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Valleys, Pastures, and Passes: New Research Issues from the Swiss Central Alps

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SUMMARY - *Valleys, Pastures, and Passes: New Research Issues from the Swiss Central Alps* - A number of recent archaeological survey and excavation projects in the Swiss Central Alps (St. Gotthard area, Ticino valley, Engadine, Silvretta massif) shed new light on the environmental, social and economic dynamics of early Alpine colonisation. Specific topics addressed in this paper are human impact on the environment as derived from palaeoecological datasets, geography of settlements and transit routes, specific forms of social organisation, evidences of Alpine pasture use and economy, as well as new issues relating to global warming and the rapid loss of ice patches with archaeological potential in high altitudes.

RIASSUNTO - *Valli, pascoli e passi: nuovi temi di ricerca della Alpi centrali svizzere* - Recenti ricerche nelle Alpi centrali svizzere (area del S. Gottardo, valle del Ticino, Engadina e massiccio della Silvretta) effettuate attraverso sia prospezioni di superficie che attività di scavo, hanno permesso l'acquisizione di nuovi dati sulle dinamiche economiche, sociali e ambientali relative alla più antica colonizzazione delle Alpi. In questo lavoro, ad esempio, verranno affrontati temi come l'impatto umano sull'ambiente in base ai dati paleoecologici, geografia degli insediamenti e rotte di transito, specifiche forme di organizzazione sociale, evidenze di paastoralismo alpino; inoltre saranno discussi anche nuovi argomenti relativi al riscaldamento globale e la rapida diminuzione di copertura glaciale con le sue conseguenze sulla ricerca archeologica ad alte quote.

Parole chiave: Settlement topography, Social organisation, Trans-alpine contact, Prehistoric pastoralism, Swiss Alps, Glacial archaeology
Keywords: Topografia degli insediamenti, organizzazione sociale, contatti transalpini, pastoralismo preistorico, Alpi svizzere, archeologia glaciale

1. INTRODUCTION

This article is aimed at providing a synthetic outline of the current research situation in the southern and eastern Swiss Central Alps during the Metal Ages. It refers to a series of scientific studies that were developed during recent years within the framework of research and cooperation projects at the University of Zurich in the fields of settlement, burial and economic archaeology. The main focus was on the coherences of settlement topography and geographic nature, as well as on questions regarding the social and economic forms of organisation of Alpine populations in the context of the 3rd to the 1st millennium B.C.

2. THE VALLEYS OF THE SOUTHERN ALPS

Ancient written sources allocate the Leponti, Orobi and Insubres to the Ticino and the areas to the south and west, and the Uberi, Seduni and Veragri to the Valaisan Rhone Valley - they are all Celtic tribes which have a more or less corresponding material culture. In thematic order, the following chapters shall discuss new settlement finds, new surveys of cemeteries and also evidence for transalpine contacts and relationships - initially with a focus on the Iron Age. Structural peculiarities and coherences shall

be revealed from a socio-archaeological perspective. From a settlement-geographical point of view, such coherences can be illustrated particularly well using the location of settlements and necropolises with reference to the proven or presumed road network in the Alpine valleys and across the passes (Carlevaro 2012) (Fig. 1).

Indications have been repeatedly and justifiably made which refer to the situation of cemeteries - which in the absence of settlements are often the best indicators - along the valley flanks, on screes and on the terraces of the main passage valleys. Characteristic examples thereof are Gudo, Arbedo (TI), Castenada, Mesocco (GR) as well as Osco and Dalpe (TI) in the Leventina. Other places - also to be seen as a recurring phenomenon in the Central Alps (Della Casa 2007) - occupy naturally fortified strategic locations such as hilltops and valley walls that served as means of territorial control. For example, one of these is the station in Airolo-Madrano which was recently discovered in 2002 (Della Casa *et al.* 2009), combining elements favourable for settlements and transport network.

2.1. Settlements

As already indicated, the settlement finds on the survey opposite the grave finds are clearly underrepresented, which is why our possibilities for insights to settlement structures and

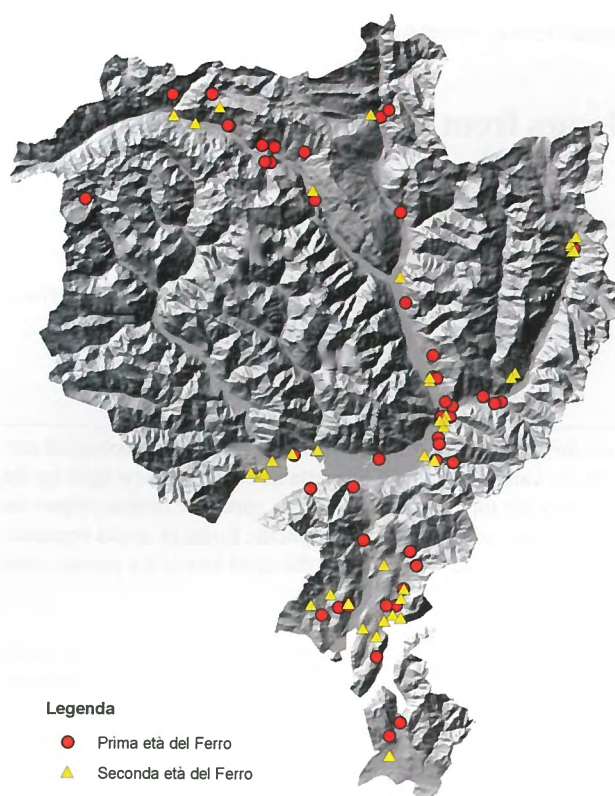


Fig. 1 - Find sites from the early and late Iron Age (the majority are grave finds) along the Alpine valleys of the Canton of Ticino (cf. Carlevaro 2012).

Fig. 1 - Distribuzione dei siti dell'età del Ferro (in maggioranza tombe) lungo le valli alpini del Canton Ticino (cf. Carlevaro 2012).

economic manners are still quite limited. It is however possible to give a fairly good outline of the human influence on the landscape via indirect and vegetational historic evidence (Conedera & Tinner 2000). Recent surveys now demonstrate that a *human impact* can be estimated during the Neolithic period, and that the Bronze Age clearly appears to be an intensive settlement phase (Vescovi *et al.* in: Della Casa *et al.*, in prep.). Furthermore, it also becomes apparent that a strong agricultural land development took place from approx. the 7th century B.C. - a fact that corresponds well with the chronology of archaeological finds which, after an actual discontinuation at the end of the Bronze Age in the 10th to the 8th century, once again set in during the early Iron Age.

The best-studied example of an Iron Age alpine settlement is without doubt the village of Gamsen-Waldmatte near Brig in the Canton of Valais (Curdy *et al.* 1993) which was researched in the course of motorway excavations on one of the extended screes at the edge of the valley. Located at the stretch of the road towards the Simplon and Furka passes, it is a small scattered settlement with an agrarian and mercantile orientation that is characterised by a long occupancy lasting to the Roman Imperial Era. Commerce and trade were most probably an important secondary branch of the economy in Gamsen during the Iron Age. It is particularly manifested by the numerous finds of non-local provenance, i.e. many elements of female and male costumes (especially fibulae) which indicate a presence of



Fig. 2 - Prehistoric settlement mound in Airolo-Madrano (TI), Leventina, CH (Photo: Ph. Della Casa).

Fig. 2 - Innesediamento preistorico in Airolo-Madrano (TI), Leventina, CH (Foto: Ph. Della Casa).

people from the Golasecca area (Tori 2012).

The multi-phase prehistoric settlement in Madrano-In Grop is situated in a protected position above the bottom of the valley in Airolo - where the valley wall of Stalvedro dominates the southern entrance resp. exit of the St. Gotthard pass route (Della Casa *et al.* 2009) (Fig. 2). Until now, this central Alpine pass - except for the discussion of the finds in Amsteg-Flüeli in the Reuss valley, Canton of Uri - had received little attention in archaeological research, not least due to a lack of relevant finds. The excavations in 2003-06 in Madrano and the subsequent archaeological survey in the area between Hospenthal (UR), the top of the Gotthard pass and Giornico (TI) now provide evidence of a - if not continuous, then repeated - settlement of this Central Alpine region between the end of the early Bronze Age and the Latène period (Hess *et al.* 2010).

In Madrano, two settlement phases are traceable according to carbon-14 dating results and finds: one in the period from 1650-1150 and another in the 3rd/2nd century B.C. Based on the numerous botanical macroremains, there is no doubt about the agro-pastoral orientation of this valley settlement (Della Casa *et al.* 2009). In the surrounding Alpine regions, for example in Buco di Pontino at 2000 m.a.s.l. above Airolo, at Lago di Tom, or on the Alpe di Rodont immediately next to the Gotthard route, there is a series of places that are seasonally used for Alpine farming whose more or less contemporaneous occupancy phases during the Bronze and Iron Ages have been documented. It mainly concerns protective situations or dwelling places on promontories which are often located in the region of mediaevally or contemporarily used Alpine pastures (Fig. 3), and thus indicate a certain continuity of use of the sites.

The only evidence of an Iron Age settlement with an accompanying cemetery is located on the terrace of Castaneda (GR). The occupancy here lasted from the period Ticino B until Latène C, i.e. approximately from the 6th until the 2nd century B.C. (Nagy 2012). A comprehensive and rich amount of finds especially derive from the grave goods - amongst other things, personal adornments and metal vessels give impressive indications of large-scale contacts and the material abundance of the population which resided next to the San Bernardino route.

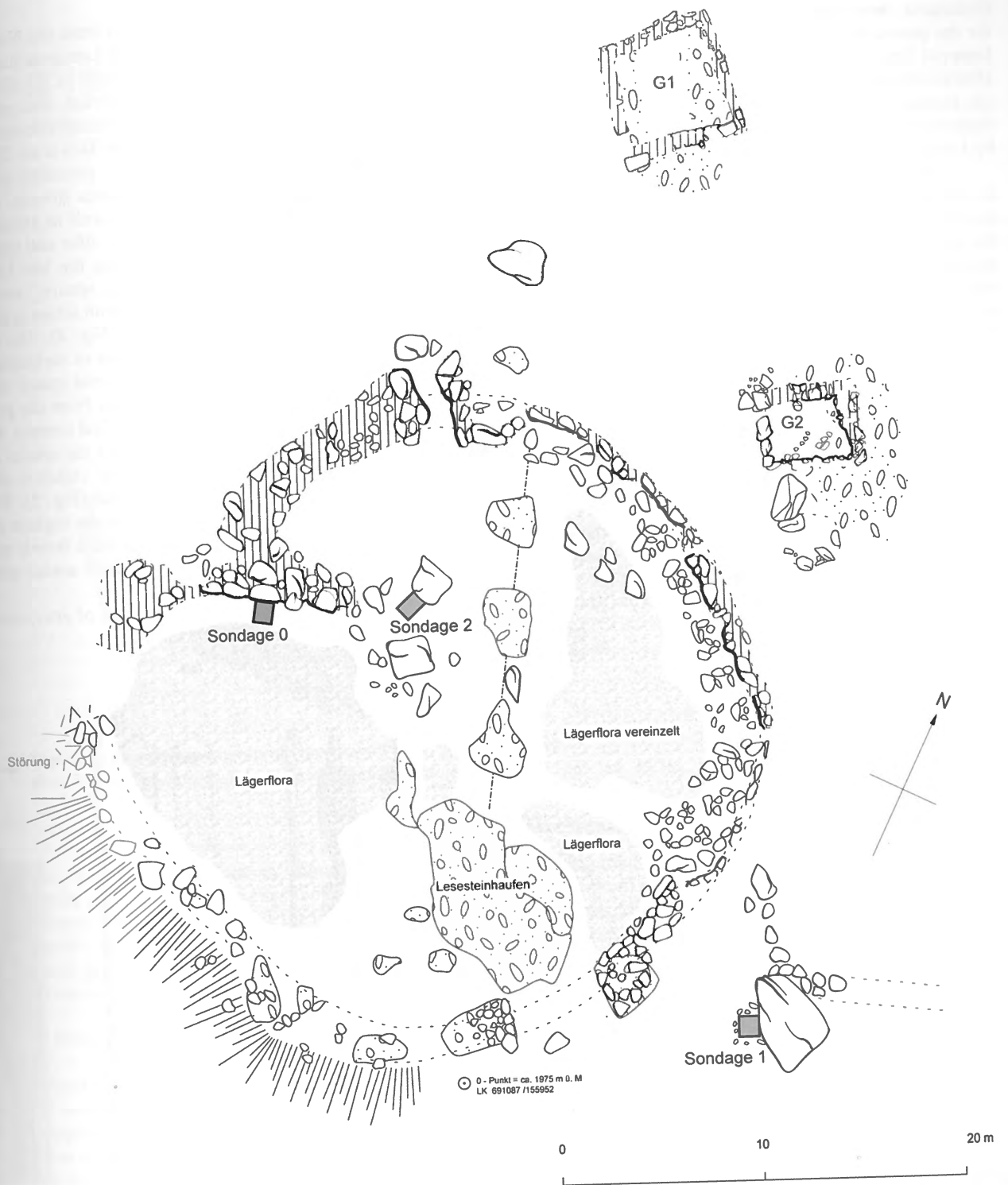


Fig. 3 - Buco di Pontino (TI), soundings including evidences of prehistoric dwelling places within a mediaevally/contemporarily used cattle pen (cf. Hess et al. 2010).
 Fig. 3 - Buco di Pontino (TI), evidenze di insediamenti preistorici all'interno di una stalla medievale/attuale (cf. Hess et al. 2010).

2.2. Cemeteries

The larger research projects during recent years regarding the so-called „Ticino cemeteries“ are all comprehensive revisions of excavations of the late 19th and early 20th century - this applies to Castaneda (Nagy 2012),

Gudo (Sormani 2010) and Giubiasco (Pernet et al. 2006; Tori et al. 2010), but also to the smaller complexes of Mesocco (Schmid-Sikimic 2002), Minusio as well as Osco and Dalpe (Della Casa et al., in prep.). What these places have in common is that their occupancy didn't start before 700 B.C., and that some of them have very long continuities - in

Giubiasco, more than 500 graves have been documented for the period between the early Iron Age and the Roman Imperial Era. Due to this situation, the main focus of the aforementioned studies is on the chronology as well as socio-archaeological topics, especially in Giubiasco and with regard to the synthetic work carried out on female costumes by Luca Tori (2012).

In Gudo, Mattia Sormani (2010) not only succeeded in reconstructing the formerly fragmented grave inventories to a large extent, but above all he was able to explain the details of the chronology of the 5th-3rd century B.C. by means of the elements of the female and male clothing as well as the ceramics common to both genders. The topose-riation („horizontal stratigraphy“) of the cemetery reveals an occupancy of several groups - a phenomenon that is also evident in Giubiasco and where we can register social constellations (such as clans or families).

At this point, no detailed report shall be given on the history of research regarding the necropolis of Giubiasco. Luca Tori has explained in detail the excavation, documentation and reception history of this cemetery which was excavated at the beginning of the 20th century (Tori *et al.* 2004). By means of recent, source-critical studies, 300 secured grave assemblages were restituted for research purposes from the rich grave inventory - mainly deriving from the middle and late Latène period as well as the Roman Era.

Based on this source material, the team from the National Museum and the Universities of Zurich, Lausanne and Bologna researched and published the details of the chronology of costume and vessel finds, the period- and gender-specific patterns of the graves as well as comprehensive socio-historical aspects (Pernet *et al.* 2006; Tori *et al.* 2010).

During the periods LT B and C, primarily female costumes featuring late alpine Sanguisuga fibulae, mask fibulae, earrings and ring ornaments as well as standardised vessel additions consisting of bowls, ollae and cups all serve to establish the chronology; during the late Latène period, warrior equipment including spears, swords, shields and helmets as well as women with silver arm and ring jewellery appear more frequently (Fig. 4). The classified grave inventory achieved by means of seriation and correspondence analysis presents a coherent image of the continuously densely occupied necropolis from the period Tessin D (5th century B.C.) until the 1st/2nd century A.D., within which - analogous to Gudo - there are spatial constellations of graves of men, women and children where individual social groups buried their dead (Fig. 5). It has become repeatedly evident that graves of the highest category (usually a male grave with a sword and a female grave with a silver ring) form the nuclei of these social groups (families).

Despite the superficial high amount of graves in the

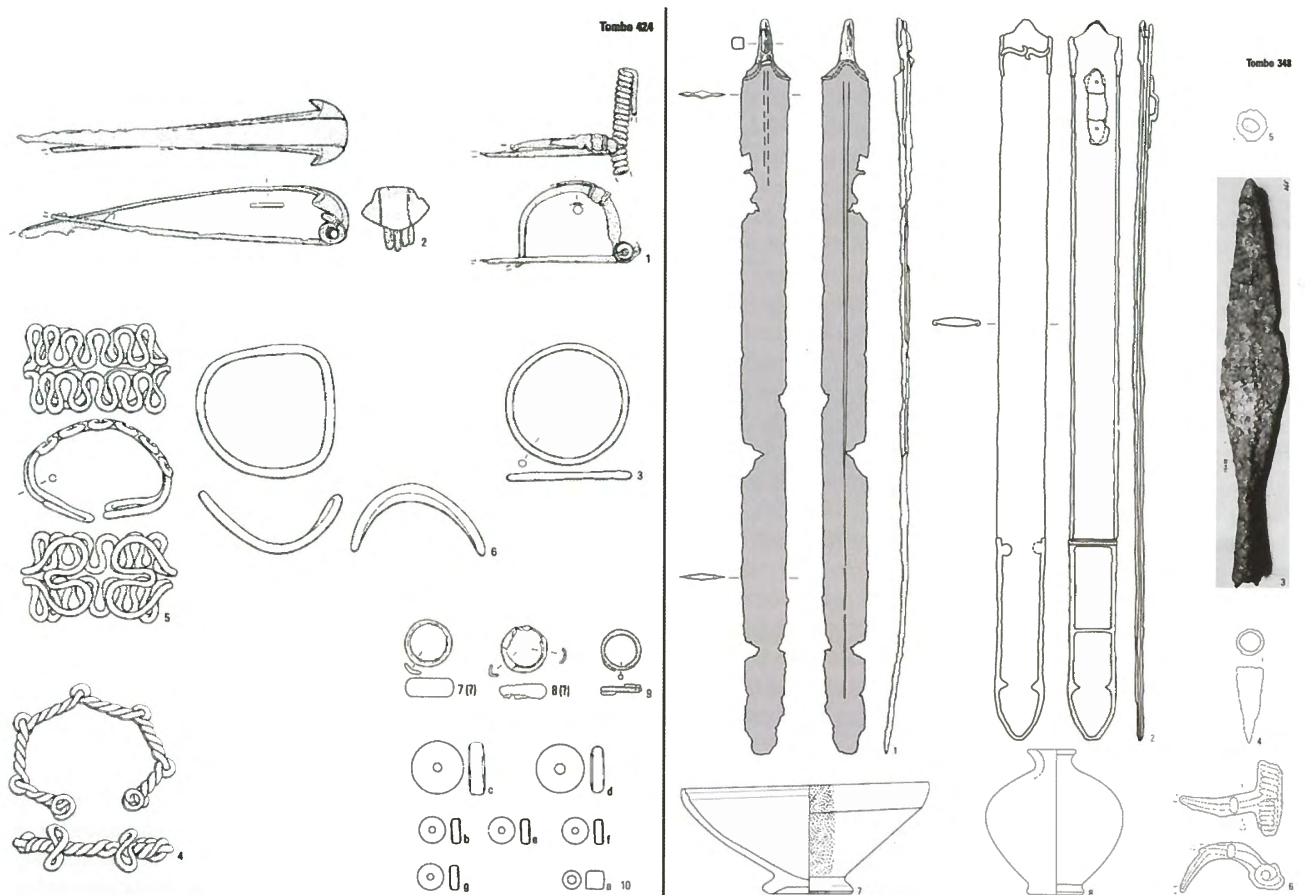


Fig. 4 - Female costume with silver ring jewellery and warrior equipment, Giubiasco (TI), late Latène period (cf. Pernet *et al.* 2006).

Fig. 4 - Abbigliamento femminile con anello di argento e equipaggiamento da guerriero. Giubiasco (TI), tardo Latene (cf. Pernet *et al.* 2006).

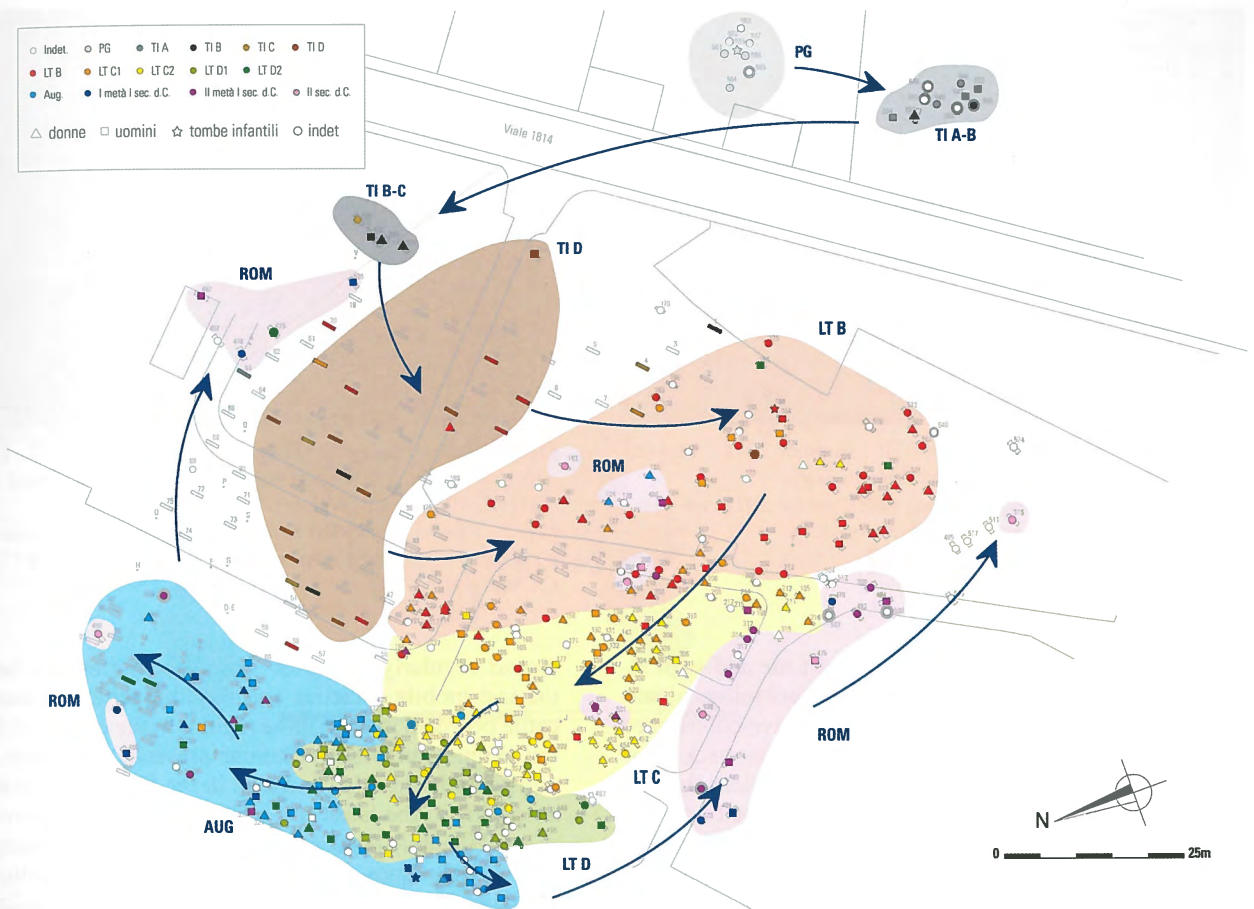


Fig. 5 - Toposeparation of the necropolis of Giubiasco (TI) (cf. Tori et al. 2010).
 Fig. 5 - Relazioni spazio-cronologiche della necropoli di Giubiasco (TI) (cf. Tori et al. 2010).

necropolis, the demographic survey shows that one must assume quite a small population: max. 25-40 people in Augustean times, distributed among 5-6 family associations. This is hardly an average village population, but more likely a small group of elitist families - the Celtic *nobilitas*, as, for example, described by Caesar.

2.3. Transalpine contacts

Based on the previously discussed finds from the Ticino, a series of transalpine relationships can be verified which supports and enhances the image of a settlement of an area that is strongly oriented towards transport routes, as described at the beginning.

With regard to the Early Iron Age and by means of the finds from the necropoles in Mesocco and Tamins (GR), Biljana Schmid-Sikimic (2002) was able to demonstrate the close contacts between the populations to the south and north of the main Alpine ridge. The economic background of these contacts may well be the transalpine trade which, on a trans-regional level, has been widely debated as existing between the western Hallstatt culture in the north and the Etruscan region in the south, and which from a local aspect, was deposited in the fortune of the southern Alpine necropoles.

Later on, towards the end of the Latène period, it seems that contacts of a different kind had arrived: the Celtic

warrior buried in grave 119 in Giubiasco, who was given a Roman sword - a *gladius* -, was probably a mercenary or an auxiliary soldier who served in the Roman army (Pernet et al. 2006). A significant part of the votive hoard of iron weapons on the burnt offering site in Wartau (SG) in the Rhine valley (Schmid-Sikimic et al. 2012) consists of spearheads of a southern Alpine origin - a further indication of the (now most probably due to military purposes) circulation of people heading across the Alps.

3. PREHISTORIC ALPINE FARMING IN THE SILVRETTA MOUNTAIN RANGE

Little seems to appear as natural in the Alps as the summertime use of the widespread high grazing pastures with sheep, goats, cattle and horses. Lush meadows, grazing Alpine cattle, spicy mountain cheese - many elements of the local Alpine culture originated a long time ago and still characterise our identity to the present day as a collective native country symbol and a socially distorted picture resp. projection surface (Fig. 6). The question of how old Alpine farming really is, is of course long standing (Gleirscher 1985). Hence, Ötzi - the icon of Alpine archaeology - was repeatedly associated with „transhumance“ (Spindler 2005), however without yielding any tangible archaeological evidence despite innovative approaches and extensive



Fig. 6 - Val Urschai, Alp Urschai (GR), summer 2011 - a typical Alpine cultural landscape (Photo: T. Reitmaier).

Fig. 6 - Val Urschai, Alp Urschai (GR), estate 2011: un tipico paesaggio culturale alpino (Foto: T. Reitmaier).

surveys (Oegg *et al.* 2009). For a long time and with regard to the Swiss Alps, particularly archaeobiological surveys, Alpine finds as well as field names have contributed to indexing prehistoric Alpine farming. Looking back at the state of research over the past decades, it is clear that the methodical difficulties are not at all insignificant and that the problem has not been solved in any sufficient manner whatsoever - despite a numerous amount of archaeological and human-paleoecological studies (Reitmaier 2010). For this reason, a research project was initiated at the University of Zurich in 2007 that, in a systematic and interdisciplinary manner, analyses the prehistoric development of the Alpine region from 2000 m.a.s.l. upwards in the Silvretta mountain range between the Grisons (CH) and Tirol-Vorarlberg (A). As far back as 1983, L. Stauffer-Isenring then called for a systematic quest for traces of prehistoric shepherds within the framework of her pioneering work concerning the prehistoric sites in the Lower Engadine (Stauffer-Isenring 1983, 128).

3. 1. Last hunters, first shepherds

More than six years of intensive research have led to the discovery and survey of more than 200 Alpine sites that, together with environment- and climate-historical data, enable a high-resolution reconstruction of the 12'000 year old settlement and cultural history in the Silvretta region. As expected, several camp sites - mainly in protective situations - belonging to Mesolithic hunters between the 9th and 6th millennia were discovered. The finds (hearths, weapons and tools made of silex and bone/antler, animal bones) demonstrate that the region was inhabited by human beings a lot earlier than assumed until now, and that a well-developed transalpine contact and trade network did indeed already exist. Hence, the find location maps of the Alpine Mesolithic Period in Switzerland resp. in the Grisons depict the true image a lot less than in fact the current insufficient state of research.

Just as inadequately proven and unsatisfactorily explained is the initiated transition of the Mesolithic Period to the Neolithic Period (as of 5500 B.C.), due to the fact that



Fig. 7 - Fimber valley/Val Fenga, CH/A, summer 2010 - Excavation of the Iron Age Alpine hut dating back to the period around 600 B.C. (Photo: Ch. Walser).

Fig. 7 - Fimber valley/Val Fenga, CH/A, estate 2010: scavo della capanna dell'età del Ferro alpino datata a circa 600 B.C. (Foto: Ch. Walser).

almost regularly, a gap of several centuries lies between the last mobile societies and the first settled farmers and cattle breeders in the Alpine region. In the course of the 4th millennium, an intensive human presence was (once again) registered in the Alps and also in the Silvretta region, and, according to the latest research, there is growing evidence of late Neolithic farmers and first shepherds - featuring new culture techniques, innovations and adaptations with regard to the methods of cultivation and nutrition (e.g. field terraces, irrigation, cattle breeding and dairy farming) as well as a sustainable restructuring of the landscape. This clearly demonstrates a more differentiated land use of the Alpine altitudinal layers which sets in earlier, as well as an economic development of the region „from above“, i.e. from the broad Alpine pastures, where Bronze Age agriculture already represents an advanced stage. Against this background it becomes understandable that the new settlements of the early and middle Bronze Age certainly do not reflect the colonisational pioneer status which has occasionally been attributed to them.

A Final Neolithic site underneath an enormous rock in Val Urschai (Abri Urschai, 2180 m.a.s.l.) which was researched for the first time in 2011-2012 can be allocated to this fascinating context. Well protected by the protruding rock shelter, several hearths and pits were excavated here which are classified as early 3rd millennium B.C. by means of carbon-14 dating. Even though several silex arrowheads and the topographic location of the place suggest a seasonal Neolithic hunting camp, numerous contemporaneous ceramic fragments and domestic animal bones at a height of 2000 m lead to the more likely conclusion that these were the first Alpine shepherds - something that subsequent analyses shall most certainly state more precisely.

3. 2. The oldest Alpine economy

From the 2nd millennium B.C. onward, a well known, massive and permanent expansion of the settlement and the installation of numerous Bronze and Iron Age villages finally took place in the Engadine. The fact that the Silvretta region was intensively devoted to pasture is

Passes and Passages

- 2500-2599 masl
- 2600-2699 masl
- 2700-2799 masl
- 2800-2899 masl
- 2900-2999 masl
- 3000-3999 masl

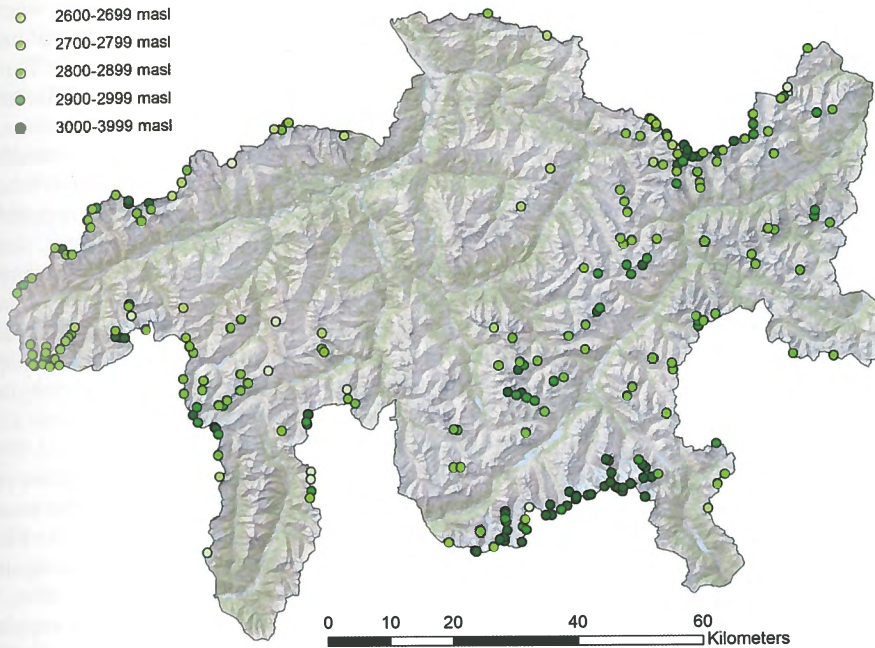


Fig. 8 - High-Alpine, permanently frozen passes and transits in the permafrost area. Canton of Grisons, CH. (Image: L. Naef; reproduced by permission of swisstopo BA12073).

Fig. 8 - Passi e valichi permanentemente ghiacciati nell'area di permafrost in alta quota. Cantone dei Grigioni, CH. (Immagine: L. Naef; con il permesso di Swisstopo BA12073).

shown by means of numerous dwelling places and accompanying palynological/palaeoethnobotanical and archaeozoological analyses as well as architectural remains that were discovered for the first time. In 2007, a seemingly insignificant, superficially hardly visible stone circle was discovered at the rear of the Fimber valley/Val Fenga, near the present-day Heidelberger hut (Fig. 7). The complete excavation revealed the grinded foundation of a former log cabin from the early Iron Age around 600 B.C. The previous shepherds and their cattle crossed the nearby Fimber pass from their valley settlements near Ramosch or Sent to use the rich pastures in the summer. Their prehistoric name „Fimaba“, „Fenga“ or „Id“ is still in use today - the name simply means „fat/fertile“. Just as inconspicuous as the Hallstatt Alpine hut in the Fimber valley was the discovery of a slightly younger cattle pen, also dating back to the Iron Age, in the Val Tasna, above Ardez resp. Ftan. It can be assumed that, almost 2500 years ago, the small livestock was locked up overnight, either for protection resp. milking or to escape the snow. Until now, these finds are classed as unique pieces of evidence for prehistoric Alpine economy throughout the whole of Switzerland (summarisation of the project: Reitmaier 2012).

The majority of the objects discovered and systematically documented originates from more recent periods. Only a few of the barely 200 sites were dated in a more precise manner and also analysed - most of them were generally allocated to the Middle Ages resp. the Modern Age („deserted villages“). Altogether, these archaeological monuments from 11 millennia shed a completely new light on the Silvretta region which, until recently, was unexplored. The inventory of archaeological sites which was compiled during a period of more than six years, will furthermore have a high value of monument preservation with a role model character. Almost 90% of the Grisons region lies

above 1200 m.a.s.l. - the average height of the Canton is 2100 m. That the Grisons is a typical mountain area is reflected by the fact that almost 45% of its population lives above 1000 m. This must entail a quick expansion of archaeological monument preservation at higher altitudes. Because here is exactly where increased architectural interventions and new challenges such as climate change must be reckoned with.

4. ICE PATCHES - ENDANGERED ARCHIVES IN HIGH MOUNTAIN REGIONS

The effects of the current climate change will become increasingly visible especially in extreme regions such as high Alpine altitudes. The continuous retreat of the glaciers and the melting permafrost are presently changing the Alpine landscape in a rapid and sustainable manner. For more than 20 years, objects - some of them dating back as far as the Neolithic period - protrude from the ice time and again as a result of this development. Small, static ice patches that are frozen into the permafrost offer particularly good preservation conditions (Haberli *et al.* 2004), while actual glaciers relocate and partially cause serious damage to frozen objects in the course of time, due to their flow dynamics and mass.

Ice finds - often consisting of organic material - are highly valuable to archaeological science. Therefore, as many corresponding objects from ice patches as possible should be documented and recovered. While archaeological heritage is easier to locate in other finding environments and can also be protected more efficiently, actually finding and professionally recovering objects from the ice in the Alps in due time was until now - to a large extent - left to chance.

In North America and Scandinavia, archaeology



Fig. 9 - Promising ice patch on the Futschöl pass in the Silvretta region, CH/A (Photo: Ch. Walser).

Fig. 9 - Ghiacciaio sul passo Futschöl, regione della Silvretta, CH/A (Photo: Ch. Walser).

became aware of this problem around the turn of the millennium. Efficient strategies were developed in order to actively trace and secure such endangered finds belonging to these unique archives (Andrews *et al.* 2012). Specific GIS-based predictive models pave the way for vast areas - such as Alaska and Yukon - to be reduced to a few presumed sites for selective prospection. The success rate of this procedure as well as the resulting quantity of finds and their quality are impressive (Dixon E. J. *et al.* 2005; Farnell *et al.* 2004; Hare *et al.* 2004; VanderHoek *et al.* 2007).

Transferring this method to the Alpine region is a rather obvious and also promising procedure regarding an equivalent adaptation to the diversified archaeological and geographical context. The well known ice finds of Schnidejoch, Lötschenpass (Hafner 2009) and of course the Man from Hauslabjoch are witnesses to the enormous glacier-related archaeological potential of the Central European mountain archives that should not become a victim of climate change resp. accidental loss.

For this purpose, an appropriate management tool is currently being developed in an exemplary fashion for the Canton of Grisons in order to protect climatically endangered cultural assets (Naef 2012). Well known ice find sites from the scenically comparable Cantons of Berne and

Valais (Hafner 2009, Suter *et al.* 2005, Meyer 1992) as well as the results of a previous pilot study (Bucher *et al.* 2011) suggest that the expectation of finds in pass regions, where human mobility/activity has been channeled within a limited space for several millennia, is exceptionally high. Thus, the focus is on all passes and transit regions which lie at a glaciologically interesting height of at least 2500 m.a.s.l. (Fig. 8). Out of all of these approx. 450 transits, a handful of especially promising passes resp. pass regions, whose remaining ice fields shall be specifically and regularly observed by a monitoring programme in the future, shall be evaluated according to numerous and relevant parameters. For this purpose, geographic and cultural influencing factors shall be modelled in a GIS and calculated in order to create a prioritising predictive model. The resulting mapping of expected find areas is examined by accompanying field work in order to ensure a continual improvement and adaptation of the methodical strategy (Fig. 9).

In order to optimise the amount of work, glacier regions and glacier passes shall be excluded from the usual prospecting. But because finds - particularly from the Modern Age - are discovered in these fields time and again, they should not be totally excluded from the study. Here, it seems that the most promising method would be a supplement to the selective archaeological monitoring system by means of a widespread awareness program. Specific information in accommodations and journals of note shall call the attention of hikers, mountain guides, hut landlords, hunters, mineral collectors, etc. to the problem of glacier archaeology, in order to ensure the discovery, professional documentation and recovery of finds, even beyond the evaluated monitoring areas.

Because of the fact that glacial retreat merely depicts one aspect of global warming, it appears to be inevitable that archaeologists (Mitchell 2008) also focus on further possible scenarios and develop forward-looking strategies in order to register, protect and preserve climatically endangered cultural assets in due time.

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