

Settlement archaeology and prehistoric mining: a new interdisciplinary research project in the Alpine valley Montafon in Vorarlberg (Austria)

RÜDIGER KRAUSE

ABSTRACT - The Alpine valley Montafon and surroundings were thought to have been uninhabited in prehistoric times, until 1999 when remains of an ancient settlement were discovered at Bartholomäberg. Occasional finds around the high pass over the Schlappiner Joch (2200m) together with the occurrence of copper and iron ores in the Bartholomäberg and the Kristberg in Silbertal suggest that prospecting for and exploitation of ores already occurred in prehistoric times. An interdisciplinary research project of the Free University in Berlin, the University in Freiberg/Saxony, and the University in Innsbruck is directed towards the history of prehistoric settlements in Montafon, with respect to formative influences on the earliest settlements and postulated early mining activities, further, the development of the natural landscape and cultural processes in general within this small inner Alpine settlement area.

Key words: Settlement, mining activities, Alps, Austria

Parole chiave: Insediamenti, attività estrattive, Alpi, Austria

Rüdiger Krause - Institut für Prähistorische Archäologie der Freien Universität Berlin, Altensteinstr. 15, D – 14195 Berlin

1. INTRODUCTION

Along the border of the eastern and western Alps the broad Alpine Rhine valley provides natural access to inner areas of the Alps (Fig. 1). It also represents a major north-south axis of communication that extends to the southern periphery of the Alps into the plain of eastern upper Italy. The favourable location of settlements and fertile loess soils of the “mountain islands” in the Rhine valley in Vorarlberg and Liechtenstein (VONBANK, 1950a, b; STEINHAUSER-ZIMMERMANN, 1989; MACZYNSKA, 1999, fig. 1, 39-42) together with the advantageous geographical situation for travel and exchange have formed the basis of the habitation in this area since middle Neolithic times. In the southern loess province in Vorarlberg, the wide valley of the Ill river branches southeastwards from the Rhine valley and with the Walgau (Fig. 1) represents an old settlement area with many prehistoric sites (LEITNER, 1996; GRABHER & SWOZILEK, 1999, fig.1). Among them are well-known sites of the Bronze and Iron Age in and

around the town of Bludenz (Fig. 2), in particular Bludenz-Unterstein. There was probably one of the most spectacular site in the inner Alpine region. The site of Bludenz-Unterstein lies directly south of the steep slope of the Montikel elevation. Ever since 1830 weapons and artefacts have been found there in ashy earth interspersed with charred bones over an area of c. 100x20m (LEITNER, 1979, 1996). More than 200 weapons and tools have been recovered, including spearheads, axes, swords, sickles, shovels, adze and even a Negau-helm of bronze (EGG, 1979). Altogether, these findings indicate that this was a site of importance, of offering during the Bronze- and Iron Age. Yet, it is still unclear whether the archaeological material is really sediment that was carried down from an offering place further up on the Montikel itself and deposited, or whether the position of the objects as well as the burnt remains mark the actual site of an offering place at the foot of the Montikel (WYSS, 1992).

To the southeast directly below Bludenz the Walgau narrows and separates into the Kloster valley, that leads eastwards to the Arlberg, providing passage to

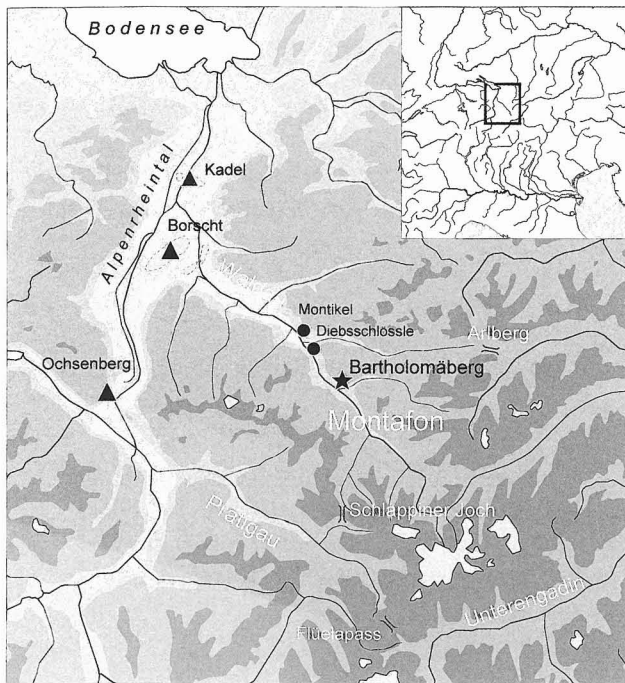


Fig. 1 - Map of the Alpine Rhine Valley with the Walgau and Montafon, showing the major settlements of the Early and Middle Bronze Age (excluding Graubünden). Also indicated are mountain passes in the area of Montafon that were important crossings in the inner Alpine region.

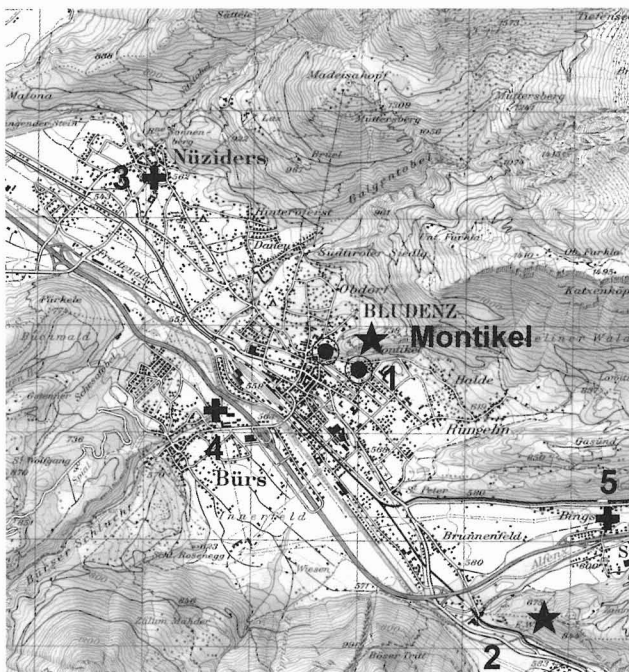


Fig. 2 - Southern Vorarlberg. Prehistoric sites in the Walgau and environs of the town of Bludenz.

- 1) Bludenz with the Montikel elevation and the stations "Kleiner Exerzierplatz" and "Unterstein"
 - 2) Diebsschlössle, Middle Bronze Age hillfort above the communities of Stallehr and Lörüns in Montafon
 - 3) Nüziders, flanged celt of the Langquaid type, occasional find
 - 4) Bürs, Late Bronze Age spearhead, occasional find
 - 5) Bings, Late Bronze Age antenna swords, occasional find
- Detail from the topographical map 1:50000, No. 238, Montafon. Map of Switzerland. By permission of the Ministry of Topography (Bundesamt für Landestopographie) in Wabem.

the Inn valley in the eastern Alps (Fig. 1). To the south-southeast is the valley and area of Montafon, whose surrounding mountain massifs the Silvretta (Fig. 3) and the Rätikon are drained by the Ill river. Until recently no prehistoric settlements or finds were known from the inner Alpine Montafon valley. Yet, occasional finds from mountain passes and roads that were disclosed by Elmar Vonbank in 1966 (VONBANK, 1966) indicate that these routes were used by prehistoric populations. Especially noteworthy are the bronze objects found in the area of the town of Schruns and the Gargellen valley higher above. The Gargellen valley leads up to the Schlappiner Joch, that forms the boundary between the Rätikon and Silvretta massifs and presents a natural, 2200m high pass as well (Fig. 1). The discovery of an Early Bronze Age spearhead in the Alp Valzifenz and a winged axe of the early Iron Age (Hallstatt C/D) on the Schlappiner Joch at 2000 m height as well as an Urnfield spearhead from the village Gargellen (see VONBANK, 1966, fig. 3-5) are irrefutable evidence that the route from the Alpine Rhine valley through Walgau and Montafon into the inner Alpine area via the Schlappiner Joch was already traversed since the Early Bronze Age. From the Schlappiner Joch there was easy access to the upper Engadin to the south and the Prätigau, where the Flüela pass led east to the lower Engadin and west into the Alpine Rhine valley (Fig. 1). The upper and lower Engadin are an inner Alpine settlement area that was inhabited during the Middle and Late Bronze Age (PRIMAS, 1998, fig. 4; see RAGETH, 2000).

Despite unfavourable climatic conditions at times (Löbden vacillations) settlement even in high areas of the Alps during the Bronze Age can be confirmed. This has led to the general line of inquiry as to the circumstances and motives behind the settlers at that time. Did pressure come from the north that caused the expansion of the economic foundation to pastoral economy (Almwirtschaft)? Or did the search for copper ores, that were needed for the production of copper implements and artefacts, a distinguishing and coveted feature of prestige and rank in the societies at that time, dominate (WYSS, 1971; BILL, 1980; PRIMAS, 1999)? It is perhaps due to the state of research that to date the latter hypothesis can be applied to only few settlements. One example is the Klingelberg near St. Veit in the Pongau south of the Mitterberg (SHENNAN, 1995), a fortified hilltop settlement where evidence of ore exploitation and production suggest that a mining community. By contrast, M. Primas has pointed out, with reference to the Middle and Late Bronze Age settlements in the lower Engadin (Fig. 1), that settlement there was based on solely an agricultural economy (PRIMAS, 1998, 357ff.); the occurrence of copper is scanty and, hence, ore exploitation could not have played a significant economical role.



Fig. 3 - Aerial view of the Montafon landscape from the northwest; in the background the main Alpine ridge with the 3312 m high peak Piz Buin. In the foreground the valley and Schruns with the confluence of the Ill and Litz rivers; the settlement at Bartholomäberg is located on a terrace in the upper left. Photograph by Otto Braasch.

2. THE MONTAFON – A PREHISTORIC SETTLEMENT LANDSCAPE?

With these examples of Bronze Age settlement of the Alps and the natural setting and conditions in Montafon as a background, the presence of copper and iron ores in Bartholomäberg and Silbertal gains even greater significance, especially since it has long surmised that these ores were already mined in prehistoric times (VONBANK, 1966: 86; KRAUSE, 1988, 214ff., 216). However, until now there was no archaeological material that attested the existence of prehistoric settlements in this small ore-bearing region. Mining activities during the Carolingian period are implied by the mention of nine smelting ovens in the Reichsurbar in Chur (842). Mining in medieval times continued until the beginning of the 16th century, as evidenced by waste heaps and mine entrances in the field (Fig. 4) as well as frequent mention in written sources (SCHEIBENSTOCK, 1996). Finally, the discovery in 1999 of a prehistoric hilltop settlement above Schruns on the Bartholomäberg (Fig. 5) (KRAUSE, 2001) gave impetus to a new investigation in this inner Alpine valley. The prerequisites for an interdisciplinary research project on settlement environment, the history of the natural landscape as well as the economic foundation(s) (mining?) were at hand: there are several moors in the Montafon (KOSTENZER, 1996) and at various heights on the Bartholomäberg, and well-preserved remains from medieval mining, esp. in mining debris, contained ores. The collaborative research project is aimed at determining and examining the cultural relationships, the basis of



Fig. 4 - Bartholomäberg in Montafon, Vorarlberg, Austria. The area of medieval mining activities with waste heaps and mine entrances in the parish "Knappagruaba" (cp. map Fig. 5: 3).

subsistence and economic systems in this small, inner Alpine settlement area.

3. ARCHAEOLOGICAL INVESTIGATIONS AT FRIAGA WALD ON THE BARTHOLOMÄBERG

The hilltop settlement is located in the Friaga Wald at 940m a.s.l. in the southeastern part of a large terrace called Platta, that faces south. The setting is part of an old settlement environment on Bartholomäberg with the oldest church in the valley (at 1087m a.s.l.). The prehistoric site itself is actually 240m above the valley sole and Schruns, where the Litz river flows out of the Silbertal into the Ill river (Fig. 5). This strategic and topographically exposed setting enables a far-reaching view of the surrounding valleys as far south as the distant Silvretta massif, the main Alpine ridge (Fig. 3, 6).

The advantageous location and the southerly direction of the terrace were an enhancement for crop cultivation. Cereals were raised there well into the 1950s. Due to the pleasant climate and the intensive sun this area of the Bartholomäberg has become known in the tourist branch as the "sunny balcony of Montafon". Since the summer of 2000 archaeological excavations have been carried out in four-week campaigns by the Institute of Prehistorical Archaeology, Free University Berlin (Fig. 7) (KRAUSE, 2001). They are directed at clarifying the history and stratigraphy of the settlement as well as the construction of fortifica-

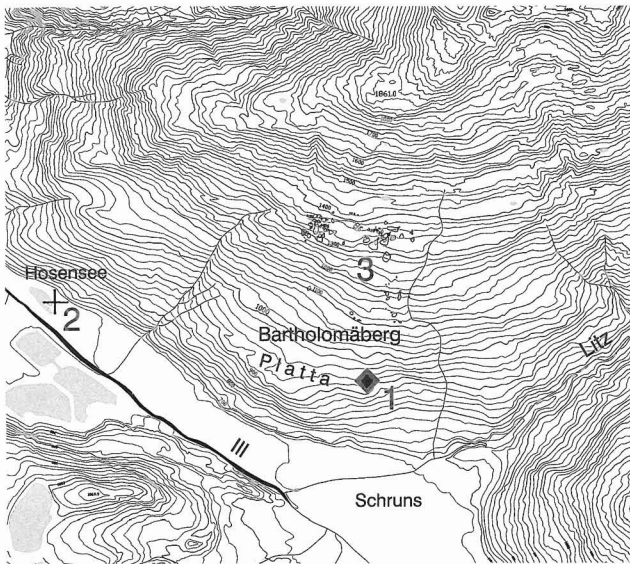


Fig. 5 - Oro-hydrographic map of Bartholomäberg with the location of the prehistoric hilltop settlement Friaga Wald (1), the flanged celt of Langquaid type from Hosensee (2), and the zone of medieval mining debris in the parish Knappagruaba and Hennakopf (3). Based on the cataster map of the Bundesamt für Eich- und Vermessungswesen, Wien and of the communal administration (Stands) of Montafon in Schruns.

tion. Trial trenches laid at various other places on the Bartholomäberg should throw light on further possible settlement sites as well as the density of settlement in the area. Palaeobotanical analyses of burnt remains in habitation layers as well as analyses of pollen from two moors on the Bartholomäberg, conducted by Klaus Oeggel in the Institute of Botany at the University in Innsbruck, are an integral part of the project. The results supply information about the beginnings, intensity and duration of settlement activity, basing on plants that serve as cultural indicators and charcoal, while providing important facts about the vegetation and natural environment. Chemical and mineralogical



Fig. 6 - Bartholomäberg, Montafon. In the foreground, the forested mountaintop of the prehistoric settlement Friaga Wald at the edge of the Platta. View towards the southeast and Montafon.



Fig. 7 - Bartholomäberg, Montafon. The Institute of Prehistoric Archaeology of the Free University in Berlin has been conducting excavations in the fortified hilltop settlement Friaga Wald on the Platta since the year 2000. The photograph shows investigations on the middle, intentionally levelled settlement terrace (cp. Fig. 8, plateau 2).

analyses of ores, artefacts and metallurgical relics answer questions on the postulated exploitation of copper ores at this site in prehistory, in particular during the Bronze Age. They also measure the influence that this mining activity might have had on the procedures in ore production and on cultural processes in general in the settlement area. Analyses of heavy metal from turf profiles, i.e. the amount of heavy metals in organic matter, should help determine and date phases of ore smelting and metal working, thereby indicating the main phases of mining activity.

The excavations of 2000 and 2001 on the Bartholomäberg took place within the c. 90x50 m large settlement area located on a promontory above the valley. The work revealed that the terrace had been artificially shaped into plateaus for settlement; further, the promontory is separated from the hinterland by a ditch hewn into the bedrock (Fig. 8). The central settlement terrace, where settlement is confirmed by several habitation layers, was enlarged and fortified by means of a terrace wall. It can be dated to the beginning of the Middle Bronze Age.

3.1. Habitation layers and find complexes

Trenches 2 and 3 on the central settlement plateau (Fig. 8) have supplied information about the occupation layers and the first clues as to the method of construction. Levelled-off layers up to 0.4m in thickness consisting of reddish brown clay interspersed with charcoal particles and pottery of the Early Bronze Age were found in the area between and above the fissured rock (Fig. 10: 4). The pottery mainly comprises body sherds, whose form and surface treatment do not yet allow an exact assignment within the developmental phases of Early Bronze Age pottery. Apparently, ter-

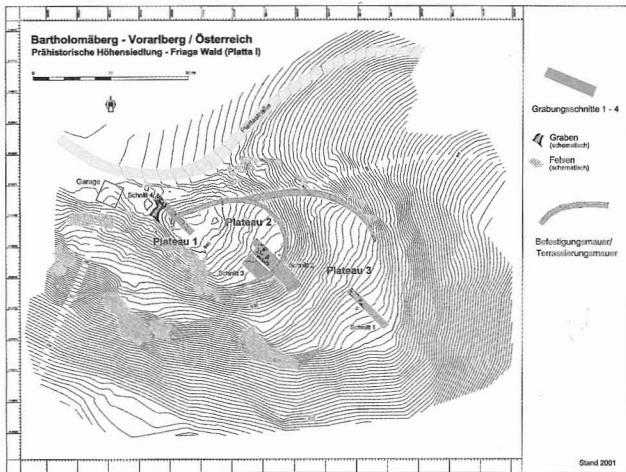


Fig. 8 - Bartholomäberg, Montafon. Topographical plan of the prehistoric hilltop settlement Friaga Wald. The promontory is characterised by terraces and plateaus. Designated are the excavation trenches 1–4, the course of the terrace wall on plateau 2, and the fortification wall encircling the hillfort. Digital documentation by the firm ArcTron, Altenhann.

raced layers among the rocks were an effort to gain more level surface.

Following upon the oldest Early Bronze Age horizon was a up to 0.3m thick, dark- to blackish brown habitation layer mixed with an abundance of charcoal and pottery sherds (Fig. 10: 3). The pottery dates to the Middle Bronze Age; the finds of a pin (Fig. 11) with perforated neck and trumpet-shaped head (Lochhalsnadel) (see INNERHOFER, 2000: 46 ff.) as well as two fragments of the same type of pin narrow this date to the beginning of the Middle Bronze Age, i.e. to the 16th century BC. The pottery is typical with its coarse temper and relatively smooth, leather-like surface. Several rims and body sherds display a horizontal rib that is smooth or with finger depressions (Fingertupfenleisten), a feature that coheres with the spectrum of Middle Bronze Age wares. The Middle Bronze Age layer distinctly adjoins the rest of a terrace wall, most of which has fallen down the slope (Fig. 9). The date of the wall's construction can thus be set at the beginning of the Middle Bronze Age. Further notable finds in this layer are two hearths and a section of stone foundation - almost 5 m in length - for the wall of a house (Fig. 9). The house was built in blockhouse style (see RAGETH, 1986: fig. 5, 8) with the back against the terrace wall. In view of these findings, the reconstruction of row-house-like structures, that were arranged in a ring along the terrace wall, seems probable.

A dark brown layer 0.25-0.3m thick followed upon the Middle Bronze Age level, and dates to the Early Iron Age (Hallstatt period) (Fig. 10: 2). Remarkable features of this layer are stone slabs interpreted to be platters or a small platform, a foundation of stone blocks and a c. 70x50 cm large stone slab with a conical hole (Fig. 12).



Fig. 9 - Bartholomäberg, Montafon. Trench 2 with find complexes from the Middle Bronze Age and transition to the Early Bronze Age. The natural bedrock is exposed in places, above which the horizontal planing of the Early Bronze Age followed by an initial stone foundation of the early Middle Bronze Age can be seen.



Fig. 10 - Bartholomäberg, Montafon. Stratigraphy of the habitation layers of the middle settlement terrace in trench 2. Beneath a cover of forest humus and a sterile horizontal level (1) follow an Early Iron Age layer (2) and a black layer marking the distinct horizon of the Middle Bronze Age (3). Below these is the Early Bronze Age horizon (4) that contains many rocks.

Found in stratified position within the early Iron Age layer, the slab served as foundation for a door-hinge (see RAGETH, 1993: 116 ff., fig. 22). A cover of flat stones separates the Early Iron Age layer from the later succeeding settlement horizon. In view of the presence of the so-called Schneller ware (Fig. 13), the layer can be attributed to the late Iron Age (early Latène period).

The numerous habitation layers indicate that this location was settled during different periods in prehistory. Yet, it is noteworthy that apparently there were lengthy interruptions of several hundred years in settlement, i.e. between the Middle Bronze Age and the Early Iron Age. A shift in the inhabited area seems to be a likely explanation. Therefore, another aim of the

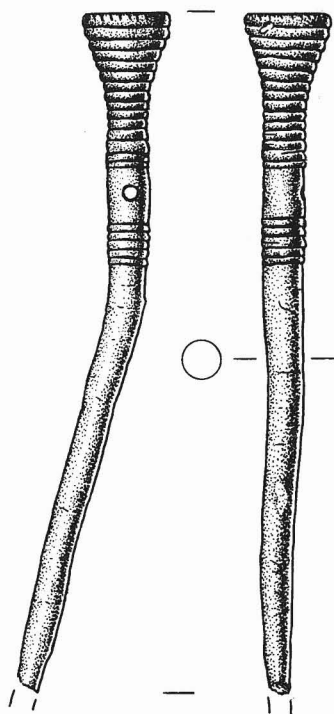


Fig. 11 - Bartholomäberg, Montafon. Pin with perforated neck and trumpet-shaped head (Lochhalsnadel) of the early part of the Middle Bronze Age from trench 2. Scale 1:1.

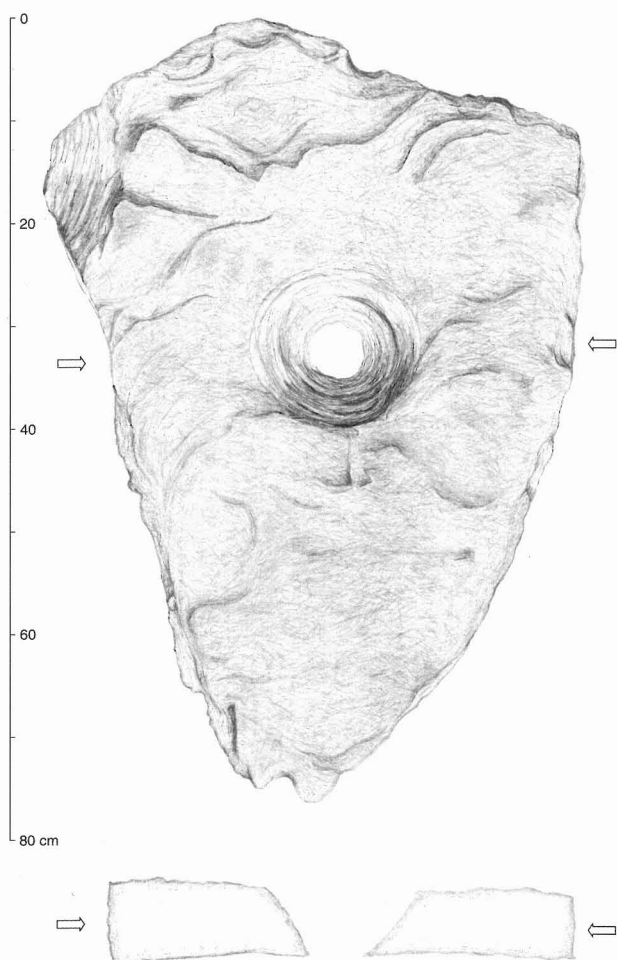


Fig. 12 - Bartholomäberg, Montafon. Flat stone of c. 70 cm diameter with conical hole for a door-hinge. Found in the Early Iron Age layer (2) in trench 2.



Fig. 13 - Bartholomäberg, Montafon. Small squat vessel, typical Schneller pottery of the Early Iron Age in the Rhine valley, found in trench 3. Height 9.0cm, greatest width 11.6 cm (Inv. No. Ba01-230).

project is a field survey for further prehistoric settlements in Montafon. Initial trial trenches at exposed places in the summer of 2001 have indicated, however, that this intention will not be easy to fulfil.

Basing on the pottery and metal finds, the habitation layers in the central settlement plateau could be dated to the Early Bronze Age, the beginning of the Middle Bronze Age and the Early Iron Age (late Hallstatt period). The latest finds and find complexes with Schneller pottery date to the transition of late Hallstatt to early Latène period. Various other findings such as postholes, stone platters, stone foundations and the two hearths evidence the construction of houses in the Early Bronze Age and the beginning of the Middle Bronze Age. Until now excavations in the settlement in Friaga Wald have not produced any evidence of metal working or mining activities.

3.2. Fortification of the settlement area

The settlement terrain was stabilised near the mountain slope by a stone wall about 80 m in length. Its mound and debris are clearly recognisable upon the surface (Fig. 8). Part of the wall was uncovered in the summer of 2001 in one of the trenches (Fig. 14-15). The wall was constructed in two shells with a total width of at least 2m: the outer shell or side consisted of large stone blocks; the inner side of the wall is difficult to determine. Possibly the inner wall was not a vertical construction, but made of small stones piled up at a slant. This would mean that the wall was about 3m wide at the base (Fig. 14). Judging from the volume of heaps of dislodged stones from the outer wall that were found in the trench, the original height of the wall must have been at least 2-3m.



Fig. 14 - Bartholomäberg, Montafon. Fortification wall in trench 4 (cp. plan in Fig. 8).



Fig. 15 - Bartholomäberg, Montafon. Profile of the fortification wall in trench 4 (cp. plan in Fig. 8 and 14). The outer shell (lower left in photo) of the wall was constructed with large stone blocks, while the inner side was built of smaller stones that are now mostly dislodged. The wall is c. 2.5 m wide, its original height was probably 2–3 m. The course of the wall can be followed across the terrace (background).

The fortification wall cannot be securely dated yet; however, just as the terrace wall in the central settlement plateau, a date in the Middle Bronze Age seems probable. All in all, the stone wall represents a massive construction (Fig. 15) and an impediment to any approach, thereby lending the character of a fortress to the settlement. The fortification opens interesting questions as to the significance and function of the site and its position within the (yet unknown) settlement structure in the area (VONBANK, 1950a; SHENNAN, 1995). Especially when considering the postulated ore exploitation and production during the Bronze Age, the site could well have played a central role. The massive, forbidding defence wall must have set the settlement apart from others; fortified places such as this are otherwise unusual. These circumstances have led to the questions of the purpose and the target of such extensive defence measures, questions that will be the focal point of future research on the prehistoric settlement area of Montafon. In the attempt to establishing and reconstructing

the economic basis and cultural environment of the prehistoric inhabitants, the results of interdisciplinary research with the Institute of Botany, University in Innsbruck, and the Institute of Archaeometallurgy, Bergakademie in Freiberg, Saxony, will play key roles. Presumably movement and settlement in Montafon and its passes, such as the Schlappiner Joch, in prehistoric times are associated with its location in an inner Alpine economic system as well as with the postulated prospecting and exploitation of copper and iron ores. Indeed, these ores were among the most valuable and coveted natural resources of the Bronze- and Iron Age!

3.3. Future prospects

Excavations at the hilltop settlement in Friaga Wald, on the Bartholomäberg, will continue in 2002 and 2003. Results attained until now have confirmed that settlement began there in the Early Bronze Age. The area of settlement was expanded at the transition of the Early to Middle Bronze Age, whereby a terrace wall was erected on the second plateau. It is generally assumed that at this time fortification measures in the form of a 2-3m wide stone wall on the slope were undertaken. Results acquired by K. Oeggel from the pollen profile, a c. 8m sequence taken at the Garsetta moor, have revealed settlement indicators with clear evidence of pastoralism and the regression of the pine as early as the beginning of the second half of the 3rd millennium. Two calibrated radiocarbon dates have set the timespan shortly before and contemporary with the cemetery in Singen on Lake Constance, i.e. in the 23rd/22nd to 21st/20th century BC (KRAUSE, 1988: 120 ff.). This means that settlement in the inner Alpine area Montafon began earlier than supposed until now: at the transition from the final Neolithic to the early Bronze Age. Some of the questions that remain to be answered are, among others, whether the oldest cultural layer of the hilltop settlement in Friaga Wald is associated with the earliest phase of human habitation of the Alpine landscape and whether the site thus represents a continuously inhabited settlement.

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SUMMARY - The Alpine valley Montafon and surroundings were thought to have been uninhabited in prehistoric times, until 1999 when remains of an ancient settlement were discovered at Bartholomäberg. Occasional finds around the high pass over the Schlappiner Joch (2200m) together with the occurrence of copper and iron ores in the Bartholomäberg and the Kristberg in Silbertal suggest that prospecting for and exploitation of ores already occurred in prehistoric times. An interdisciplinary research project of the Free University in Berlin, the University in Freiberg/Saxony, and the University in Innsbruck is directed towards the history of prehistoric settlements in Montafon, with respect to formative influences on the earliest settlements and postulated early mining activities, further, the development of the natural landscape and cultural processes in general within this small inner Alpine settlement area.

RIASSUNTO - Si è da sempre ritenuto che la valle alpina di Montafon e dintorni non fossero stati abitati in epoca preistorica, fino a quando, nel 1999, sono stati rinvenuti i resti di un antico insediamento a Bartholomäberg. Ritrovamenti occasionali presso lo Schlappiner Joch (2200 m) assieme a qualche minerale grezzo di rame e di ferro a Bartholomäberg e Kristberg nella Silbertal, suggeriscono che la ricerca e l'utilizzo di minerali avveniva già nella Preistoria. Si sta conducendo un progetto di ricerca interdisciplinare fra l'Università di Berlino, l'Università di Freiberg/Sassonia e l'Università di Innsbruck attraverso la storia degli insediamenti preistorici a Montafon, considerando le influenze formative dei primi insediamenti e tenendo conto non solo delle prime attività minerarie, ma anche dello sviluppo del paesaggio naturale e in generale dei processi culturali all'interno di questa piccola area alpina.

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