Zeitschrift: Archäologie Graubünden. Sonderheft
Herausgeber: Archäologischer Dienst Graubünden
Band: 6 (2017)

Artikel: St. Moritz, Mauritiusquelle : die bronzezeitliche Quellfassung
Autor: Oberhänsli, Monika
Kapitel: 19: Summary
DOI: https://doi.org/10.5169/seals-871059

Summary

19

The Bronze Age spring tapping system at St. Moritz, retrieved from its original findspot in 1907, is one of the most important prehistoric Alpine assemblages ever found. It had a trapezoidal ground-plan and consisted of pipes (hollowed out tree trunks), a box frame of planks and a log construction. Horizontal planks (so-called lid planks), which finished off the structure at the top, were also found. Other objects preserved included a log ladder and four hooks (forked branches) used as devices to draw the water. A total of 95 parts were found, which consisted of 117 individual timbers, some of them cut into sections (Chap. 1.1).

On 9th March 1907, Jakob Heierli, then lecturer in pre- and protohistory at the University of Zurich and secretary of the Schweizerische Gesellschaft für Urgeschichte (SGU) [Swiss Society of Prehistory], received a telegram informing him that two Bronze Age swords, a fragment of a third sword, a dagger and a pin had been found in a hollowed-out tree trunk (pipe 2) at the bottom of the St. Maurice spring in St. Moritz. Heierli travelled to the Upper Engadin to record eye witness accounts regarding the recovery of the metal and wooden finds, to make reconstruction drawings and subsequently publish a paper several pages long about the assemblage (Heierli 1907). The same year, the spring tapping system was reconstructed in the basement of the Engadin Museum in St. Moritz (Chap. 3.1.5).

Plans for a new display of the construction afforded an opportunity, in 2013, to carry out the first ever systematic archaeological examination of all timbers by dendrochronological and other means. The first dendrochronological analyses and radiocarbon dating had been carried out in the 1990s and suggested a Middle Bronze Age date for the construction (Seifert 2000); the aim in 2013 was to undertake a comprehensive and systematic dendrochronological investigation (Chaps. 1.2, 2.3).

The most pressing question raised by the re-evaluation relating to the original construction and functionality of the facility could not be answered on the basis of Jakob Heierli's schematic elevation and plan view or the reconstruction in the Engadin Museum, which was tainted by many constructional errors (Chap. 5.1.6).

The archaeological study of the timbers showed that the logs were preserved to varying degrees. Some bore brown rot with cubical decay, traces of erosion or washed-out areas. However, because the areas that were infected by brown rot exhibited the same excellent state of preservation as the other areas, the rot could be identified as dating from the Bronze Age. The obvious conclusion was that the geological deposits into which the construction had been dug had led to the differences in preservation due to their individual hygroscopicity levels (rot) or due to the presence of water continuously circulating within these deposits (erosion, washing-out). The timbers inside the log construction, i.e. the planks and pipes, on the other hand, had survived unscathed (Chaps. 4.2–4.8, 7.8.3).

Jakob Heierli's reconstruction drawings of 1907 exhibited a series of discrepancies (Chap. 7.3). He had drawn most of his information from a photograph of a model of the construction at a scale of approximately 1:9, created by Christian Gartmann, the architect tasked with directing the restoration of the spring tapping system in 1907. The original model, several copies of which were made, can be viewed as a dependable source of information on the original find context (Chap. 7.2). The most obvious dis-

crepancy in Jakob Heierli's drawings is the absence of the so-called lid planks. Their ends had been worked to points so that they could not have been built into the box construction. Heierli counted them as parts of the box (arriving at 24 planks including the lid planks, which he did not recognise as such, instead of 16), which resulted in his reconstruction being much higher than is suggested by both the original timbers and Christian Gartmann's model.

The upper edges of the two hollowed-out tree trunks had been exposed in 1853 during the restoration of the spring tapping system that had been in use at the time. The pipes had been cleaned out and reused as the substructure for the new construction, which remained in use until 1907 (Chap. 3.1.4). A detailed report was compiled in 1853 which contains information on the stratigraphy above and within the construction and on the size ratios between the upper edges of the pipes and the plank box frame (BRÜGGER 1853; Chap. 7.4).

There are accounts of a folk tale from the period between 1833 and 1853, confirmed by a number of octogenarians, that the roots of a tree had sat at the bottom of the spring and that the mineral water had become less potent after it had been lifted (Chaps. 3.1.3; 7.6.2). Axe marks on pipe 2 suggest that these accounts referred to a restoration of the spring tapping construction in 1740, at which stage pipe 2 was raised, but by how much remains unknown. In 1853 the rotted upper edge of pipe 2 was sawn off (Chap. 7.6.3) – pipes 1 and 2 were originally roughly the same height.

Thanks to a combination of various sources (Chap. 7) – the plausibility of the measurements of the upper area of the construction, which had been obtained independently in 1853 and 1907 and which more or less corresponded with each other, the presumed completeness of the original assemblage and the reconstructed position of pipe 2, taking into account that it had been raised by an unknown amount (1740), and its original height (1853) – a new reconstruction has now been suggested for the feature (Chap. 8). The overall height of the assemblage is much shorter than had previously been believed; the new reconstruction, in contrast, started out from the measurements of the upper area, since the 1907 measurements for the bottom of the feature were highly contradictory. Given the narrow excavation pit and the fact that the logs / planks and the pipes had been retrieved in succession, this is not surprising.

Jakob Heierli had put forward the thesis that the mineral water had been drawn from both pipes and that the area between the log and plank constructions and the box frame itself had been filled with loam. From a functional point of view, however, this makes hardly any sense. Why does the assemblage consist of two box constructions built using diametrically opposed construction techniques? What would the advantage have been of combining different types of casing if there was no functional difference between them, at first glance, since they were both clad in loam?

According to the principle that form follows function, only one conclusion can be drawn from this: the different construction techniques used for the log and plank box frames must have corresponded to their different functions. The fact that the dovetail joints of the plank box frame were intended to provide the best possible waterproof seal points to its function as a catchment basin for the mineral water, whilst the log construction probably served to protect

the plank box frame and shore up the walls of the surrounding pit.

The notion that the plank box frame was not, in fact, filled with loam but was accessible, at least occasionally, is suggested by the presence of a log ladder with the same felling date as the remainder of the feature, i.e. the winter months of 1411/1410 BC. According to Heierli's theory, the log ladder would have been used during the construction period, left behind and deposited in the postulated loam packing. Besides a uniform deposition in the ground, this presumption also implies identical preservation of the planks and the log ladder. In contrast to the planks, the ladder, however, bore clear traces of washing out and thus direct contact with water. It was probably used to gain access to the box construction for sporadic cleaning, but would usually have been in use elsewhere (e.g. in buildings nearby).

In the winter months of 1412/1411 BC the mineral spring at St. Moritz was tapped by placing a singular hollowed out tree trunk (pipe 3) around the area where the iron oxide-laden mineral water emerged naturally (Chap. 8.3). During the spring of 1411 BC the concentration of the mineral water probably lessened because of a seasonal rise in groundwater levels and increased intermixing of mineral and ground water. In an attempt to counteract this and achieve a better seal, a construction consisting of two pipes, a catchment basin (plank box frame) and a protective log construction was installed. In order to finally separate the precious mineral water from the ground water, a water-impermeable loam deposit between the mineral and ground water had to be penetrated. Between September 1411 BC and April 1410 BC, trees were felled, the construction planned and prepared and probably even assembled in advance, at least in part, on dry ground (Chap. 8.4).

Based on the dendrochronological examinations we can assume that the approximately 20 trees necessary for the log construction were felled in the wider surroundings of the spring. Four to five trunks, however, would have been sufficient to make the planks. From a dendrochronological point of view and taking the measurements into account, pipes 1 and 2 were probably made from the same tree trunk. The tree was probably chosen due to the dry rot in its heartwood, which would have made it easier to hollow it out, as suggested by archaeological experiments (Chaps. 6, 12).

The log construction was sealed using wads of moss, a conglomerate of which has survived and has now been botanically analysed. Judging by the presence of a microsporophyll of Swiss stone pine or mountain pine, which is only formed during the blooming period of trees and shrubs of the Pinaceae family, the caulking and thus the construction of the spring tapping system cannot have taken place until June/July (Chap. 13).

The bottom edges of both pipes were sealed using sheepskin. A sample of the wool had been taken from pipe 1 in 1907 and transferred to the Swiss National Museum that same year, where it was erroneously catalogued as remnants of bark. The sample can clearly be identified as sheepskin of a Bronze Age type (Chap. 14).

The study of the manufacturing traces on all construction elements revealed that the blow marks were caused mainly by the use of adzes, but also axes. Adzes have not yet been found amongst the range of Bronze Age tools in present-day Switzerland, but a few examples are known from Austria.

Another possible link to the (north-)east can also be made on the basis of the votive metal-hilted swords from St. Moritz, which were probably made in Bavaria. It seems obvious that they came to St. Moritz via the Inn Valley.

Much like the builders who planned to construct a new spring tapping system in 1942/1943 by breaking through the loam deposit (Chap. 3.1.7), the Bronze Age builders must also have underestimated the steepness of its gradient, which is in no way suggested by the more or less plane terrain. The actual construction that was installed in the winter months of 1411/1410 BC was therefore probably not consistent with the plans made in advance; only pipe 2 reached deep enough to penetrate the loam deposit, perhaps only by way of a small penetrating channel, and gain direct access to the moraine material below through which the mineral water circulated (Chap. 8.5). Neither of the two box constructions or pipe 1 fully reached the upper edge, let alone the stratum within the loam deposit and had thus become functionally obsolete. Groundwater, even at its lowest, could flow into those parts of the construction.

Therefore pipe 2, which offered the only way of accessing the mineral water, would have been the main focus during the spring tapping system's period of use which, according to the typological dating of the metal finds lasted approximately 100 to 150 years at most (Chap. 8.6). From an archaeological point of view it is clearly distinct from pipe 1 based on the bronze deposits mentioned earlier and strong iron oxide discolouration on its inside.

Unsurprisingly, no comparable spring tapping systems are known, given that even the concept of its construction was tailored to a presumably specific geological situation, and was then further customised to match the actual circumstances encountered.

Both the sacred and spatial context must be seen from a rather wide perspective (Chaps. 10, 11). With its broad range of weapons from various provenances, the Bronze Age water deposit at Berlin-Spandau, for instance, shows how deeply the significance of natural sanctuaries was rooted in Bronze Age societies over a vast area.

Since 2014 the extraordinarily well-preserved wooden construction has been on display in a hall with a drinking fountain, which was restored specifically for this purpose at the Forum Paracelsus in the spa district of St. Moritz.

Translation:
Sandy Haemmerle, Galway (IRL)