Transalpine pass routes in the Swiss Central Alps and the strategic use of topographic resources

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SUMMARY - *Transalpine pass routes in the Swiss Central Alps and the strategic use of topographic resources* - Using examples from the San Bernardino and the St. Gotthard passes in the Swiss Central Alps, this paper discusses how the existence of transalpine high altitude pass routes can be inferred, even though there is a lack physical evidence, from specific Bronze and Iron Age settlement patterns in access valleys. Particular attention is given to the effect of topography within the territorial and economic organizational area on transalpine tracks and traffic routes. A set of recurring patterns, such as strategic position, natural and/or artificial protection, presence of "foreign" materials, can help identifying (settlement) sites with particular functions as regards traffic and trade within the systems of territorial organization. Moreover, the paper also addresses socio-dynamic issues of the problem of transalpine pass routes.

RIASSUNTO - *Passi transalpini nelle Alpi Centrali Svizzere e uso strategico di risorse topografiche* - Usando esempi dal Passo di San Bernardino e dal Passo del San Gottardo nelle Alpi Centrali Svizzere, il presente contributo discute come l'esistenza di vie di transito transalpine d'alta quota possa essere dedotta, anche mancando evidenze fisiche, da specifici modelli insediativi dell'età del Bronzo e del Ferro presenti nelle valli di accesso. Particolare attenzione è data all'effetto della topografia dell'area organizzativa territoriale ed economica sulle vie di transito e commercio transalpine. Una serie di modelli ricorrenti, come la posizione strategica, le protezioni naturali e/o artificiali, la presenza di materiali alloctoni, può facilitare l'identificazione di siti (di insediamento) con particolari funzioni, come il traffico e il commercio all'interno dei sistemi di organizzazione territoriale. Inoltre, l'articolo propone anche modelli socio-dinamici per le vie di transito transalpine.

Key words: Switzerland, Alpine pass routes, prehistory, settlement, topography, resource management
Parole chiave: Svizzera, passi alpini, preistoria, insediamento, topografia, utilizzo di risorse

1.   INTRODUCTION

There has been, over the last few decades, an ongoing discussion about the use of transalpine pass routes in prehistory for the purpose of communication, cultural transfer and trade. Many of the claims for the existence of Alpine pass routes are what could be termed "views from the outside", based on distribution patterns of specific artifacts, raw materials or cultural traits in geographical zones north and south of the Alps (e.g. Kimmig 1983; Sherratt 1993).

In general, these approaches do not deal with the topographic or cultural realities within the Alpine area, nor the parameters that allow for the establishment and maintenance of such pass routes. The corresponding maps of communication or trade activities associated with these studies do not reflect the physical and human preconditions to the existence of prehistoric transalpine routes.

Pass routes are often discussed on the basis of archaeological findings in valleys or contact finds, and by recent or near recent ethnographic analogy. As the Alpine passes lie beyond the usual areas of settlement, there is a clear lack of direct evidence. Alternatively, single finds in high altitude locations (1500 m and above)[1] and along pass roads have been used to postulate zones of prehistoric economic activities along with alpine and transalpine axes of communication. Taken alone, these finds – though valuable indicators of human presence and activity in the higher altitudes of the Alps – can, again, not elucidate the structural context of transalpine routes. However, their inter-

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[1] All altitude indications are given above mean sea level.

pretation has more recently focused on ritual depositional behavior (see Wyss 1989; Neubauer & Stöllner 1994).

A third line of evidence, that of actual physical remains of alpine tracks and roads, suffers both from difficult geomorphological conditions of preservation and the quasi-impossibility of dating, at least for prehistoric periods.

In many cases, however, from physical and written sources there is evidence of roads that suggest a continuity of use of medieval and modern transalpine axes back to Roman times, and can help indicate zones of particular interest for the discussion of prehistoric routes (e.g. Cardani Vergani & Colombo 2002).

Based on the results of a series of research projects run by the University of Zurich together with local partners in the Swiss Central Alps, this paper seeks to investigate some specific geographical preconditions and strategies of resource management in order to better understand the role of local Alpine Bronze and Iron Age populations within the framework of transalpine contacts and pass routes.

2.   STUDY AREA AND METHODS

Geographically, the research area lies in the very heart of the Alps, and covers the valleys leading to two of the major transalpine crossings of today: the *St. Gotthard* pass and the *San Bernardino* pass (Fig. 1). A somewhat wider area corresponding roughly to the west- to east-central Swiss Alps will be taken into consideration for the discussion.

Over the last twenty years, a number of both large and small research projects have been carried out in this zone by the Department of Pre-/Protohistory of the University of Zurich in collaboration with local heritage management services of the Cantons of Uri (UR), Graubünden (GR), and Ticino (TI). These projects were carried out in the Reuss valley north of St. Gotthard (Primas *et al.* 1992), in the Alpenrheintal (Primas *et al.* 2001, 2004) and the Lower Rhine valley and San Bernardino pass region (Della Casa *et al.* 1999), in the Mesolcina valley south of San Bernardino (Della Casa 2000; Schmid-Sikimic 2002a), and the zone between Arbedo (TI) and Lake Verbano (Giubi-
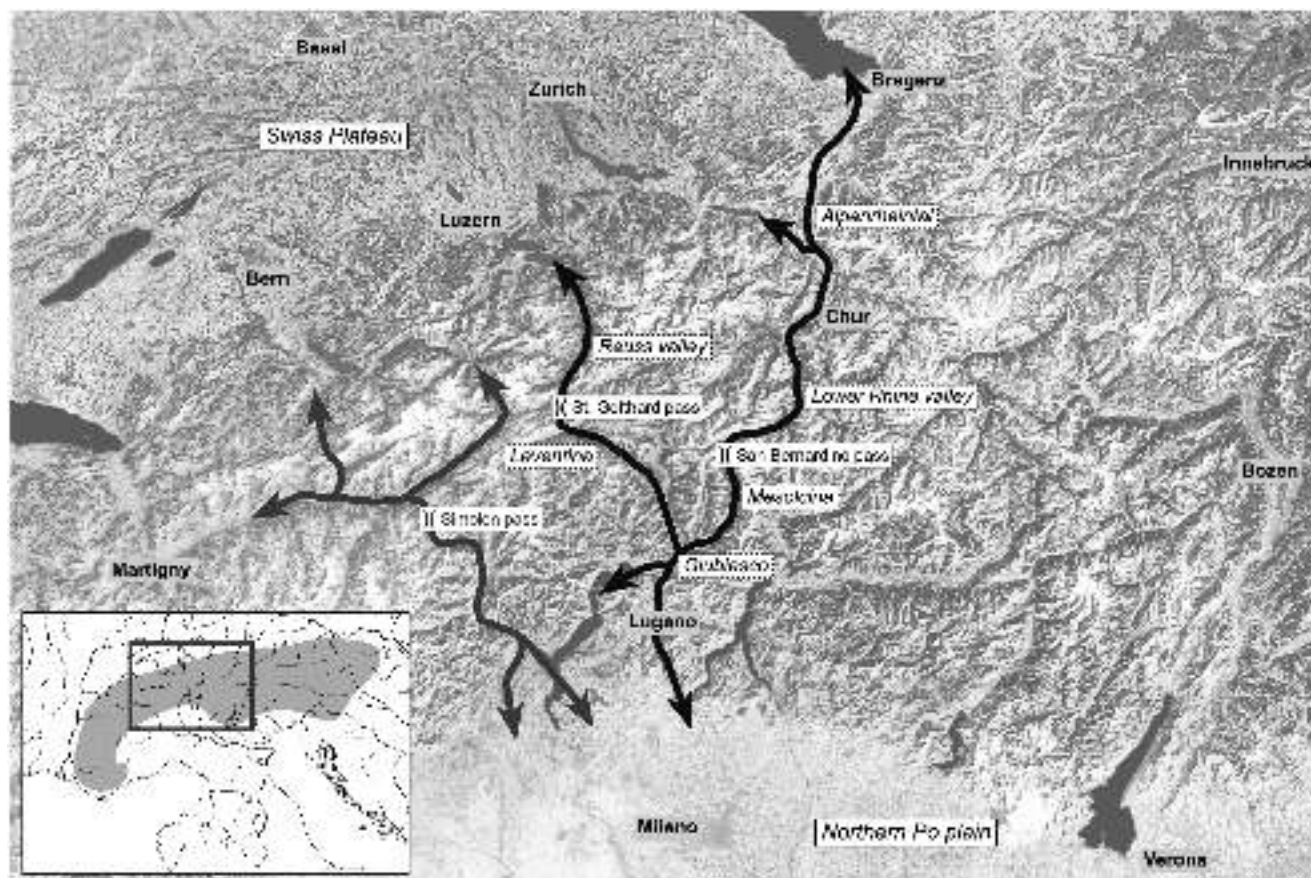

Fig. 1 - Overview satellite map of the areas discussed in the text.
Fig. 1 - Carta panoramica satellitare delle aree discusse nel testo.

asco: Tori *et al.* 2004; Pernet & Carlevaro *et al.* 2006), and more recently in the Leventina valley south of St. Gotthard pass[2].

These projects include comprehensive mappings of archeological finds of pre- and protohistoric periods, revisions of sites and find complexes (settlements, cemeteries), extensive and intensive field surveys, subsurface tests excavations and full scale excavations, as well as geomorphological and archaeobiological investigations. They produced a wealth of new data and allowed the proposal of a range of models on pre-/protohistoric Alpine settlement activities, resource management, economic strategies and social networks (Della Casa 2000, 2002; Schmid-Sikimic 2002a, 2002b; Primas *et al.* 2001, 2004).

Particular attention was paid to settlement topography and site diversification in a transnational and diachronic study concerning selected areas of the eastern, central and western Alps (Della Casa 2002). Parameters were set that allowed for the identification of settlement sites *sensu stricto* (see above), while alternative interpretations for non-permanent settlements and other sites with specific socio-economic background were discussed (Della Casa 2002: 11-13, 69-72).

This paper focuses on a particular aspect of Alpine socio-economic strategies: the use of local topography in the structuring of settlement and the organization of supra-regional contacts. Specific locations and situations of Bronze and Iron Age sites along the pass routes of San Bernardino and St. Gotthard are analyzed and set into a more general framework of both Alpine settlement and socio-economic activity, including the use of high altitude pass zones for the transit of people and objects.

The primary position of this paper can be summarized by two main points:

1) Colonization of the Central Alps by agro-pastoral groups is well ascertained from the Copper Age through to the Roman conquest by direct archaeological (settlements) and indirect environmental evidence (pollen analysis) (Della Casa 2000, 2002). Settlement sites showing both archaeological and biological findings relating to year-round or at least long-term seasonal occupation cluster in recurring topographical situations such as naturally protected river or slope terraces and hilltops with close-by arable land. There is a clear choice for climatically favorable locations (Della Casa 1998).

2) Transalpine contacts are evidenced from the Neolithic and Copper Age onwards through exotic raw materials and contact finds (e.g. Mottes 2002). Contact finds in settlements and graves are particularly numerous in the 1st millennium BC, both in zones outside the Alpine massif (Po plain, northern forelands) and inside the Alpine valleys where, for example, objects of south-alpine Golasecca type indicate the crossing of Alpine passes northwards (Schindler 1998; Schmid-Sikimic 2002a). This can be viewed as a subset of supra-regional north/south trade activities (Kimmig 1983).

A number of research questions arise from this, pertaining to the cultural, social and economic reality behind the archaeological evidence: Are there specific elements in the settlement structure relating to communication, traffic and trade? What can be said about the roles of individuals and society in the organization of transalpine contacts?

3.   RESULTS

In all test areas, starting with the Copper Age, sites occurred that would not fit into the basic pattern described for agro-pastoral subsistence organization. Such sites were usually located in conspicuous topographic settings such as naturally defended hillocks or ledges, in the vicinity of gorges, valley latches or river crossings, and quite often along later medieval or modern traffic routes. Lack of space, fresh water, nearby arable or pasture land, and often modest archaeological find spectra, make these locations unlikely for permanent settlement. They are viewed as separate features within the overall settlement structure, with specific functions of territorial organization, protection, and control (Della Casa 2002: 72). A number of such archaeological features can be described along the pass routes of San Bernardino and St. Gotthard.

3.1.   *San Bernardino route*

The San Bernardino pass route is the shortest and fastest connection between Lake of Constance and Ticino (Fig. 2). It follows the Rhine valley up to the crossroad of *Tamins* (GR) (670 m) at the confluence of Upper and Lower Rhine. A cemetery of Alpine Hallstatt graves of the late 8th to 6th century BC with many sou-

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Fig. 2 - The San Bernardino route, between Lake of Constance and Bellinzona.
Fig. 2 - Il passo di San Bernardino, fra il Lago di Costanza e Bellinzona.

Fig. 3 - Viamala gorge, Thusis GR (photo author/UZH).
Fig. 3 - Gola Viamala, Thusis GR (foto autore/UZH).

thern contact finds marks this important traffic junction (Schmid-Sikimic 2002a: 239-293). Several hilltops dominate the narrowing passage to the Domleschg/Heinzenberg valley, prehistoric Bronze and Iron Age finds being reported from at least two of them – Bonaduz, (GR) *Bot Panadisch* and Rhäzüns GR *Schlosshügel* (Zürcher 1982). The route then remains easy to use until the entrance to the famous (and fearful) *Viamala* gorge south of Thusis (GR). The gorge stretches over 6.5 km and represents the most difficult part of the entire route, as it is extremely steep and narrow (Fig.

3). Though cumbersome by-passes have been suggested for the prehistoric periods (see Planta 1990), it seems just as probable to assume that the original track – as in Roman and later times – led for its major part through the gorge. An impressive promontory controls and defends the starting point of the track on the right side of the gorge, today known as *Veia Travesina*: the castle hill of Sils i.D. (GR) *Hohenrätien* (Crap Sogn Gion – 950 m).

Test excavations during the summer of 1997 led to the discovery of a number of pre- and protohistoric strata and structures on Sogn Gion promontory, datable to the Late Bronze, Early Iron, and (Late) Roman periods (Della Casa *et al.* 1999). Floral and faunal remains speak in favor of an at least a semi-permanent settlement connected to lowland (valley) agricultural villages. Contact finds (mostly pottery) indicating supra-regional connections are found in all strata/contexts, just as we would expect it for a site situated strategically along a traffic route (Fig. 4). Interestingly, a tollhouse is known to have been on Crap Sogn Gion during later historic periods.

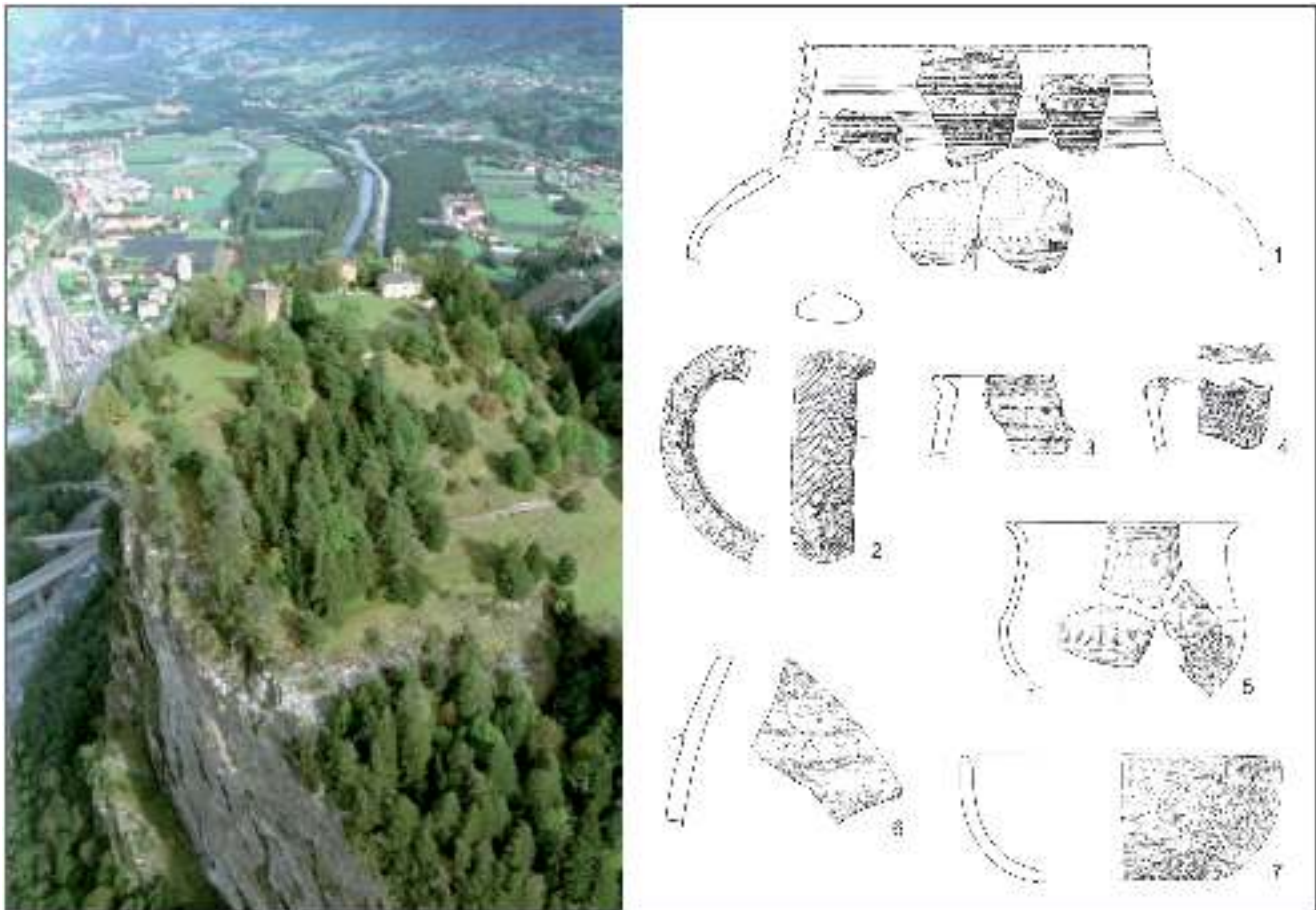From *Zillis* (GR) at the southern end of the Viamala, the San Bernardino route crosses the Schams valley

Fig. 4 - Hohenrätien, Sils i.D. GR: situation above the Lower Rhine valley (photo R. Jecklin/Hohenrätien). Pottery finds, 50% to scale: 1. north-Alpine Late Bronze Age; 2-3. Alpine Laugen-Melaun style, Late Bronze Age; 4-5. Alpine Tamins style, Early Iron Age; 6. south-Alpine Early Iron Age; 7. north-Alpine Early Iron Age (M. Reuschmann/UZH).
Fig. 4 - Hohenrätien, Sils i.D. GR: situazione sulla Bassa Valle del Reno (foto R. Jecklin/Hohenrätien). Ritrovamenti ceramici, 50% grandezza naturale: 1. Età del Bronzo Finale nord-alpina; 2-3. Stile alpino di Luco-Meluno, età del Bronzo recente; 4-5; Stile alpino di Tamins, prima età del Ferro; 6. Prima età del Ferro subalpina; 7. Prima età del Ferro nord-alpina (M. Reuschmann/UZH).

(a Bronze Age site is attested on the terrace of *Donath* GR: Zürcher 1982) and leads through another terrain handicap – the *Rofla* gorge – into the Rheinwald valley (1400-1600 m). Very few archaeological findings have so far been reported from this area, for which however extensive forms of Alpine agro-pastoral economy cannot be excluded for prehistoric times (Della Casa 1998). There is a turn-off towards the lake of Como across *Spluga* pass in Splügen (GR).

The high altitude part of the track leads from there across the easily accessible pass at 2060 m rapidly descending to San Bernardino village (1600 m), Pian S. Giacomo (1170 m), and down to *Mesocco* (GR) in the Mesolcina valley bottom at 790 m (Fig. 5) where we have ample evidence of prehistoric settlement (Della Casa 2000; Schmid-Sikimic 2002a). An extensive Late Bronze Age settlement site (14th-12th Century BC) occupies the southern part of the river terrace, where a rocky ridge inhibits easy passage. Mesocco castle dominates this well defended hilltop situation, from which again Bronze Age finds are known, and that makes – as in Hohenrätien – a perfect control post over the only possible valley track (Della Casa 2000: 77-80). An Early Iron Age cemetery is located in the actual village (nothing is known about the corresponding settlement) with metallic and ceramic findings that illustrate manifold transalpine connections (Schmid-Sikimic 2002a & b). For the Late Iron Age (4th to late 1st century BC) we have structural and material evidence from yet another naturally defended hillock called *Gorda* (Della Casa 2000: 83-91).

Down the Mesolcina valley, *Arbedo* (TI) – known in particular for its many rich Early Iron Age cemeteries – marks (at the confluence of Moesa and Ticino) the
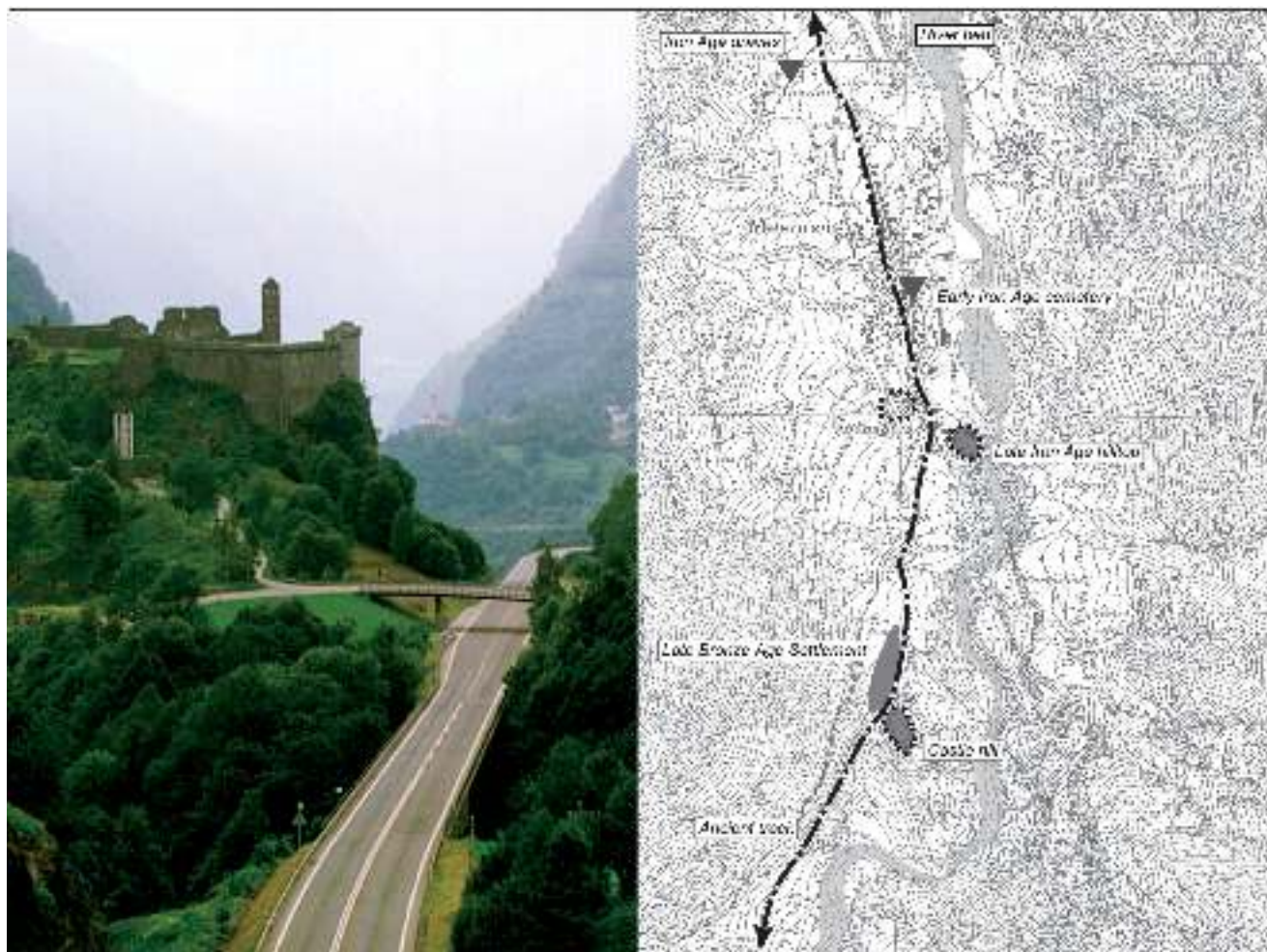
Fig. 5 - Mesocco GR: castle hill seen from the north (photo author/UZH). Overall situation (prehistoric settlement zones are indicated in shade).
Fig. 5 - Mesocco GR: collina fortificata vista da nord (foto autore/UZH). Situazione generale (le zone di insediamento preistoriche sono indicate con l'ombreggiatura).

terminus of the San Bernardino route. Based on written sources reporting transalpine traffic with pack animals in medieval and recent times, it can be assumed that the difficult part of the journey from Thusis to Mesocco would last four days, with several stage stops in between (Schmid-Sikimic 2002a: 200-215). Considerable infrastructure, supported mostly if not entirely by the local Alpine population included upkeep of tracks, supply of guides, and provision of food and pack animals that would be necessary to maintain such a transalpine route.

3.2.   St. Gotthard route

Today there is an ongoing debate on the earliest use of the St. Gotthard route. It is an important transalpine crossing with the shortest connection between the Swiss Plateau and the south Alpine lakes. While many arguments have been raised for a rather late medieval

date for the opening of this north-south passage, in particular because of the quasi-insuperable *Schöllenen* gorge (Aerni 1990), there is fair evidence from Roman finds (coins) that the pass was used at that period (Primas *et al*. 1992: 16-22) and increasing evidence that it was already known in prehistoric times (Schmid-Sikimic 2002a: 202-207). However, the northern access might not have been through the Schöllenen, but by using one or several possible bypasses (Z'Graggen 1986) such as the *Bäzberg* or the *Fellilücke-Oberalp-Val Canaria* transect (Fig. 6).

The route has its onset in Flüelen (UR) at the southernmost end of the Lake of Lucerne (or more precisely the *Urnersee,* an easily navigable connection to the Swiss Plateau). Up the Reuss valley, the route reaches the junction at *Amsteg* (UR) (550 m) where structures of a settlement datable to the Middle/Late Bronze and Early Iron Age have been unearthed (Primas *et al.* 1992: 279-306). The topographical setting

Fig. 6 - The St. Gotthard route, between Lake of Lucerne and Lugano.
Fig. 6 - Il passo del San Gottardo, fra il Lago di Lucerna e Lugano.

is a medieval castle hill *Flüeli* (Zwing Uri) that controls a natural narrowing of the valley and thus passage to the Gotthard track (Fig. 7). There are most interesting contact finds pointing in southern and eastern directions among the pottery assemblages from this area (Primas *et al*. 1992: fig. 113; Schmid-Sikimic 2002b).

South of Amsteg, no prehistoric sites are known so far, though single finds in the region of *Realp* and *Andermatt* (UR) indicate human presence from the Cop-

per Age onwards (Primas et al. 1992: 235, fig. 39). As stated above, it is for the moment impossible to specify the exact course of the pass track around Pizzo Centrale, the very heart of the Central Swiss Alps. The St. Gotthard pass is crossed at 2100 m, while some of the proposed bypasses are at altitudes of around 2500 m.

The high altitude part of the route reaches at its southern end *Airolo* (TI) at 1150 m in the upper Ticino valley called *Leventina*. This is again not an area of dense archaeological findings; however, new field archaeological investigations on the promontory of Airolo-Madrano *In Grop* have led to the discovery of a Bronze and Iron Age settlement in perfect strategic position (Fig. 8). The promontory is part of a rocky "latch" that forms a major obstacle in the valley and compels passage along the northern hillside and the hamlet of Madrano. The *In Grop* promontory thus controls access not only to the uppermost part of the Leventina and the St. Gotthard pass, but also to the Val Canaria as one of the possible secondary routes. It seems almost needless to detail that this settlement site is again dominated by medieval ruins of a tower or castle on Mött Chiaslasc.

Thus far, we have only preliminary archaeological information on the site. Stratigraphy and radiocarbon dates indicate an occupation covering the Middle and Late Bronze Age (1500-1000 BC) as well as the second part of the 1st millennium BC. In addition to the naturally defended site location, access to the settlement was restricted by a stone or stone and timber wall. Domestic structures yield metal and ceramic finds along with animal bone fragments, and a range of charred seeds and grains indicating agricultural activity on or in the vicinity of the site (see footnote 2). However, the full extent of the site and holding area still needs to be determined.

Thanks to the longtime Swiss research program on ancient traffic routes *Via Storia*[3], we are rather well informed on medieval and sub-recent tracks in the Leventina. From Airolo down the valley, the next topographical obstacle is to be found at the *Piottino* gorge (Bellini 1990). An important toll station is known to have been in Piottino during later historic periods. Until the construction of the first road through the gorge in the 14th century AD, the easiest bypass was by way of Prato-Leventina and *Dalpe* TI (1180 m) where two tomb groups of the Early Iron Age, some with northern contact finds, illustrate that this was an area economically exploited in prehistoric times. Other Iron Age ceme-
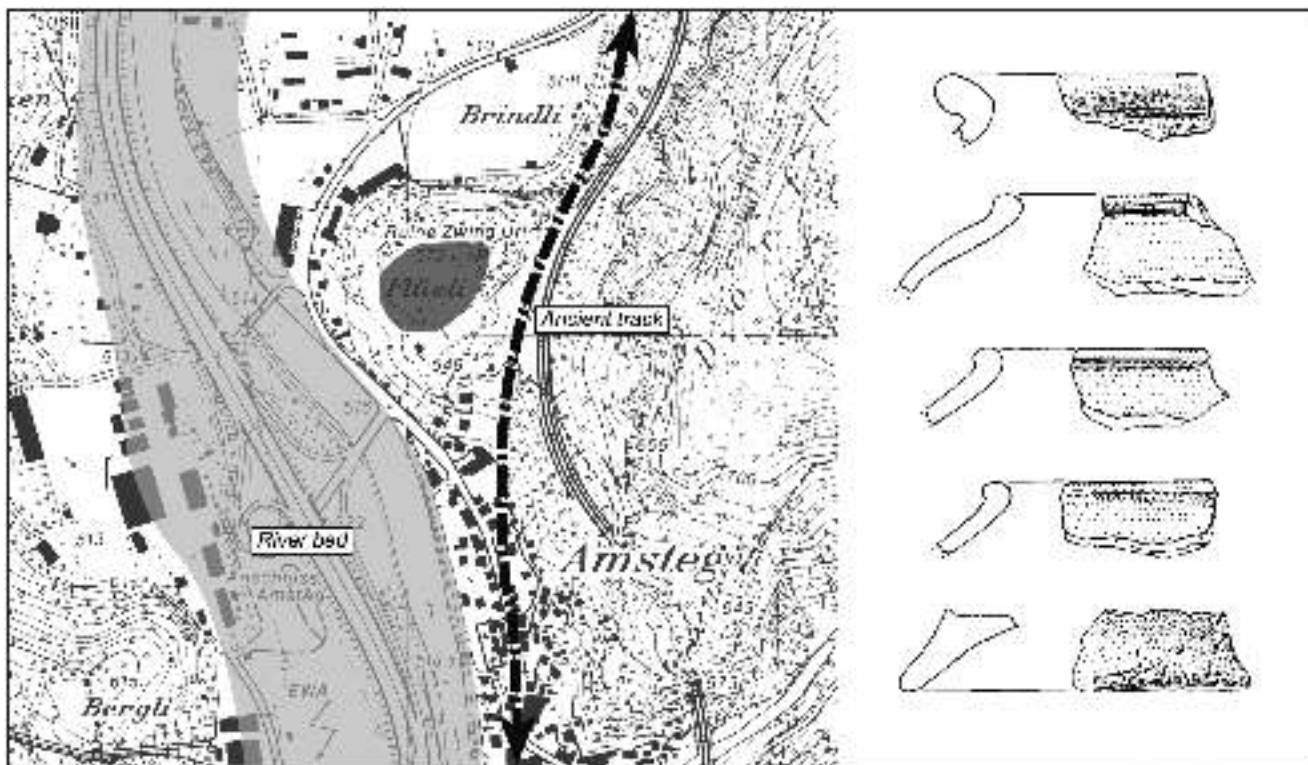
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[3] http://www.viastoria.ch

Fig. 7 - Amsteg UR Flüeli. Map indicates likely extension of archaeological area (dark grey shade). Pottery of south-Alpine origin, 60% to scale (after Primas *et al.* 1992, modified).
Fig. 7 - Amsteg UR Flüeli. La mappa indica l'estensione approssimativa dell'area archeologica (ombreggiatura grigio-scuro). Ceramica di origine sud-alpina, 60% della grandezza originale (da Primas et al. *1992, modificato).*

Fig. 8 - Airolo-Madrano TI In Grop (photo author/UZH). Middle Bronze Age disk pendant (60% to scale; photo G. Pegurri/UBC).
Fig. 8 - Airolo-Madrano TI In Grop (foto autore/UZH). Pendente a disco dell'età del Bronzo medio (60% della grandezza originale; foto G. Pegurri/UBC).

teries on the northern valley side might help to understand how traffic was staged in the Leventina in the 1st millenium BC (Schmid-Sikimic 2002a: 210-214).

The St. Gotthard pass route goes southward to Bia-sca (TI) where it joins together with the *Lucomagno* pass route (Cardani Vergani & Colombo 2002), and finally *Arbedo* (TI) (see above 3.1). Using pack animals, to traverse the entire route from Flüelen to Arbe-

do would have taken 5 days or more, depending on the exact route and environmental conditions, as it would have also on the San Bernardino route.

4. DISCUSSION AND CONCLUSIONS

Local settlement patterns and the topography of sites relating to the Bronze and Iron Age are excellent – if indirect – indicators of the importance attributed to the major transalpine connections of the Central Alps in prehistoric times: the San Bernardino pass and the St. Gotthard pass, to which we must add the Simplon pass, and connecting routes in the Upper Valais.

The Simplon pass and connecting routes in the Upper Valais, located outside our main research area, show many topographical and archaeological features similar to the ones discussed, such as the Iron Age village of *Waldmatte* – situated at the valley junction of Brig-Glis, Valais (VS) – with its many southern contact finds, and the numerous Iron Age graves of the Upper Valais containing south alpine Golasecca type materials (Curdy *et al*. 1993). More recently, archaeological findings from the Simplon pass area itself at around 2000 m. (Crotti *et al*. 2004) have evidenced the significance of this west-central Alpine transit route, connecting Lake Verbano through the Toce valley with the Valais, the Bernese Oberland, and the western Swiss Plateau (Fig. 1).

There can be no doubt that besides the major transalpine routes described here, a fair number of minor alternative regional pass routes were used in prehistoric times. As long as we lack material evidence for these routes, the high altitude single finds mentioned above might help to identify the passages. In the central part of the Swiss Alps, examples can be given for the Flüelapass (2280 m), the Schlappiner Joch (2200 m), the Valserberg/Tomülpass (2400 m), the Passo dello Spluga (2215 m) – probably not a "secondary" route –, the Grimselpass (2150 m) and the Hanigalp Pass (2150 m) (see Neubauer & Stöllner 1994). Little more can be said about these regional pass routes as their access often lies outside well known and documented settlement zones. However, in the case of Lumbrein-Surin (GR) *Crestaulta* for example, contact finds indicate southern connections across the *Greina* pass in the Bronze Age (Primas 1998).

The overall situation, and in particular the strikingly recurrent settings of sites on promontories, hillocks and ledges along historic axes of traffic, clearly speak in favor of both the particular importance of the most direct transalpine routes (San Bernardino, St. Gotthard, Simplon) and the careful attention paid to the organization of these routes in prehistoric times. As can be shown,

topographic conditions played a crucial role in this system because they are the most obvious means of enforcing control – both politically and economically – over Alpine tracks and routes. In this sense, advantageous topography represents a manageable resource that can be of strategic territorial and economic use.

On a theoretical level, such a strategy of control must be seen as a subset within socio-economic models of *expansion* and *regulation*, both vital factors to survival in Alpine environments (Netting 1981: 42; Della Casa 2002: 83). The use of topographic resources insuring control over communication and trade, and of human resources for services and infrastructure along transalpine tracks, are tightly linked. Individual and group actors played a decisive role in the establishment and maintenance of this system. B. Schmid-Sikimic has for example discussed the role of women within marriage networks linking regions immediately south and north of the Alpine range (Schmid-Sikimic 2002a: 232-236).

It is finally worth noting that the evidences for transalpine contacts, both from settlement sites and single finds, tend to cluster chronologically into a few periods: the later Early Bronze, Middle Bronze and early Late Bronze Age (18th to 10th cent. BC), and the later Early Iron and Late Iron Age (7th to 3rd cent. BC). There is a lack of archaeological materials for the early 1st millennium BC which makes that period difficult to interpret, although this (non-)evidence accords with cultural developments on a European level (Trachsel 2004: 257-320) and climatic phenomena (Della Casa 2002: 172-177). Current research projects in the Leventina (see footnote 2) and the lower Ticino valley / Giubiasco (Della Casa in: Tori *et al*. 2004) will further investigate these socio- and eco-dynamic processes.

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