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Concepts of Copper Age mobility in the Alps based on land use, raw materials and a framework of contact

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ABSTRACT - The paper discusses the evidence for a substantial movement of colonization into the central and inner Alps at the beginning of the Copper Age around the mid-4th millennium cal BC. Settlement patterns, agricultural land use systems and economic strategies in the exploitation of specific raw materials are major topics of the research. A model of climatic and economic stress and subsequent population movement between the lowlands and the Alps is presented.

Key words: Alps, Copper Age, Colonization, Raw Materials, Mobility, Contacts.
Parole chiave: Alpi, Calcolitico, Colonizzazione, Materie prime, Mobilità, Contatti.

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1. INTRODUCTION

The map of neolithic expansion into Europe reveals that the Alps, together with regions to the North and West of the continent, are marginal to an economy based on food production, especially agriculture. There are limited areas suitable for large scale neolithic crop cultivation with regard to soils and climate, as detected in the Central Alps by settlement patterns in the low valleys of Rhine, Ticino and Rhone (DELLA CASA, 1998; 2002).

Over the entire Alpine Range however, there is a marked increase of activity from around the mid-4th millenium onwards. We refer to this period, using the North Italian terminology, as "Copper Age" with regard to cultural entities such as Remedello, Horgen, Tamins-Carasso, Corded Ware, Ferrières, Fontbouisse and C.S.R. as well as Bell Beakers (DELLA CASA, 2002, fig. 3.1). It can be assumed that this period marks the first intensive and comprehensive colonization of the central alpine marginal zones.

A couple of important questions arise from this situation: What can we say about the economic and social background of this colonization? What were the causes for the colonization and where did it originate? How does it relate to previous and subsequent periods (e.g., the Mesolithic and Neolithic or the early Bronze Age)? We shall try to answer some of these questions with particular focus on patterns of land use and raw materials, and on frames of supra-regional contacts.

2. THE MESOLITHIC PRELUDE

The Mesolithic evidence demonstrates that, right from the beginning, mobility is a key component of alpine prehistory and history. There is growing evidence of seasonal movements of mesolithic populations between prealpine lowlands and alpine valleys or high-altitude zones (CROTTI & PIGNAT, 1992; CURDY *et al.*, 1999; LANZINGER, 1996). One such case-study has been presented for the site of Mesocco-Tec Nev in the Mesolcina (800m asl) where lithic raw materials support the view of human groups moving from the Lake Varese hills to and beyond the central Alpine watershed (DELLA CASA, 2000a,b; 2002, fig. 4.3).

In fact, lithic materials collected in the Mesolithic strata of Mesocco cluster into two distinct groups: one consists of radiolarite and flysch silex, certainly

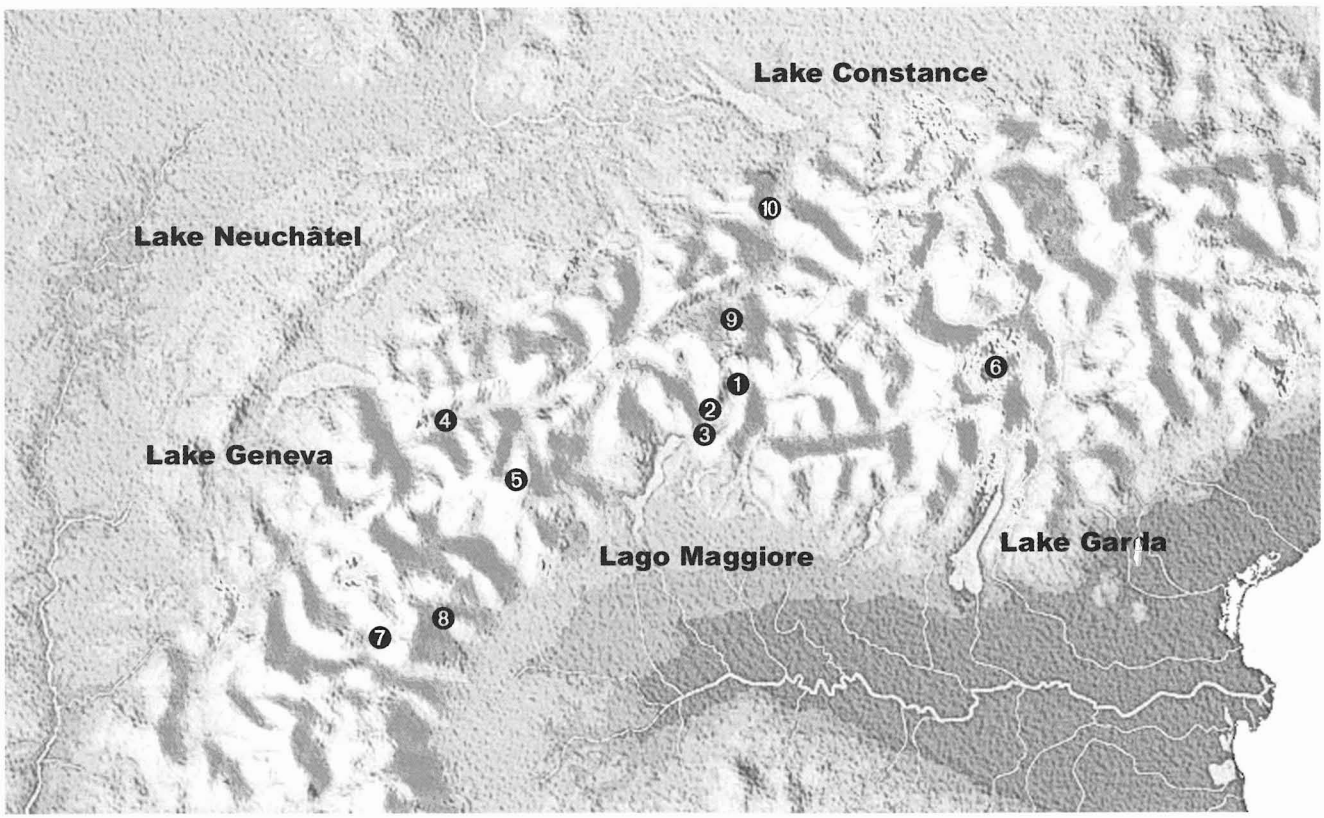

Fig. 1 - The Alps. Map of sites cited in the text: 1 Mesocco-Tec Nev (Mesolithic, Copper Age, Bronze Age); 2 Castaneda-Pian del Remit (Copper Age); 3 Bellinzona-Castel Grande (Neolithic, Bronze Age); 4 Sion-Planta/Tourbillon (Neolithic); 5 Alp Hermettji (Mesolithic to Bronze Age); 6 Castelaz di Cagnò (Late Neolithic); 7 Bessans-Rocher du Château (Late Neolithic, Copper Age); 8 Villaretto-Balm'Chanto (Copper Age); 9 Cazis-Petrushügel (Copper Age, Bronze Age); 10 Wartau-Ochsenberg (Neolithic, Copper Age, Bronze Age).

of foreign origin and most probably from the area of Varese, the other of local alpine rock crystal (Della Casa, 2000a: 125). Both groups amount to nearly 50% within the sample. It can be argued that the presence of these materials reflects seasonal movements of Mesolithic populations into the alpine valleys (e.g. the Mesolcina) and up to the areas of natural alpine grassland beyond the tree limit. Evidence of this movement is also supported by numerous high altitude campsites on the Pian dei Cavalli in the upper Spluga valley, more or less contemporary to the Mesocco valley bottom site. Animal exploitation, in particular red deer hunting, appears to be a major focus of these activities (Fedele & Wick, 1996; Fedele, 1999).

3. COPPER AGE COLONIZATION OF THE CENTRAL ALPS

This pattern of alpine colonization ceases with the onset of the Neolithic (ca.5000 cal BC; Della Casa, 2000c) and its new soil-based subsistence economy, as evidenced by the sites of Bellinzona-Castel Grande in the Ticino valley or Sion-Planta and Tourbillon in the Valais (Carazzetti & Donati, 1990; Müller, 1995). However, there is evidence for a continous use of transalpine contact routes (e.g., in the Zermatt valley with the Alp Hermettji site on 2600m asl; Curdy *et al.*, 1998).

Is has been noted that in Mesocco and else where, Copper Age finds seem to cluster in areas already used in the Mesolithic, indicating a possibly similar spatial setting (e.g., in zones used for deer hunting) (Bagolini & Pedrotti, 1992). Use of alpine pastures is a plausible scenario, with increasing palaeoecological evidence from both pollen and charcoal analyses in Tyrol, Engadine, Valle Spluga and Maurienne (Fedele & Wick, 1996; Zoller *et al.*, 1996; Carcaillet & Thinon, 1996; Burga & Perret, 1998: 668). In the western Alps, the "grottes bergeries" (cave stables) make a strong case for at least partial higher elevation mobility along with movements of flocks (Brochier *et al.*, 1999). Transhumance however, in the historical sense (i.e., the seasonal transfer of domesticates between different ecotopes in and around the Alps) is still a matter of debate (see Spindler, this volume).

Settlements of the later 4th/3rd millenium are typically located on hilltops and terraces, limited in surface and structure, and are often of rather seasonal

or temporary character (Della Casa, 2002). A typical example is provided by the site of Castaneda-Pian del Remit, situated on a gentle terrace at 780m asl above the Mesolcina and Calanca valleys (Fig. 2). With its pithouse, hearths and random ceramic and lithic artifact scatters, Castaneda reflects a permanent though not necessarily year-round settlement in an ideal climatic location. As in Mesocco, local quartz slightly predominates prealpine flint and radiolarite of Varese origin. Ceramics (Fig. 3) belong to the Tamins-Carasso group (Primas, 1982), albeit with wide-ranging typological affinities to Copper Age wares in Piemont, Graubünden and Horgen groups north of the Alps (Vogt, 2000). Traces of ploughing and charred seeds indicate on-site agriculture in accordance with regional pollen evidence (Zoller, 1960).

4. TERRITORIES AND RAW MATERIALS

Contemporary cereal pollen evidence is recorded from the lower Rhine valley north of the San Bernardino alpine pass (Burga, 1980). This region is one of the major prehistoric North–South transit routes now emerging as an axis of communication between prealpine and alpine Copper Age groups that share a common set of material culture. It is noted that the number of recorded sites is not yet really substantial (Primas, 1985; Della Casa, 1998, fig. 2).

Territorial organization is visible through sites located in strategic and naturally defended positions, many of which – such as Castelaz di Cagnò – are known in the Trentino-Alto Adige (Fig. 4; Della Casa, 2002: 32). Additionally, rock-shelters and open land sites with typically abundant traces of raw material working – in particular quartz, greenstone and antler – are known from almost all regions within the Alps. In the western range, they spread up to altitudes of 1800m asl, well beyond the supposed agricultural frontier, and are of clearly seasonal or semi-permanent nature. Good examples are provided by Bessans-Rocher du Château (1830m asl; Fig. 5) and Grotte des Balmes in Sollières-Sardières (1350m asl) in the upper Maurienne valley (Rey & Thirault, 1999; Benamour, 1993; Della Casa, 2002: 45). These two sites can be set within a wider network of later Neolithic and Copper Age lithic resource exploitation (Thirault *et al.*, 1999). As Thirault and colleagues have suggested, the aforementioned alpine sites can be interpreted as primary working zones for local franco-piemontese serpentinites and eclogites within a furnishing network of polished greenstone axes to the areas of the prealpine lakes and Rhone valley (op. cit., fig. 8).

5. WARTAU-OCHSENBERG, COPPER AGE SITE IN THE RHINE VALLEY

Similar situations are known in the Piemont (Villaretto-Balm'Chanto; Nisbet & Biagi, 1987), in the Grisons (Cazis-Petrushügel; Primas, 1985), and in the Rhine valley south of Lake Constance on the Ochsenberg of Wartau. This site occupies a remarkable promontory at 660m asl famous for its ruins of a medieval castle (Fig. 6). The structures and finds found in the lowest levels of the multi-period settlement are of a late 4th-millenium dwelling and working area with rich flint, greenstone, bone and antler industries (Primas *et al.*, in press). Bones of both wild and domesticated species (deer, bovines, ovicaprines) are abundant. Complete "chaînes opératoires" of axes and sockets from regional greenstones – mostly serpentinite – and antler can be reconstructed (Fig. 7). They indicate that Wartau was part of the supply network for local settlements in the Rhine valley and Liechtenstein, and possibly further North towards Lake Constance. As opposed to the situation in the French Alps, the petrographic and chemical analysis of greenstone raw materials has not yet been accomplished for the zones concerned.

However, detailed analysis of the silex raw materials reveals even wider operational networks. There is a significant amount of chert from Eastern and Northern origins, along with "selce veronese" (south alpine flint) that must have reached Wartau across the Alps (Fig. 8). One piece is particularly interesting, as it clearly belongs to a flint dagger of so-called "remedellian" type made of Lessini silex. The piece is not isolated in north-alpine contexts of the later 4th-millenium, as similar finds are known in Opfikon and Feldmeilen (canton Zurich), in the Rhine valley (Schindler, 2001), and Arbon-Bleiche 3 on the shores of Lake Constance (Leuzinger, 2002).

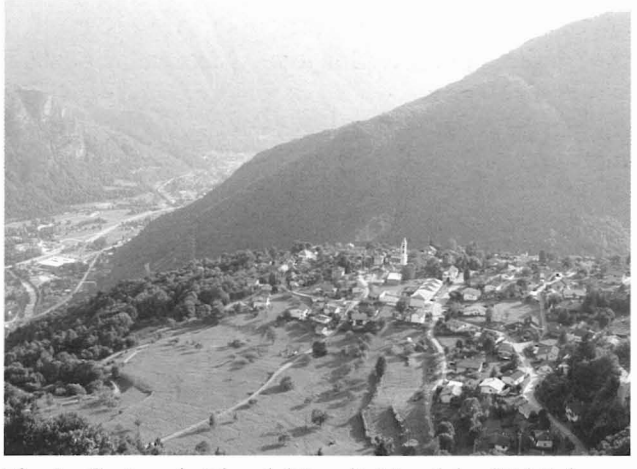

Fig. 2 - Castaneda-Pian del Remit, Mesolcina/Val Calanca, Switzerland. Situation of the archaeological site within the actual village.

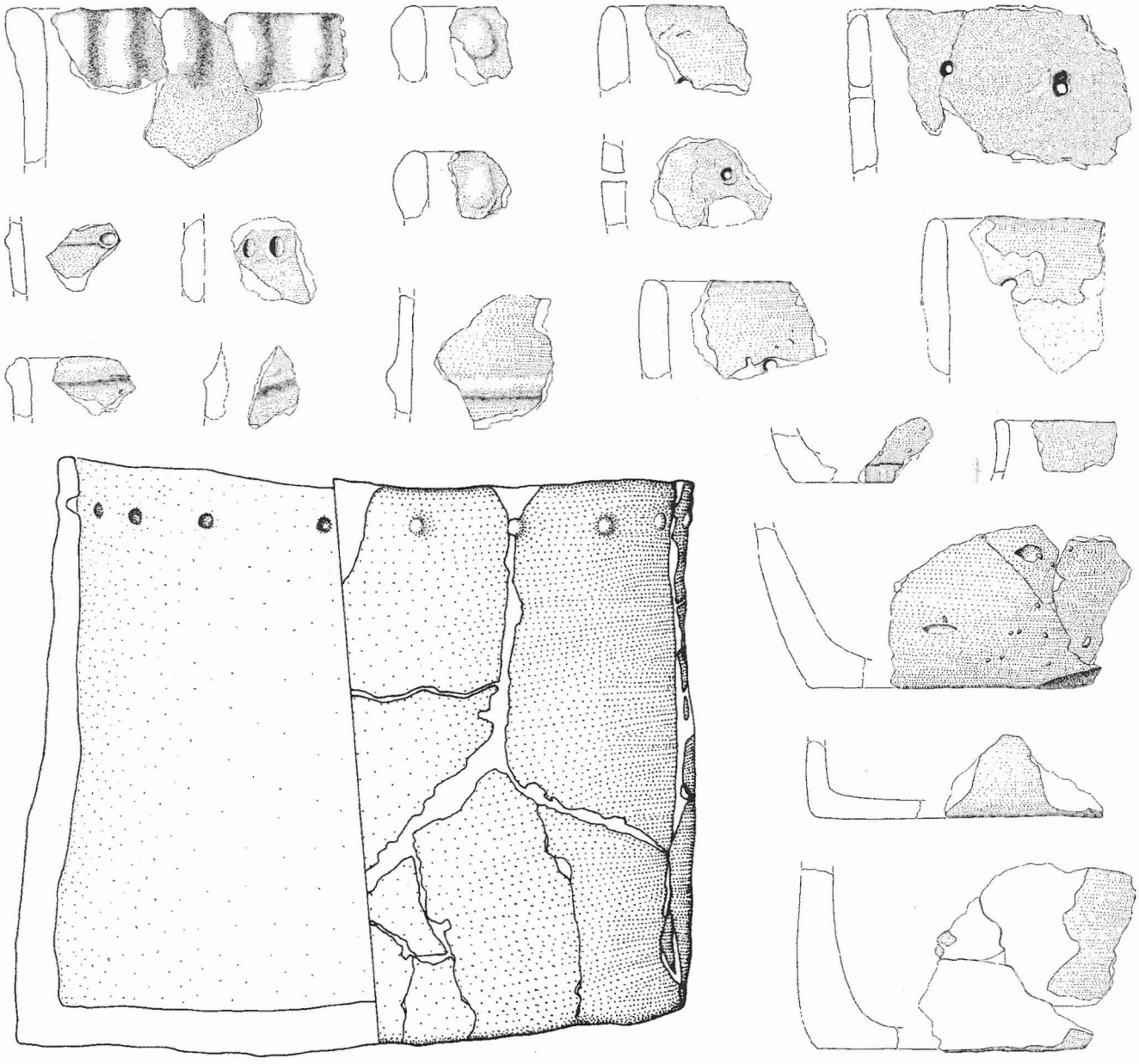

Fig. 3 - Castaneda-Pian del Remit. Copper Age pottery (scale 1:3).

6. MODELS AND PROSPECTS

The question of why and where Copper Age colonization began in the Alps must be briefly addressed. It is now widely accepted that the initial phase of the movement – the early mid-4th millennium – is marked by climatic deterioration and economic crisis in the North alpine and Jura lake dwellings of Switzerland and France (Jacomet *et al.*, 1995; Arbogast *et al.*, 1996). The climatic oscillation in question, called "Piora 2" or "Chalain", has been identified with help of various climate and vegetation parameters such as pollen profiles, movements of alpine glaciers or patterns of tree ring growth (Burga & Perret, 1998: 721; Miramont *et al.*, 1999; Della Casa, 2000a: 172). This also appears as a major transgression of lake levels between roughly 3600 and 3200 cal BC, as a result of prolonged cold and/or humid climatic phases.

A number of sites of the late Pfyn-Cortaillod groups show substantial shifts in their economy towards intensified deer hunting and wild plant collection as secondary subsistence strategies (Jacomet *et al.*, 1995). The actual lake level transgression corresponds to a known settlement hiatus between Pfyn-Cortaillod and Horgen. From the 32nd century cal BC onwards, Horgen and Ferrières settlement expansion into the Swiss Plateau and French Jura becomes evident (Arbogast *et al.*, 1996, fig. 11).

Consequently, based on the ecological and economical proxy-data, a shift of stressed populations towards marginal uninhabited zones and the consistent adoption

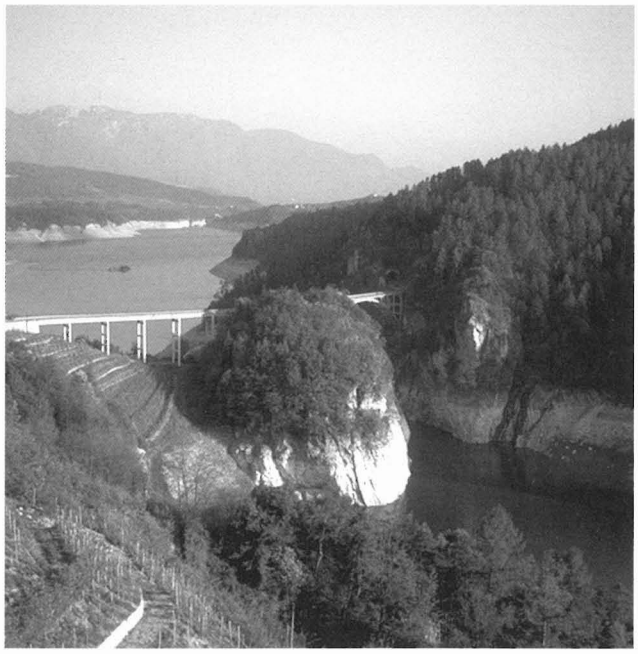

Fig. 4 - Castelaz di Cagnò, Val di Non/Trentino, Italy. Situation of the archaeological site on top of the naturally fortified promontory.

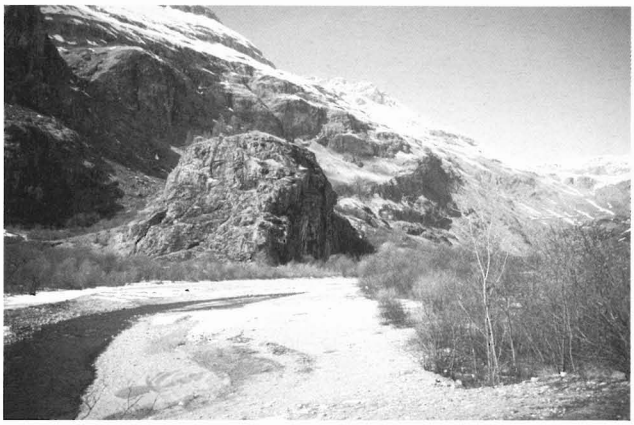

Fig. 5 - Bessans-Rocher du Château, Maurienne, France. Situation of the archaeological site in the rock shelter facing the river.

of specific alpine and mobile subsistence strategies, can be proposed as a model for the transition from the first to the second half of the 4th millennium (Fig. 9). The model takes into account that lowland Horgen and alpine Copper Age groups share a couple of economic traits such as specialized breeding (pig or likewise sheep/goat), and agricultural mobility, with regards to both soil and space.

Intriguingly, the late 3rd millenium and the very start of the Bronze Age are badly represented in many regions of the central Alps (Della Casa, 2002). Again, larger valleys such as the Valais make an exception (Curdy *et al.*, 1999). Whether this is due to changing patterns of land use and a loss of recognizable archaeological sources, or to the abandonment of previous activity zones and sequential breaks in the historical record, is open to debate.

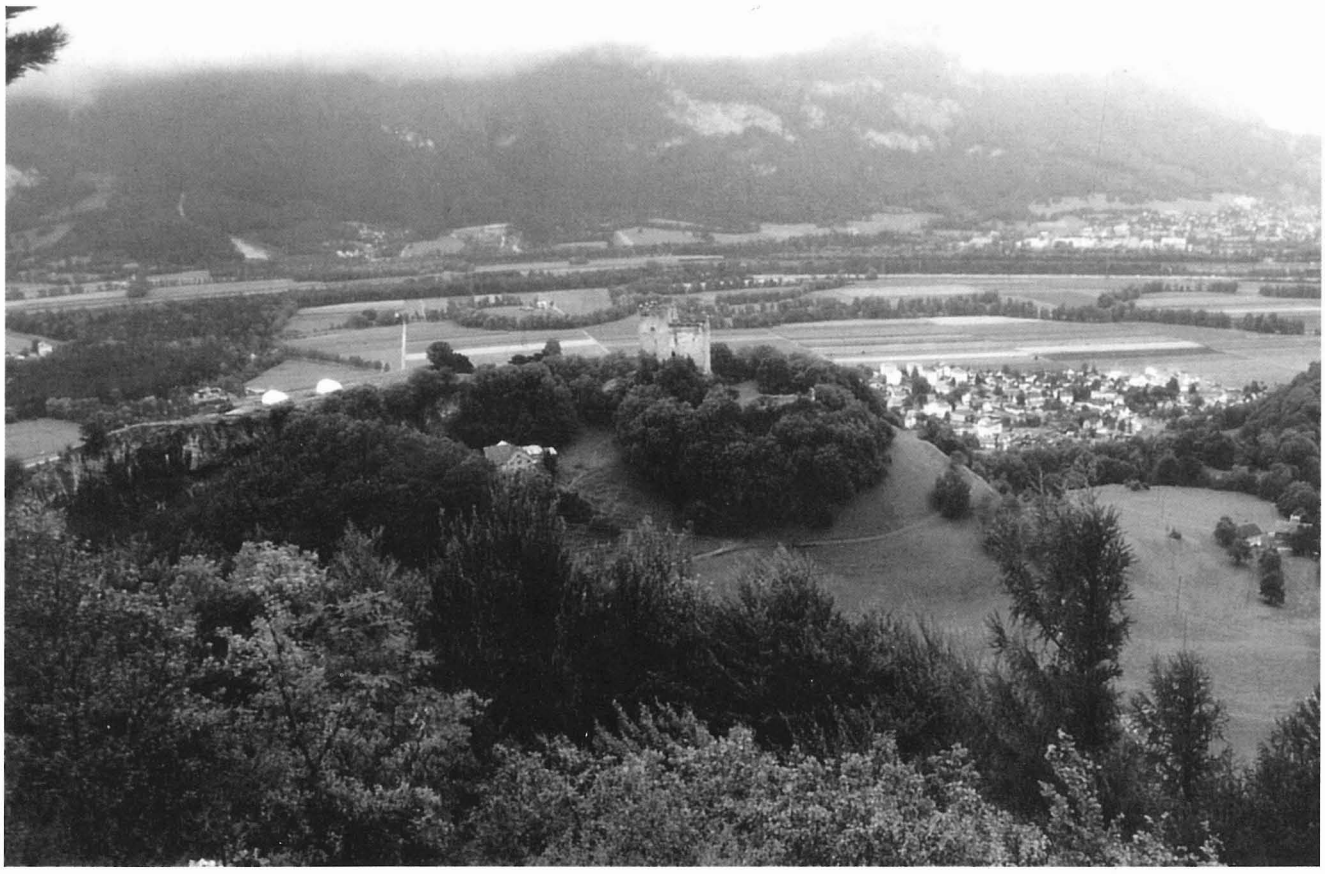

Fig. 6 - Wartau-Ochsenberg, Rheintal, Switzerland. Situation of the archaeological site left of the castle hill.

Fig. 7 - Wartau-Ochsenberg. Green stone (serpentinite) industry from the Copper Age levels (scale ca. 1:3).

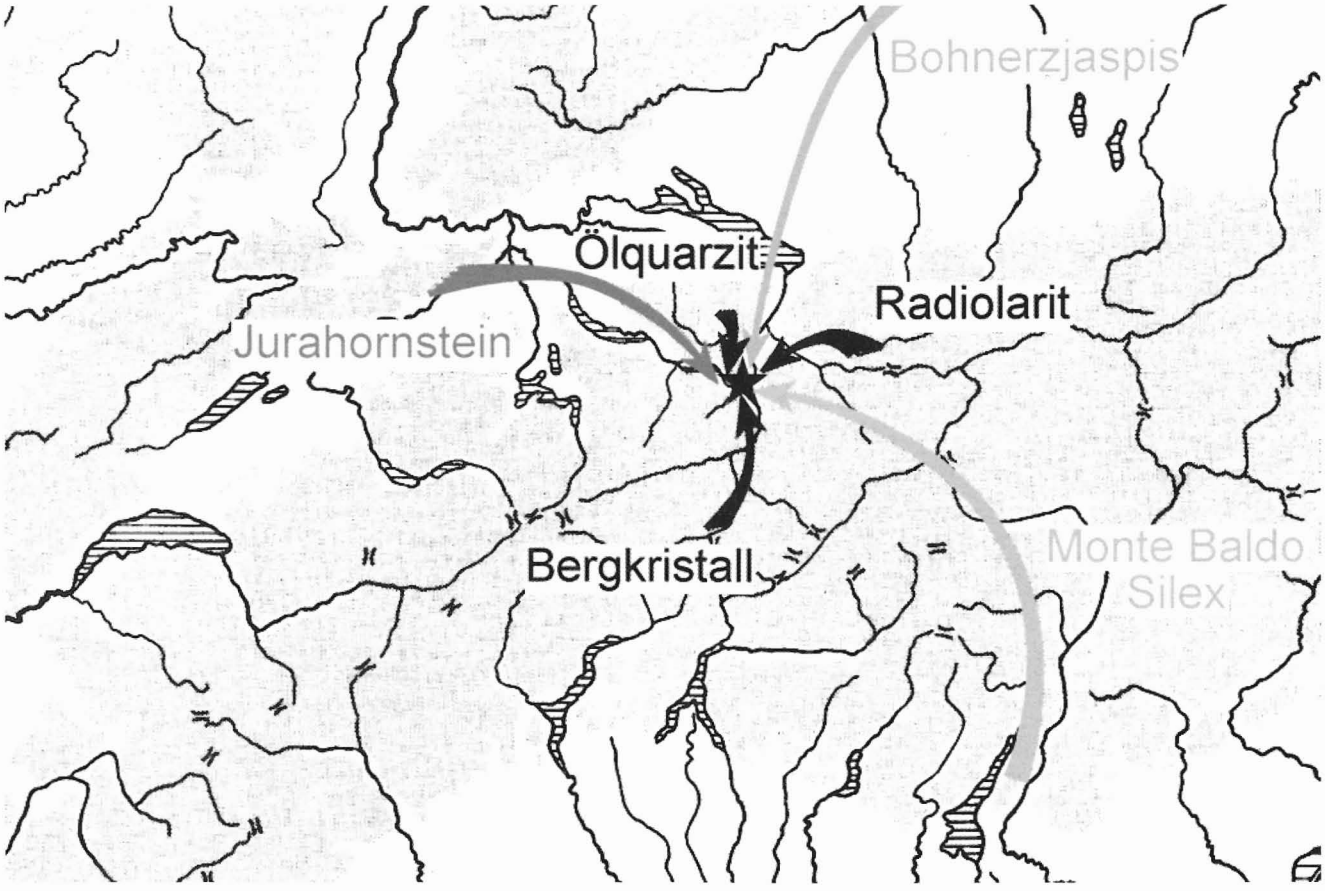

Fig. 8 - Wartau-Ochsenberg. Proveniance of silex raw materials in the Copper Age: Jurassic flint, quartzite, jasper, radiolarite, South Alpine flint, rock crystal.

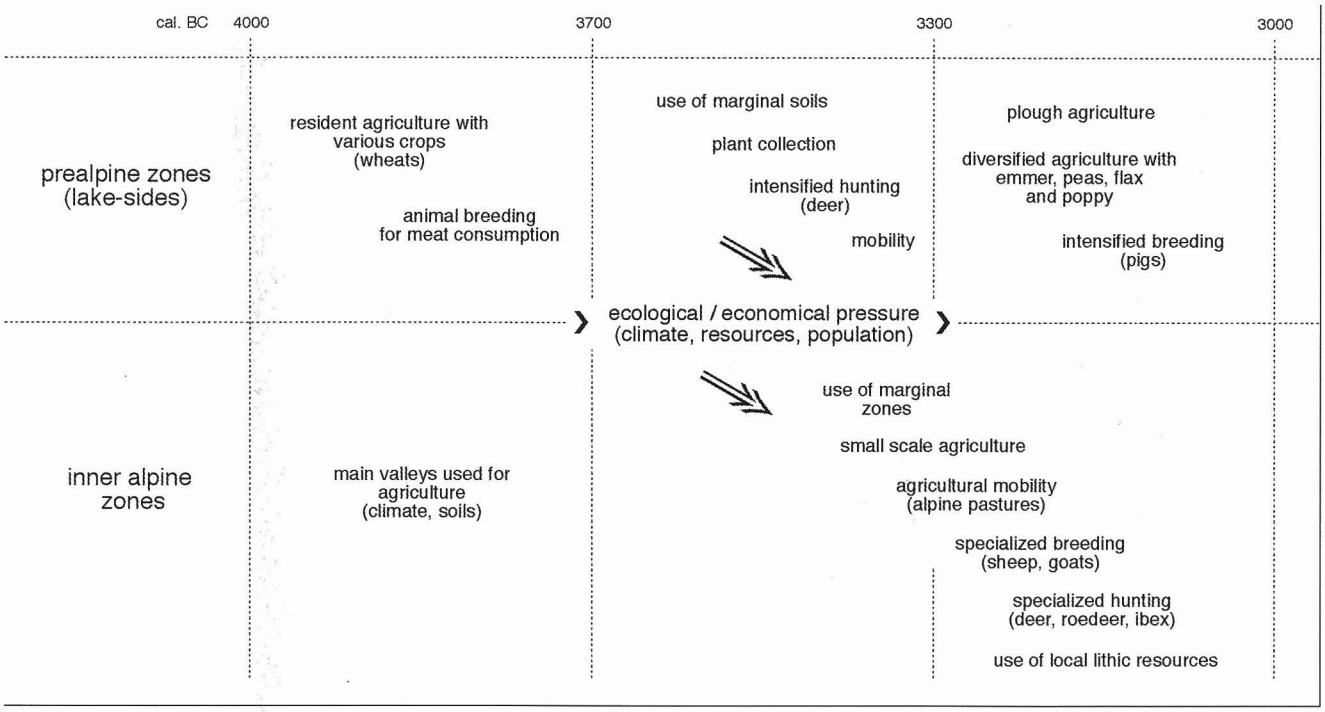

Fig. 9 - Settlement and Mobility: eco-dynamic scenario for the prealpine and alpine Copper Age, based on climatic parameters and archaeobiological investigations.

ZUSAMMENFASSUNG - Der Beitrag diskutiert die Nachweise für einen bedeutenden Besiedlungsschub in die zentralen und inneren Alpen zu Beginn der Kupferzeit um die Mitte des 4. Jahrtausends cal BC. Siedlungsmuster, Systeme landwirtschaftlicher Landnutzung und wirtschaftliche Strategien der Rohstoffgewinnung und -verarbeitung sind die wichtigen Themen der Untersuchung. Ein Modell für eine klimatische und ökonomische Krise mit nachfolgender Bevölkerungsbewegung zwischen Flachland und Alpen wird vorgestellt.

RIASSUNTO – Il contributo presenta la documentazione comprovante una significativa spinta di colonizzazione nelle Alpi centrali ed interiori all'inizio del Calcolitico, attorno alla metà del IV millennio cal BC. Temi principali dell'indagine sono i modelli insediativi, i sistemi di sfruttamento delle risorse ambientali a fini agricoli e le strategie economiche per l'acquisizione e lo sfruttamento delle materie prime. Viene inoltre presentato un modello esplicativo di una sistuazione di crisi climatica ed economica con i conseguenti movimenti migratori delle popolazioni tra le aree di pianura e le Alpi.

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