to a number of different interpretations (Rychner 1979). The bronze artefacts are seen as a direct testimony of the society that produced and used them, indicating not only an economic value as recyclable metal, but a social value, defining the role of the individual and the community by representing their activities and beliefs (Bradley 1990; Gauthier 2005).

\* *Laboratory of Prehistoric Archaeology, Department of Anthropology, University of Geneva, rue Gustave-Revilliod 12, 1211 Geneva 4, Switzerland (Email: viktoria.chr@gmail.com)*

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The research reported here aimed to discover the role played by the lake-side villages and the rationale behind the deposition of the bronze objects. To this end, it addressed the questions of whether the objects chosen were specially selected, whether they were deliberately immersed and whether they had been laid out in patterns. The results could then be compared with assemblages from other types of archaeological sites, such as dryland deposits and river finds. The research was based on the study of a representative sample of more than 17 000 bronze objects, consisting of ten archaeological collections coming from the pile dwellings of western Switzerland.

These collections were recovered from sites on the shores of Lake Geneva and the three adjacent lakes of Lake Neuchâtel, Lake Biel and Lake Murten (Les Trois-Lacs, henceforth Three-Lakes: Figure 1). The recent resumption of archaeological excavations on the shores of Lake Neuchâtel (western Switzerland) in the second half of the twentieth century has revived interest in the older collections, in spite of the poverty of their contextual data (Arnold 1986; Rychner 1987; Rychner-Faraggi 1993). Three of the collections are assemblages retrieved from these recent excavations: Auvernier/Nord, Cortaillod/Est and Hauterive/Champréveyres, which in turn have provided a framework for the study of the older ones, gathered during the nineteenth century. These include Auvernier, Chens-sur-Léman/Tougues (Upper Savoy, France), Geneva/Eaux-Vives, Grandson/Corcelettes-Les Violes, Möriegen/Bronzestation, Morges/Grande-Cité and Muntelier/Steinberg (Figure 2). The results from the recent excavations, where the bronzes were recorded accurately *in situ*, have given an indication of how metalwork might have originally been distributed on the sites from which artefacts were collected in the earlier, less programmed operations.

## Method

All the settlements studied here can be dated to the end of the Late Bronze Age or Hallstatt B phase according to the Central European chronology, spanning from the second half of the eleventh to the ninth century BC. Dendrochronological dating on the timbers of recently excavated settlements allowed the identification of accurate periods of occupation, while the metal assemblages could only be dated by typology (Figure 3). A few hundred objects were identified as originating earlier than the Hallstatt B settlements, i.e. the Early, Middle and beginning of the Late Bronze Age. The old collection from Möriegen/Bronzestation appears as an outlier, dating to a short period in the late HaB3 phase according to typology.

The artefacts were classified by provenance, form, date, weight and the quantities in each collection. Assemblages recorded *in situ* were compared with those recovered from wetland and dryland deposits away from the lakeshore. The overall practices on Lake Geneva were contrasted with those from the Three-Lakes area. Thus the context and character of the lakeshore Late Bronze Age assemblages could be compared with material deposited on other types of site and in the preceding periods.

## Results

The study endorsed the proposition that the deposition of bronzes was deliberate, selective and meaningful. Deposition included objects from periods earlier than the settlements.

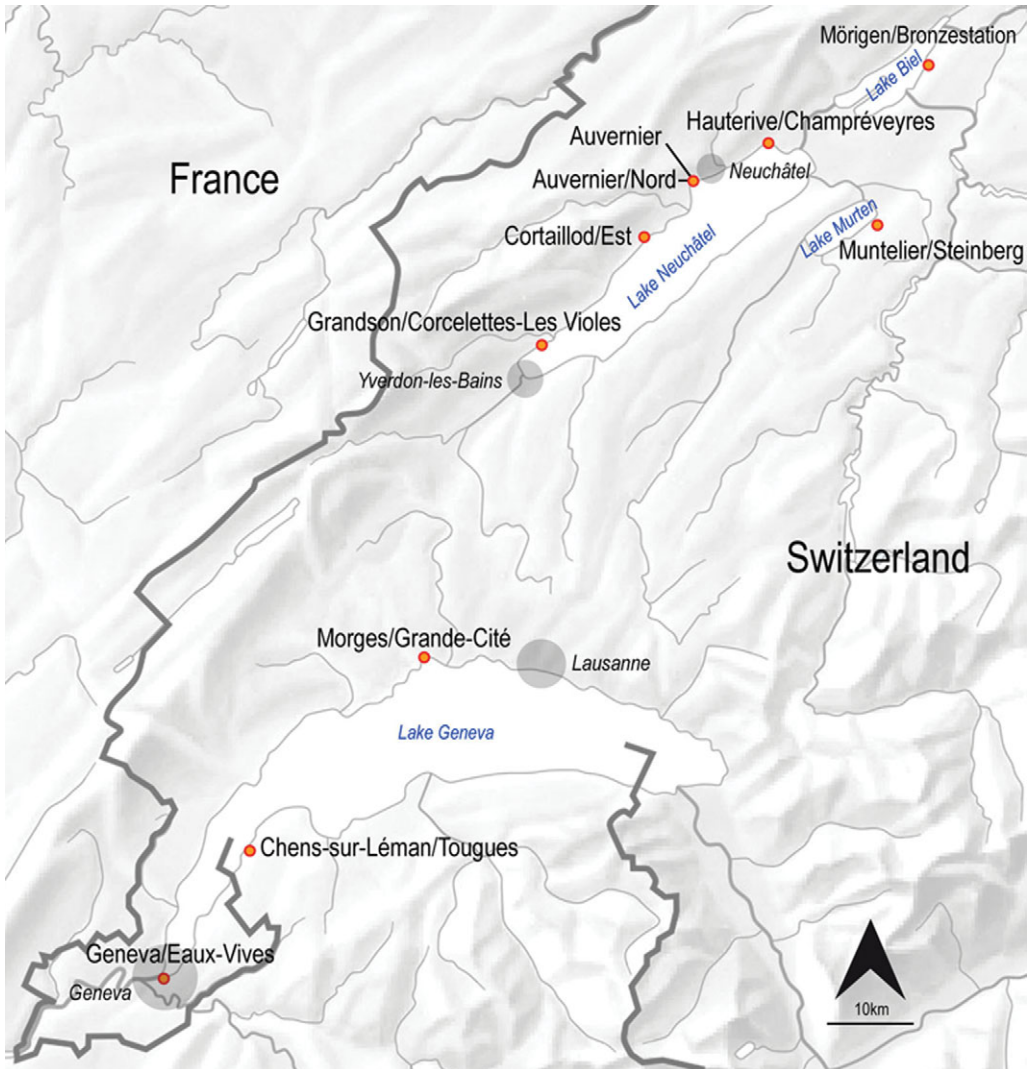


Figure 1. Late Bronze Age pile dwellings of western Switzerland, which provided a sample of more than 17 000 bronze objects (map base: ©Swisstopo, 2005).

There was a pattern in the way in which objects were selected, and this pattern changed during the course of the Hallstatt B phase, revealing regional differences. Lastly, it could be seen that the deposition of bronze objects in the area of the pile dwellings, in rivers and on dryland sites were following similar practices.

### *Immersed 'relics'?*

Only 2.6 per cent of the sample consists of artefacts produced before the Late Bronze Age: 75 from the Early Bronze Age, 130 from the Middle Bronze Age and 240 from the early stage of the Late Bronze Age. These consist mostly of pins and were found in all of the



Figure 2. Examples of the studied bronze artefacts. A) Grandson/Corcelettes-Les Violes (photograph: E. Cuchillo, Cantonal Museum of Archaeology and History, Lausanne); B) Geneva/Eaux-Vives (photograph: V. Nebbia, Museum of Art and History, Geneva).

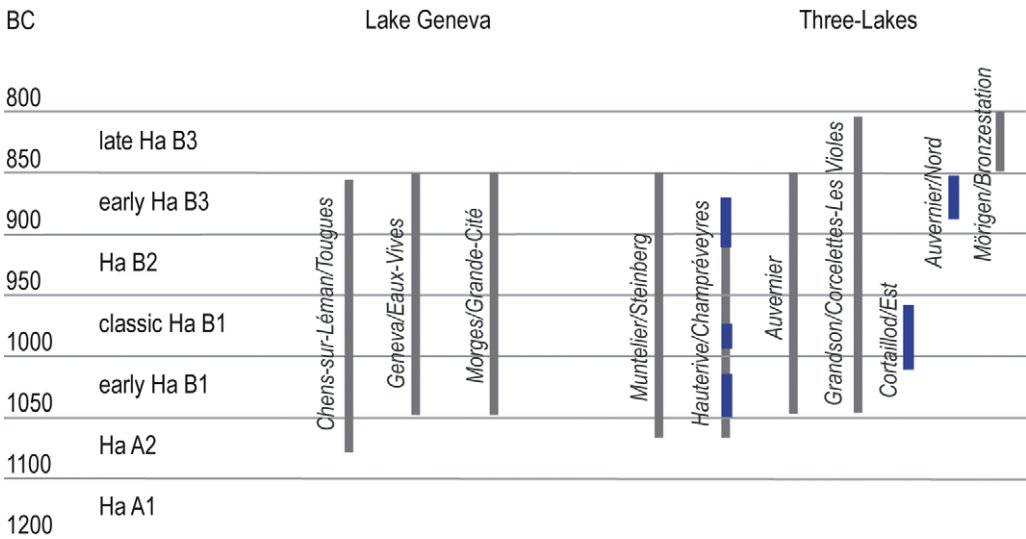


Figure 3. Chronological range of the studied assemblages. Blue lines represent intervals obtained by dendrochronology, grey lines follow typology.

collections (Figure 4). Although littoral villages are also well known in the Early Bronze Age of western Switzerland (Billaud *et al.* 2007), the early artefacts discussed here were recovered from layers dated to the Hallstatt B phase by dendrochronology. Moreover, if there had been villages earlier than the Late Bronze in the same area as the Hallstatt B settlements they would have been found and reported.

A possible interpretation is that these were ‘relics’ belonging to the inheritance of an individual and passed on from one generation to the next. This hypothesis is supported by their parallels with the grave goods of the Early Bronze Age. Pins, bronze tubes and daggers,

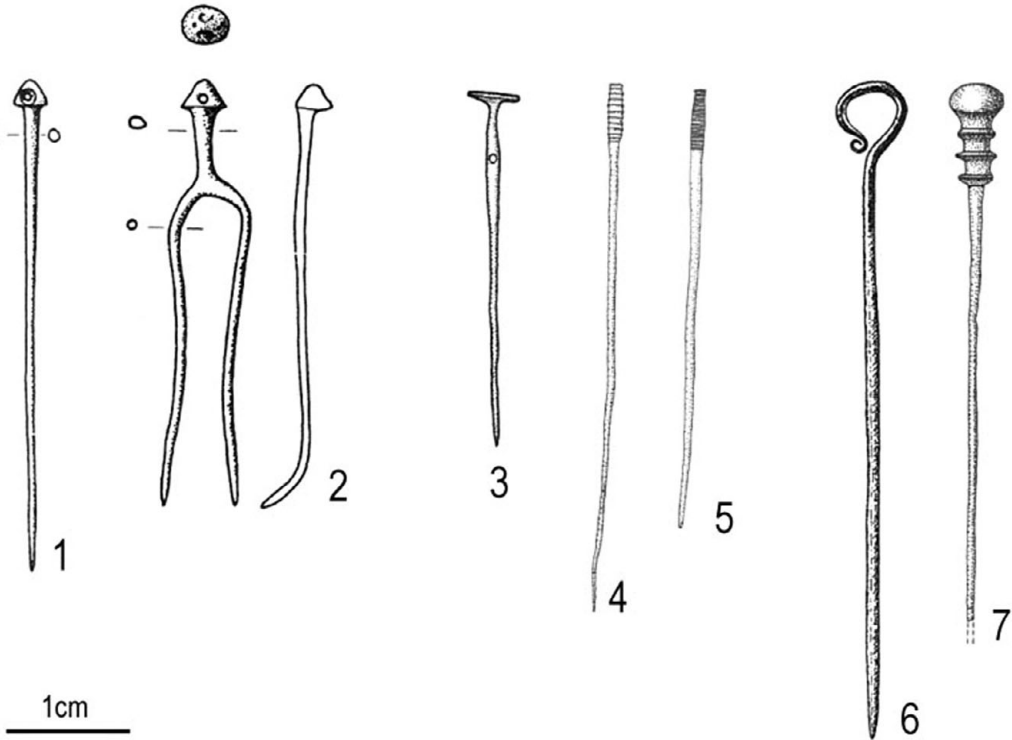


Figure 4. Pins dating to the Early Bronze Age (1–2: Mörigen/Bronzestation), the Middle Bronze Age (3–5: Geneva/Eaux-Vives) and the early phase of the Late Bronze Age (6–7: Geneva/Eaux-Vives), but discovered on Late Bronze Age pile dwellings (after David-Elbiali 2000).

which are frequent among the grave goods of the Early Bronze Age, are also regularly present on the Late Bronze Age lakeshore settlements of the Three-Lakes.

#### *Hallstatt B1 phase (1050–950 BC): rings or pins*

Among the bronzes of the sample, rings and pins are the most frequent and are proportionally opposed in the collections of Lake Geneva and the Three-Lakes. In fact, pins are better represented on the shores of Lake Geneva (48 per cent of the whole), while rings are more frequent on those of the Three-Lakes (54 per cent). During the excavations of the settlement of Hauterive/Champréveyres (1983–86), on the north-eastern shore of Lake Neuchâtel, archaeologists found several concentrations of similar small rings (Figure 5). These pieces of unknown function, which cannot be dated by their forms, were included in Hallstatt B1 phase layers on the site (Rychner-Faraggi 1993). Thanks to the records made at Hauterive/Champréveyres and the general proportions of pins and rings observed in the earlier collections, it can be concluded that immersion of groups of small rings was specific to the Hallstatt B1 phase settlements of the Three-Lakes area. However, this practice was not observed on the settlement of Cortaillod/Est. Although this village supplied huge amounts of small rings (450), they were not discovered in groups.



Hallstatt B2/B3 phase (950–800 BC): 'grouped deposits'

Quantitative analysis of the Hallstatt B phase sample showed a dramatic increase in the average weight of artefacts in the Three-Lakes collection (Figure 6). The qualitative analysis

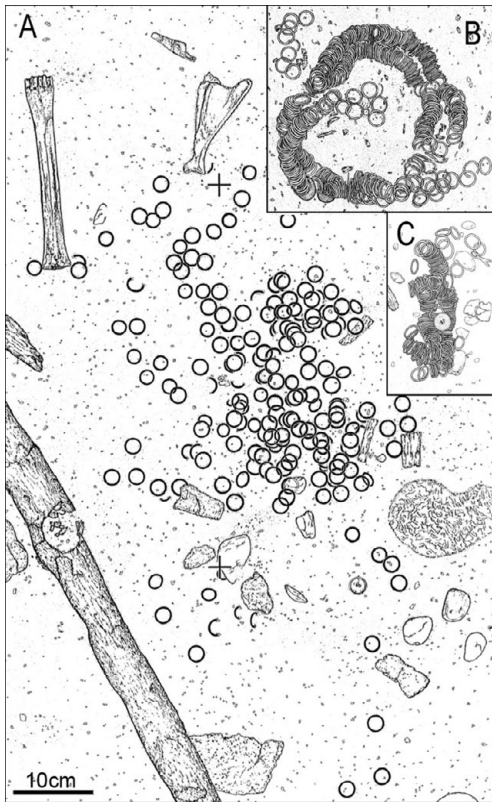


Figure 5. Three concentrations of small standardised bronze rings found on the littoral settlement of Hauterive/Champréveyres, on the north-eastern shore of Lake Neuchâtel (after Rychner-Faraggi 1993).

related this directly to the high proportions of heavy bracelets and tools, mainly axes and sickles, observed for the Hallstatt B2/B3 phase (Figure 7). Among the bracelets, ankle ornaments of the 'Corcelettes' type are most frequently discovered and often bear traces of destruction or 'manipulation', meaning that they were burnt and broken (Figure 8). Some contextual information, originating from the recent excavations and from written documents of the nineteenth century, indicate that the axes and sickles and the frequently 'manipulated' ankle bracelets of the 'Corcelettes' type were mostly found as 'grouped deposits' (Rychner 1987). The settlements conforming to this practice, Auvernier/Nord and Grandson/Corcelettes-Les Violes, also happen to be the largest villages considered in this research, extending to more than 2ha. Therefore, it can be concluded that the immersion of 'grouped deposits', composed of bracelets and tools, was a practice specific to the extensive settlements of Lake Neuchâtel during the Hallstatt B2/B3 phase (Figure 9).

The 'manipulation' of objects could be a reference to some sort of funerary ritual,

considering that the predominant burial practice of this period was cremation, and that a part of the pile dwelling material was transformed and broken up so as to resemble incinerated grave goods. No cremated bone has been found in association with the artefacts but scattered human bones, mostly fragments of skulls, occur regularly at the Swiss pile dwellings and could support the hypothesis of a funerary motivation for the metalwork. The remains of at least 201 individuals are represented in Neolithic and Bronze Age littoral villages of the Three-Lakes. None bear visible traces of cremation, so they could belong to the Neolithic or Early Bronze Age, where inhumation was the main practice. This question cannot be answered for the moment because the contexts of the human remains are not well known, even on the recently excavated pile dwellings. Some of the smaller fragments were often not even recognised as human and were stored with the fauna (Andrey 2006).

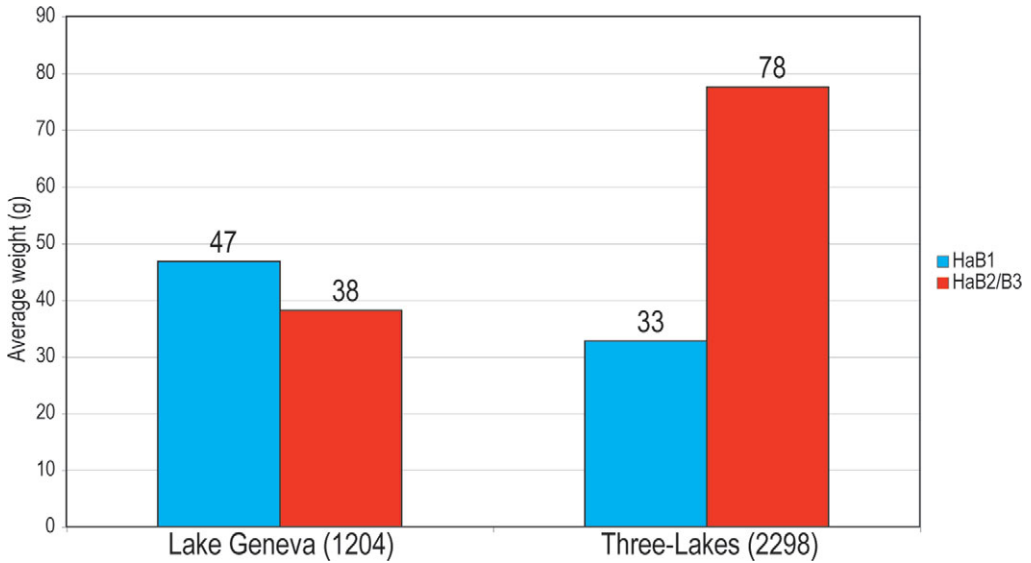


Figure 6. Quantitative analysis of the Hallstatt B phase sample. The average weight of bronze objects increases between the Hallstatt B1 phase and the Hallstatt B2/B3 phase in the Three-Lakes collections (the total amounts of artefacts are indicated in brackets).

### Three-Lakes

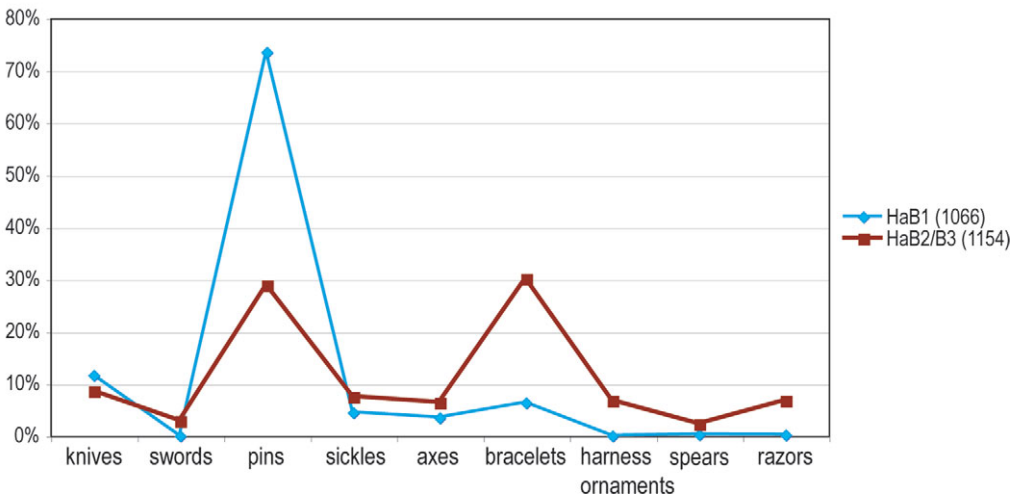


Figure 7. Qualitative analysis of the Hallstatt B phase sample stemming from the Three-Lakes area. Bracelets and tools (sickles and axes) become more frequent during the Hallstatt B2/B3 phase (the total numbers of artefacts are indicated in brackets).

### Selective deposition

The research thus demonstrated that the immersion of bronze artefacts on the lakeshore settlements of western Switzerland obeyed a set of well-codified rules and it can be concluded that this was a selective deposition. This selection confirms the deliberate character of

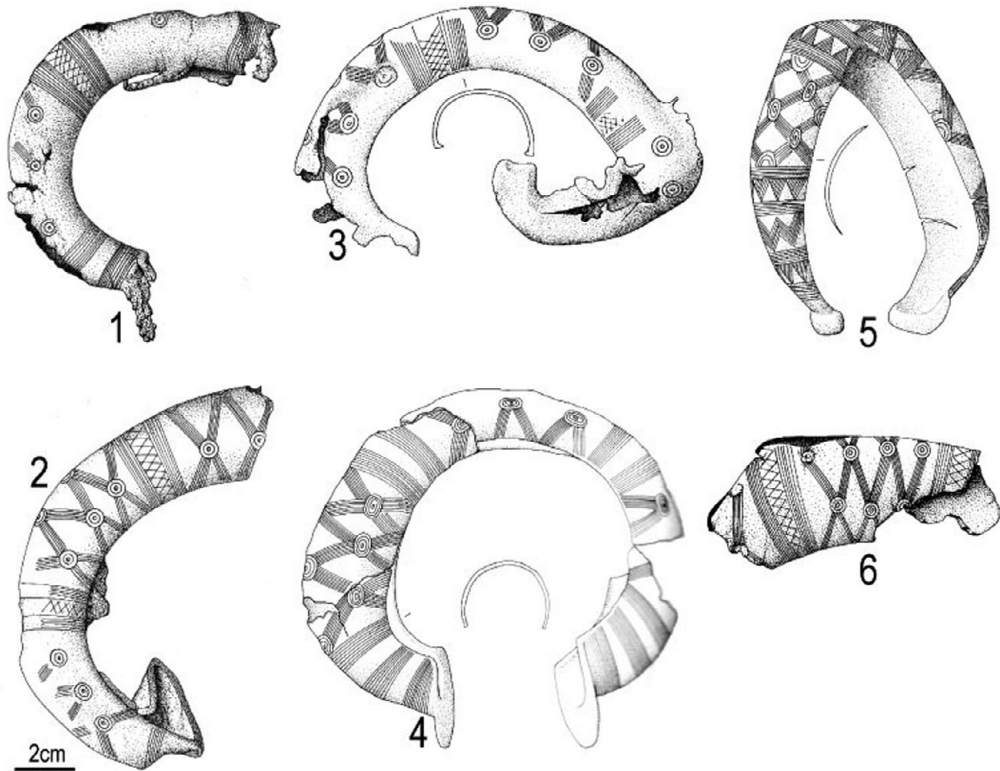


Figure 8. 'Manipulated' ankle bracelets of the 'Corcelettes' type from the Hallstatt B2/B3 phase collections of the Three-Lakes (after Pászthory 1985). 1–3) Grandson/Corcelettes-Les Violes; 4) Mörigen/Bronzestation; 5) Auvernier; 6) Auvernier/Nord.

the immersions, which were intended to be permanent. Had this not been the case, nineteenth-century scholars and modern archaeologists would not have discovered them in such significant amounts in the area of the pile dwellings.

#### *Relationship with structures*

The discovery of concentrations of small rings on the site of Hauterive/Champréveyres or the observation of 'grouped deposits' (i.e. concentrations of objects), within the perimeter of Auvernier/Nord, imply that structures must have existed. Unfortunately, the concentrations of metalwork found during systematic excavations can only rarely be assigned to architectural structures, mostly because of the erosion of the archaeological layers. For example, at the settlement of Auvernier/Nord, only a group of four implements can be interpreted as having been deposited in one corner of a house. The recently excavated settlement of Cortaillod/Est has not revealed any concentration of objects and, moreover, its collections lack heavy artefacts (axes, sickles, massive bracelets...). This observation remains unexplained, especially because this site is partially contemporary with Hauterive/Champréveyres. Was it plundered immediately after its desertion during the Late Bronze Age or in the 1960s, as proposed by B. Arnold (Arnold 1986)? Were there any unknown taphonomic phenomena at work, which could have trapped the bronze objects



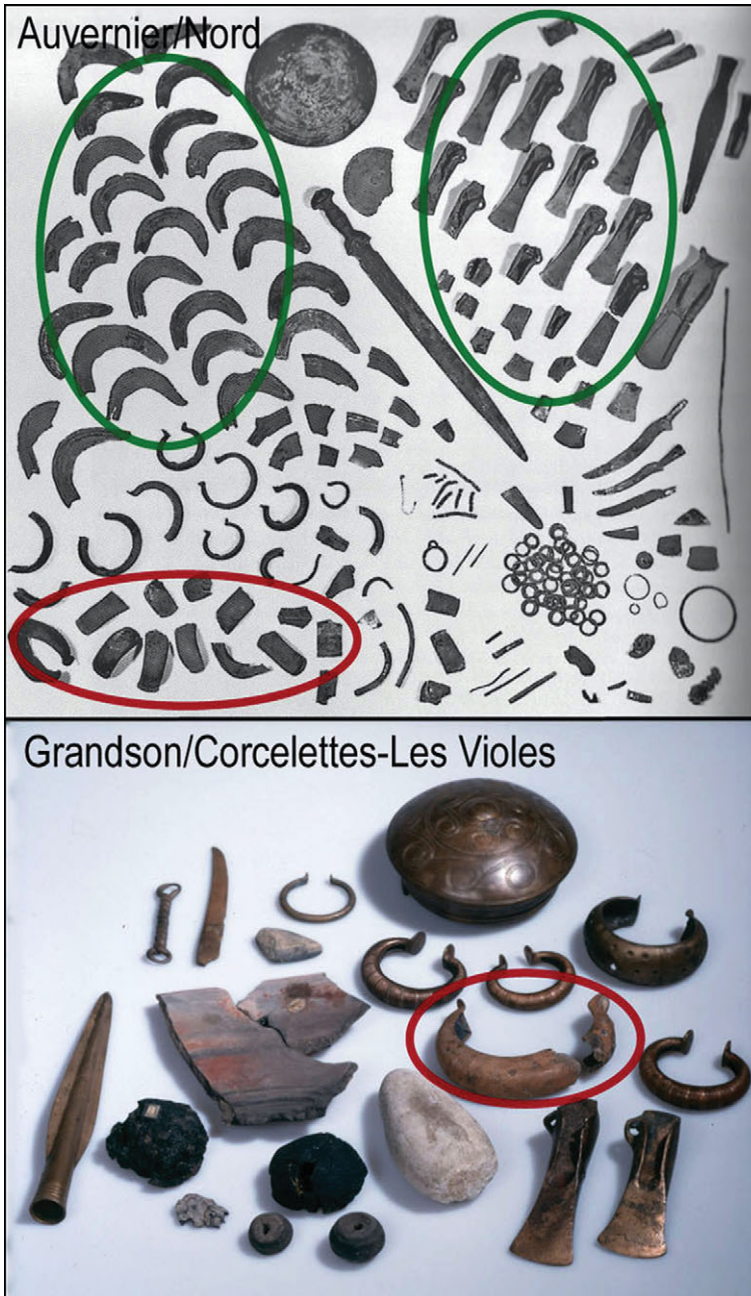


Figure 9. 'Grouped deposits' discovered on the shores of Lake Neuchâtel: the 'hoard' of Auvernier/Nord (after Müller 2002: 146) and the 'accumulation' of Grandson/Corcelettes-Les Violes (photograph: D. & S. Fibbi-Aeppli, © Cantonal Museum of Archaeology and History, Lausanne). These 'grouped deposits' contain series of tools (green circles) and 'manipulated' ankle bracelets of the 'Corcelettes' type (red circles).

under the sediments? Was it a site with a different function? These questions cannot be answered for the moment.

### *Comparative deposits*

The lakeside assemblage at Auvernier/Nord was compared with the dryland deposit at Briod (Franche-Comté, France), the ‘accumulation’ at Grandson/Corcelettes-Les Violes with the wetland (river) deposit at Ray-sur-Saône (Franche-Comté, France) and the group of 21 harness ornaments of Auvernier/Nord with the deposit no. 11 of the hillfort of the Bullenheimer Berg (Bavaria, Germany). These comparisons showed some stunning convergences, among which the most noteworthy is the presence of weapons, namely spearheads and swords, and series of objects, such as sickles, bracelets or even harness ornaments. This shows that the pattern of artefact deposits observed at the pile dwellings can also be observed on other kinds of sites.

The scattered artefacts (not included in ‘grouped deposits’) discovered on the lakeshore settlements can be compared to the contemporary river finds (single objects thrown into rivers), which represent a widespread practice during the European Bronze Age. Personal ornaments, such as bronze pins, are the most frequent among them (Müller 1993). The comparison of the sample with the river finds of Roxheim (Rhineland-Palatinate, Germany) in particular, showed similar proportions of tools and ornaments. However, weapons (swords and spearheads) are much more frequent on the German site. This difference is put into perspective by the general lack of weaponry on the archaeological sites of western Switzerland, which suggests that their importance in south Germany is due to cultural practice. We should also remember that the finds of Roxheim cannot be considered as a closed set of objects, because they are composed of different collections discovered separately on a portion of the Rhine extending over several hundreds of metres (Sperber 2006).

Despite the small number of these comparisons, they reinforce the interpretation of the immersions within the perimeter of the pile dwellings as deliberate, because they can be seen as part of a more general practice of depositing bronze objects, which includes river finds, dryland and wetland deposits.

## **Discussion**

In the nineteenth century, interpretations portrayed the bronze artefacts found on lakeshore settlements as consisting of lost and forgotten objects or domestic litter. These interpretations can no longer be accepted because of the massive numbers of objects discovered, the large geographical domain concerned (the whole Peri-Alpine area) and the time-scale of the phenomenon, restricted to the end of the Late Bronze Age. At the present time, specialists such as F. Müller and V. Rychner have explained the immersion of these objects as a result of deliberate and voluntary acts, suggesting that the deposits were meant to be permanent. Due to their presence underwater and to the recurrently observed signs of intentional destruction or ‘manipulation’, it can be interpreted that they were purposely rendered unusable (Müller 1993; Rychner 2001). At the same time, V. Rychner has concluded that the immersed artefacts were, for the most part, visible and recoverable, which implies in turn that retrieval was only prevented through socially codified taboos (Rychner 2001). This

practice seems irrational, *'because it is contrary to our economic rationality of maximizing utility and minimizing wastage'* (Fontijn 2001–2002: 19). Fontijn also claims that *'bronze deposition was historically a unique phenomenon, for which true ethnographic or historical parallels do not exist'* (Fontijn 2001–2002: 20).

The hypothesis of deliberate discard has been endorsed by the recent investigations (1968–1975) in the perimeter of Auvernier/Nord (Lake Neuchâtel). A selective deposition was inferred from the presence of artefacts of earlier date (interpreted as 'relics') in every collection, as well as from the importance of rings in the Hallstatt B1 phase collections of the Three-Lakes and of 'grouped deposits' on the vast Hallstatt B2/B3 phase settlements of Lake Neuchâtel (Auvernier/Nord and Grandson/Corcelettes-Les Violes).

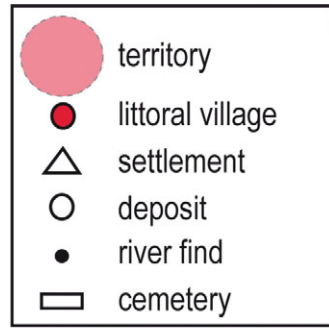
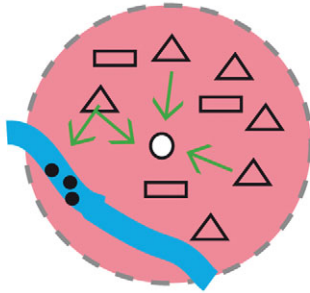
The comparisons with other types of archaeological sites led to the identification of metal collections in 'grouped deposits' similar to dryland and wetland deposits and in single finds comparable to river finds. Hence, in the littoral villages of western Switzerland the assemblages result from superimposed single and 'grouped' deposits. This 'superimposition' of practices means that several socially-codified activities took place in the area of the lakeshore settlements, as opposed to inland settlements, which are usually 'surrounded' by different categories of sites (deposits, river finds, burials). Indeed, settlement, dryland and wetland deposits, burial and river finds are generally 'juxtaposed' in the landscape. Their remains provide evidence of the different uses of the territory in prehistoric times (Figure 10). In the particular case of the Swiss pile dwellings, deposition (dryland and wetland deposits, river finds) and perhaps even practices related to the deceased ('relics' and object destruction or 'manipulation') have been shifted to the setting of daily life. This interpretation is supported by the scarcity of tombs at this time in the lakeshore area.

At the end of the Bronze Age, the Swiss plateau took an active part in the European exchange networks. In this context, the lakeshore settlements, especially the larger ones occupied during the Hallstatt B2/B3 phase, could be seen as locations attracting bronze merchants, artisans and farmers from remote areas. While the permanent character of the deposition of bronze artefacts can be explained by the existence of social bans or taboos (above), it may also be imagined that it reflects the economic situation and played a role in economic strategies, as proposed by the theory of 'ritual consumption' (Kristiansen 2003). This interpretation links the social and economic needs of the Bronze Age society, for example the performance of the elite's power with the control of the available amount of metal. In the case of bronze deposition in the Late Bronze Age, the objects would have been ritually stored in order to increase the value of the metal in circulation, perhaps in a period of economic 'crisis' linked to the transition to the Iron Age.

However, D.R. Fontijn has pointed out that the identification of patterned deposition cannot be explained by this interpretation, because in 'ritual consumption' only the value of the metal matters (Fontijn 2001–2002: 20). So, the voluntary and selective immersion of artefacts within the perimeter of the littoral villages of western Switzerland testifies to the existence of well-codified practices that remain difficult to understand. They seem to have been responding to some social need and to have been triggered by ideological, economic and 'political' factors.

The time-scale represented by the littoral bronze collections of western Switzerland has a cumulative character because the villages were occupied during long periods, sometimes

Inland settlements: 'juxtaposition'



Littoral settlements: 'superimposition'

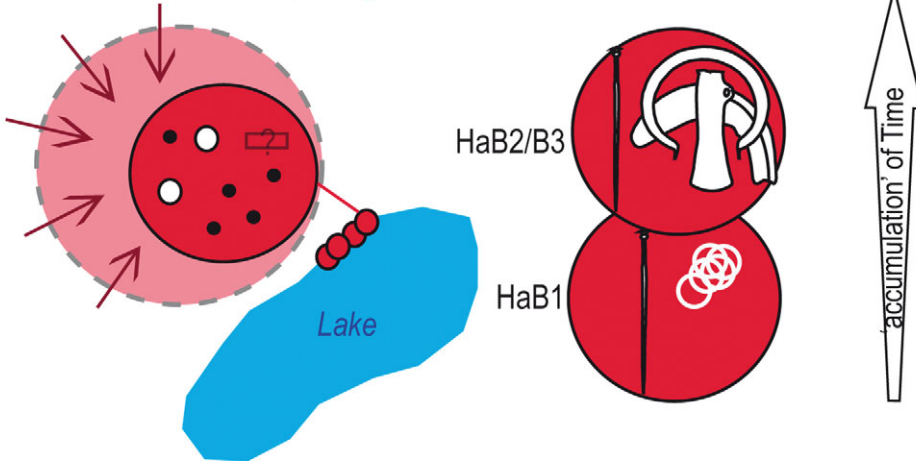


Figure 10. 'Juxtaposition' vs 'superimposition' of practices in the landscape: inland settlements opposed to littoral settlements. The wealth of the collections discovered on the Late Bronze Age pile dwellings of western Switzerland can be explained by the centralisation of practices within the perimeter of villages, which have been occupied by several generations ('accumulation' over time).

up to 250 years. The apparent wealth of the sample collections can be explained by the 'superimposition' of practices in space and by accumulation through time. The phenomenon was triggered by the specific character of the littoral belt, allowing the control of passages and transports and possessing ecological advantages, which lead to the development of a mixed economy. Moreover, water played a central role in the ideology of the Bronze Age (Torbrügge 1970–71). Although the deposition of bronze artefacts has been found to reflect similar rules in both dryland and wetland sites, it is in the wetland sites that a large number of objects appear to have been placed most deliberately out of use, an action usually seen as ritual in character.

**Conclusions and perspectives**

The various practices witnessed in over 150 years of investigation at the pile dwellings of western Switzerland have contributed to the wealth of the collections and, as a consequence,

to their renown. The assemblages discovered on the littoral sites of western Switzerland can be included within the global phenomenon of bronze deposition (dryland and wetland deposits, river finds). The privileged environment of the lakeshore bank explains the concentration of practices and populations on the pile dwellings, which makes these archaeological sites unique in the European context.

The main contribution of this work was to use recent excavations to show that the repeated deposition of selected bronze objects was a practice codified in a similar way at lakeshore, dryland and river sites in the Late Bronze Age, the lakeshore sites offering privileged conditions for survival. The research has also provided a context for the mass of previously recovered artefacts.

Future research should explore the interpretation of this phenomenon further, by investigating selective deposition in the contemporary sites of a defined region. The study of exchange networks would also allow the integration of the littoral settlements in a larger territory and in a larger economic network, which would result in a better understanding of their economic, ideological and 'political' roles.

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