Shaping mountain landscapes. Archaeology, environment and social practices

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Rethinking mountains through archaeology

Over the past two decades, archaeology in mountain areas has progressively reshaped its object of study. Attention is no longer focused only on high-elevation sites, pastoral occupation or exceptional evidence preserved under particular environmental conditions; rather, it increasingly seeks to understand mountains as complex historical systems in which settlements, resources, routes, productive practices, environments and institutions operate at different scales. From this perspective, archaeological evidence is not simply placed within a challenging physical environment; it is interrogated to understand how societies selected, organised and transformed mountain spaces, and how these transformations in turn affected the formation and legibility of the record.

The growth of this field is clearly visible in Italy as well. Over the last twenty years, several projects across the Alpine arc have worked in this direction. APSAT, for example, helped to define a range of integrated approaches and methods for the study of upland landscapes (Brogiolo et al. 2012), while the closely related ALPES project subsequently developed a long-term perspective on pastoral landscapes (Angelucci and Carrer 2015), making them the subject of specific reflection. Research in the Alti Lessini similarly connected structures, routes and practices within a territorial and diachronic reading (Sauro et al. 2013), still closely linked to the study of pastoral practices. More recently, further investigations have examined the Piccole Dolomiti (Migliavacca 2024) and the Valli del Leno and Pasubio area by integrating archaeological, historical, environmental and ethnographic data (Avanzini and Salvador 2022), highlighting the importance of a systematic application of historical-archaeological approaches and a long-term perspective. In the volume Montagne e Archeologie, these issues emerged explicitly as a first point of reflection, focusing on the archaeological record, methods, relationships between different elevations, resources and the social dimension of mountain landscapes (Angelucci et al. 2023a; 2023b). A further contribution to this debate is Paolo Forlin's recent study of the medieval landscapes of eastern Trentino, which combines archaeological evidence, historical documentation and remote sensing to examine the relationships between settlement, environmental resources, political authority and territorial organisation. By considering valleys, upland areas and communication routes within a single analytical framework, the study demonstrates how medieval Alpine landscapes were shaped through the interaction of ecological conditions, economic practices and competing forms of power (Forlin 2024).

The Italian context clearly participates in a wider debate. Anthropological studies have long shown that similar environmental conditions can be organised through different cultural systems (Cole and Wolf 1999 [1974]), while landscape archaeology has strongly emphasised the

long-term interaction between environment, economies and mobility (Walsh 2013), as well as the need to interpret these relationships carefully. Studies of pastoralism have also highlighted the variety of seasonal and transhumant strategies (Barker et al. 1991; Carrer and Migliavacca 2019) and the impact of the environment and its transformations on these processes. More recently, the concepts of affordance and connectivity have encouraged the interpretation of resources as opportunities historically perceived and activated within past societies (Kempf 2020). It should also be stressed that geoarchaeological approaches have clarified the extent to which erosion, slope dynamics and other depositional processes affect the construction of archaeological data (Angelucci 2024). Systematic high-altitude survey has likewise generated specific reflection on the limits imposed by visibility, accessibility and sampling (Gassiot Ballbé et al. 2016). An up-to-date international overview is now also provided by The Oxford Handbook of Mountain Archaeology, which brings together theoretical and methodological approaches and case studies from different mountain contexts, and offers a useful framework within which to situate these experiences in a broader comparative perspective (Carrer et al. 2024).

The contributions to this issue therefore make it possible to revisit these problems across contexts ranging from later prehistory to the modern period, from the Alps and Apennines to southern Albania. Rather than seeking a single model, this paper proposes a reading organised around four cross-cutting themes: (a) formation and recognisability of the record; (b) method and scale of analysis; (c) moving beyond marginality through vertical and horizontal connections; and (d) the historical production of territory through resources, practices, rights and infrastructure. The aim is not to homogenise different cases, but to show how, taken together, they help to redefine some of the central questions in the archaeology of mountain landscapes.

Archaeological visibility in mountain landscapes: preservation, detectability and change

A first issue runs through almost all contributions in the volume: what relationship exists between what happened in the past and what archaeology is actually able to recognise today? In mountain areas the problem is particularly evident, because the quantity and quality of traces do not depend solely on the intensity of human presence. Morphology, erosion, vegetation cover, colluvial deposition, landslides, snow, cryonival processes, reuse and abandonment interact with the material characteristics of the activities carried out. The observed distribution of sites is therefore the outcome of a long chain of selection and transformation and cannot be taken as a direct representation of the historical distribution of population or activities.

The Monti Lucretili Landscape Project makes this problem particularly clear, showing how woodland, slopes and rocky outcrops condition survey. Most importantly, the absence of finds does not necessarily coincide with the absence of activity in different parts of the landscape. Areas that are now almost devoid of evidence were used for grazing, charcoal production and agro-silvo-pastoral practices, often involving temporary structures and perishable materials (Bernardi et al. supra). Before interpreting an apparently ‘empty’ distribution, it is therefore necessary to ask which activities could have produced a recognisable record and which, by contrast, tend to escape observation.

Underlandscape shows a similar effect: vegetation, collapses, landslides and accumulations can conceal the earlier phases of caves, producing a 'hypervisibility' of the post-medieval period (Chiti et al. supra). What is most visible is therefore not necessarily what was historically most intense: the observable sequence is already a transformed and modified one.

The same problem takes on a different dimension in the Emilian Apennines. Here reforestation following the abandonment of agricultural and pastoral activities is concealing a substantial part of the surface evidence, while the intensification of erosion and extreme events produces opposite effects in different topographic positions: summit and slope sites may be eroded or destroyed, whereas sites at lower elevations may be buried beneath thick colluvial deposits. The study notes that the current picture of Bronze Age settlement may therefore be biased towards summit locations, while valley floors appear more sparsely occupied partly for taphonomic and geomorphological reasons (Putzolu et al. supra). This is not simply a technical correction, but a condition that directly affects the settlement models we construct.

The environmental dimension is therefore part of the problem of the record. Climate, vegetation, pedogenesis and slope dynamics affect the formation and preservation of stratigraphic deposits (Angelucci et al. 2023b); in geoarchaeological terms, elevation, relief energy and erosion contribute to the elusiveness of mountain evidence (Angelucci 2024). Site maps are consequently also maps of preservation conditions and research practices. Excluding the more recent historical phases from reconstruction—or flattening them into predetermined interpretative schemes—does not merely mean giving up part of mountain history; it compromises the interpretation of the archaeological record itself. Practices of the last centuries—abandonment and reoccupation, reforestation, changes in pastures, new infrastructure, extractive activities and changes to route networks—have erased, preserved, reused or altered the visibility of traces from earlier periods. Focusing only on ancient phases therefore risks producing the artificial image of an unchanging landscape, whereas a long-term reading—one that contextualises the history of mountain areas over the last millennium as well—fully reveals their continuous reorganisation.

Orgères offers another version of the problem. Here the difficulty does not depend solely on the scarcity of the record, but on the long duration of techniques and forms of dwelling. In their investigations in the Valle d'Aosta area, Lebole and Di Gangi emphasise how the persistence of relatively non-standardised building practices, the reuse of structures and materials, and the use of local stone and timber make it particularly difficult to distinguish phases chronologically. Yet such distinctions do exist. The solution does not lie in a single indicator, but in highly detailed stratigraphy, standing-building analysis, material characterisation and the integration of geological, chemical, botanical, geomatic and physical analyses (Lebole and Di Gangi 2020). In this case, 'low visibility' also concerns the typological distance between phases: long-lived technical forms can make historically different moments appear archaeologically similar.

The environment should also be treated as part of the history of the record: present-day vegetation is often the recent product of the abandonment of managed pastures, meadows and woodlands, while reforestation can conceal evidence that was previously visible. In her research, Anna Stagno has clearly shown how contemporary abandonment can crystallise some structures while obliterating others beneath newly formed woodland (Stagno 2018;

2023). Even a landscape that appears 'natural' is therefore historically produced and cannot automatically be projected back into the past.

Observed archaeological density therefore does not coincide with the density of historical presence. Types of activity, depositional processes, landscape transformations and research strategies all filter the evidence. This calls for greater caution in interpreting absences and for the systematic recording of visibility, accessibility, geomorphology and land cover. In mountain archaeology, the question 'where are the sites?' should always be accompanied by another: 'what conditions make a practice or historical phase recognisable today?'.

From sites to systems: methods and scales in mountain archaeology

If the record is selective, methods cannot be rigid either. A second theme that emerges strongly from the volume is the need to build flexible strategies, capable of varying intensity, tools and scale of observation according to ground conditions and the historical question being asked. Mountain landscapes certainly have specific characteristics, but the problem is not to define a specifically 'mountain' technique. Rather, it is to recognise that the automatic application of protocols developed in plains or hilly contexts risks producing poorly comparable results and, above all, distorted interpretations. The key issue lies in strategy and in how approaches are defined.

MoLuLaP makes this issue explicit by experimenting with fieldwalking, extensive survey, point sampling, mobile GIS and participatory information gathering. What emerges is not a single valid strategy, but the need to calibrate procedures to woodland, pasture, slope, rockiness and accessibility (Bernardi et al. supra). Methodology thus becomes reflexive: it records not only artefacts, but also the conditions that determined their discovery or non-detection, while making the process both testable and measurable.

In the Albanian research as well, accessibility and visibility directly condition fieldwalking and recording (Carbotti supra), while Underlandscape makes the point particularly clearly by adding very practical constraints: from the difficulty of access routes to the portability and battery life of instruments, and even the impossibility of using drones in some caves (Chiti et al. supra). Every mountain dataset therefore also incorporates the material conditions under which it was produced.

The need for adaptation in mountain research does not, however, imply abandoning quantitative or modelling procedures. The contribution on the Emilian Apennines instead demonstrates the potential of least-cost path analysis, intervisibility models and connectivity analysis, provided that these are understood as heuristic tools and tested in the field. The authors stress discrepancies between modelled routes and the actual configuration of the terrain and propose integrating slope, visibility and flow accumulation to formulate hypotheses for ground-truthing (Putzolu et al. supra). This is particularly significant because the model does not automatically reconstruct past movement: it identifies plausible configurations, makes the parameters explicit, and helps select areas where research can verify or falsify hypotheses.

Tor dei Pagà is particularly instructive precisely because of this critical function of the model. Visibility might appear to offer an intuitive explanation for the selection of a high-elevation ritual place; GIS analysis, however, shows that the Brandopferplatz is scarcely visible from the valley floor and from the protohistoric site of Desèrt. The result does not 'explain' the sanctuary, but removes or weakens an apparently obvious explanation and forces us to consider other possibilities, such as intervisibility with cult sites at similar elevations or relationships with water and cavities (Bellandi et al. supra). It is an effective example of how digital tools acquire value when they are used not to confirm models, but to test them.

These considerations also raise a further issue: the approach cannot be reduced to a technical adaptation; often the unit of analysis itself has to change. Excavation, survey, historical sources, cartography, palaeoecology, geoarchaeology and ethnography must be brought into dialogue within a diachronic perspective, while GIS becomes above all a tool for holding together different types of data and different scales (Angelucci et al. 2023b).

The case of Piuro has made the issue of scale particularly clear. Here, a sector of a medieval valley-floor settlement is observed in connection with productive activities and the exploitation of mid- and high-altitude zones, revealing the complexity of a medieval landscape in which valley floors, slopes and alpine pastures were closely and deeply integrated. The valley floor was not only a residential space, but also a productive one; slopes hosted settlement nuclei, woodlands, quarries, routes and areas of exploitation, while higher elevations were linked to this system through forms of management and mobility (Saggioro 2023, Saggioro 2025). The limitation of an exclusively 'high-altitude' approach is therefore paradoxical: it risks isolating precisely what historically functioned through connections between different elevations.

A comparable perspective emerges from the early medieval Orobie, where productive high-altitude sites have been interpreted not as isolated mountain occupations, but in relation to broader systems of resource exploitation, landholding and Alpine communication (Zoni 2022).

Orgères, despite its different context, leads to the same conclusion. The plateau at 1,665 m cannot be understood as an isolated episode. Its long occupation, from the Roman period to the modern period, only makes sense when morphology, availability of water and timber, livestock husbandry, residential structures, commercial networks and routes towards Piccolo San Bernardo, col des Chavannes and col de la Seigne are considered together (Lebole and Di Gangi 2020). The site is simultaneously a place of habitation, a productive space, a staging point and a node within a network. The appropriate scale therefore does not coincide with the excavation perimeter, but with the network of relationships that explains the site's persistence.

The analytical unit should therefore not be defined a priori by elevation or by the category of 'upland site', but by the historical system that needs to be reconstructed. And this, of course, can change over time. Pastoralism, extraction, fortification or collective management require different spatial frames and connect different types of evidence: the scales and boundaries of research must be constructed in relation to the processes being observed.

Beyond the margin: verticality, mobility and connectivity

A third issue concerns the very way in which mountains are positioned within historical models. For a long time, many upland areas were described through categories of isolation, backwardness and marginality, often influenced by contemporary conditions of depopulation and abandonment. In recent years, research has repeatedly drawn attention to the risk of projecting onto the past demographic and economic processes that developed mainly over the last two centuries, and has proposed instead that relationships between upland communities, environments, neighbouring societies and wider economic systems should be considered (Putzolu and Zoni supra). Recent geography has likewise shown how the contemporary image of mountains is constructed through the opposition between the abandonment of the 'montagne di mezzo', concentration in valley floors and the tourist specialisation of high elevations (Bätzing 2005; Varotto 2020).

Moving beyond marginality does not mean indiscriminately celebrating mountains, but asking what functions they perform within regional systems. In Albania, fortified upland sites combine control of routes, pastures and resources, protection and territorial marking; settlements and fortifications appear to be embedded in networks of shared rights and responsibilities (Carbotti supra). Their dominant positions are therefore not simply defensive, but serve to organise resources, movement and relationships between communities.

In the Emilian Apennines, the increase in Bronze Age settlement density is linked both to mountain resources and to trans-Apennine corridors between the Po Plain, Toscana and Liguria. Timber, charcoal, steatite, pastoral products and salt integrate the uplands into wider economic systems. The persistence of some sites into the final phases of the Terramare also raises the possibility of more diversified mountain strategies, warning against taking lowland trajectories as the sole measure of regional processes (Putzolu et al. supra).

A similar perspective emerges from research in the Piccole Dolomiti and, more recently, in Val Fraselle. The synthesis of the 'Oltre il confine' project has shown that upland occupation needs to be read through the relationships between pastures, shelters, routes, resources and boundaries, within a sequence spanning very different phases and clearly revealing the continuous redefinition of the functions of these spaces (Migliavacca 2024). The 2022–2023 campaigns of the People Woods Passes project have further identified, above 1,500 m, structures and materials associated with pastoral practices, woodland exploitation and possible boundary markers, but above all have highlighted the role of Val Fraselle as a crossroads towards the passes between Veneto and Trentino and as an area involved in exchange networks and boundary disputes (Migliavacca et al. 2026). Here too, high-elevation areas acquire meaning not as separate spaces, but within systems of mobility and resource use connecting them to lower elevations and neighbouring territories.

In the medieval landscape revealed at Piuro, as already noted, valley floors, slopes and high-elevation areas do not correspond to economically separate sectors. The main settlement is simultaneously a place of residence and production; the slopes host settlement nuclei and connect quarries, woodlands and alpine pastures; higher elevations participate in a system in which pastoralism, agriculture, extraction and the circulation of soapstone are integrated. 'Verticality' is not merely a topographic fact: it is a form of economic and settlement

organisation (Saggioro 2025). The quarries also connect this local system to much wider distribution networks, showing how a mountain resource acquires significance through circulation.

Orgères adds a strong component of transverse mobility to this verticality. The site lies along an alternative route towards the passes and cross-border areas; its late medieval economy combined livestock husbandry, cheese production and services connected with the road. Lebole and Di Gangi effectively note that the 'second source of income was the road': route maintenance, tolls, Alpine guides, hospitality and trade therefore made transit a structural component of local life. The archaeozoological data also indicate the presence of neonatal and young animals and support the interpretation of a stable settlement, rather than a merely seasonal station (Lebole and Di Gangi 2020). Mountains thus appear simultaneously as places of production and as infrastructures of movement.

Tor dei Pagà shows another possible form of connection. The small medieval coin assemblage includes issues attributable to Venetian, Milanese and Aquileian areas and reflects the site's position near Tonale, a frontier zone and point of contact between different monetary systems (Bellandi et al. supra). Although the precise function of the fortification remains debated, its location cannot be interpreted solely in terms of isolation: the site occupies a sensitive point within a territory traversed by conflict, routes and competition for control. The very notion of 'frontier' should therefore be understood relationally: not merely as a line of separation, but as a zone in which circulation and control become particularly intense.

Connectivity therefore operates in two directions: vertically, it links ecozones, activities and resources; horizontally, valleys and passes connect regions, markets and political systems. The two dimensions intersect. Studies of transhumance and Alpine historical ecology likewise show that mobility and pastoral practices belong to wider economic systems and are not simply responses to environmental seasonality (Carrer and Migliavacca 2019; Carrer, Walsh and Mocci 2020).

Describing mountains as systems of connections thus allows us to move beyond the opposition between centre and periphery. A pass can simultaneously be a political margin and an axis of circulation; a remote pasture can be economically central to communities settled at lower elevations; and a fortified site may control a space that is peripheral in relation to an urban centre but crucial for routes, woodlands or minerals. Marginality is not an intrinsic quality of elevation. It is a relative position that changes according to scale, period and the system under consideration. It is precisely this relativity that the archaeology of mountain landscapes can render historically intelligible.

Making mountains: resources, practices and rights

The fourth theme takes us from the problem of connections to the material and political construction of space. To speak of 'resource exploitation' is useful, but insufficient if it implies that woodlands, pastures, quarries or water are resources simply available for use. The problem is 'how' this happens. The contributions considered here instead suggest that something becomes a resource through knowledge, investment, infrastructure, rights,

customary practices and forms of control. This process does not simply produce income: it produces territory, a landscape.

The Underlandscape project is particularly significant. The study of caves and rock shelters intersects with the history of the compascuo and disputes over grazing rights and woodland use between Vinca, Forno and Minucciano. The authors cautiously stress that there is insufficient evidence to project these management forms back onto supposed protohistoric communal systems. The documentation instead suggests a long medieval phase, from at least the eleventh–twelfth centuries, during which increasing demographic and pastoral pressure made it necessary to define access, boundaries and rights more precisely. The dispute itself signals the emergence of economic pressure on a space previously used within less formalised boundaries (Chiti et al. supra). Conflict thus becomes a source through which to observe territorialisation.

A recent study by Anna Stagno allows the issue to be generalised: channels, enclosures, boundary stones, managed trees and terraces are not merely economic traces, but may materialise possession and rights. In ancien régime societies, continuity of 'doing' and 'seeing it done' could legitimise access to resources, intertwining technical and legal facts (Stagno 2023).

Piuro shows the same process in relation to a different type of resource. Soapstone exploitation is not confined to quarries: it alters slopes and requires tracks, access routes, working areas, storage spaces and connections with settlements. Infrastructure created for extraction can simultaneously serve agriculture, pastoralism and mobility. The productive landscape is therefore not a sum of separate compartments, but infrastructure shared by different practices (Saggioro 2025). Mountains are thus 'made' through labour at least as much as they are used.

The environmental dimension is decisive here. Pastures, woodlands and meadows are not simply portions of nature being used: clearance, fire, charcoal production, irrigation, terracing and paths alter their composition, productivity and accessibility. The quarries of Piuro and the irrigation channels of Val di Sole demonstrate investments capable of transforming the physical organisation of territory over time (Angelucci et al. 2023b). The archaeological mountain landscape is therefore, in a strong sense, a historical landscape.

Architecture also contributes to this production. Matteoni and Pupella interpret the historic built environment of the valleys of Bergamo as an archive of technical knowledge and practices adapted to local conditions, in which material availability, settlement organisation, accessibility and economic functions are continuously negotiated. Continuity in techniques does not imply immobility: tradition and innovation overlap and produce specific building forms (Matteoni and Pupella supra). This is important because it restores materiality to the sometimes overly generic notion of 'adaptation': adapting also means building, maintaining, repairing, selecting materials and transmitting knowledge.

The same environmental opportunity can therefore be activated in different ways over time. This is one reason why models that seek rigidly to explain adaptation to the natural environment are insufficient: similar physical conditions can sustain different social systems

and functions, as the comparison between Alpine communities by Cole and Wolf (1999 [1974]) had already shown at an anthropological level.

Rights finally show that the environment is not only transformed, but institutionalised. Pastures, woodlands, waters and routes become part of systems of ownership, collective use, jurisdiction and control. Underlandscape, Stagno and Piuro thus show that environmental history and institutional history are inseparable. A resource becomes part of a territory through the processes that make it accessible, regulated, defended and transmitted.

A further distinction concerns the specific evidential conditions of historical periods. Comparison across long chronological spans is essential, but it should not obscure the fact that prehistoric and historical landscapes are reconstructed through partly different regimes of evidence. For the medieval and post-medieval periods, archaeological data can often be combined with documentary, legal, fiscal, cartographic and, for the most recent phases, ethnographic sources. This does not make these periods intrinsically more complex or necessarily easier to interpret; rather, it provides a different degree and type of historical resolution, sometimes allowing material practices to be connected more directly with identifiable actors, institutions, rights and conflicts. Historical archaeology has long reflected on precisely this relationship between material and written evidence, stressing that the two should neither be hierarchically ordered nor used merely to confirm one another, but critically confronted as distinct forms of evidence (Andrén 1998; Moreland 2001; Beaudry 2017).

This perspective is particularly relevant to mountain landscapes. Archaeological traces of paths, boundaries, canals, pastoral structures, extraction areas or managed woodland may acquire a different historical significance when they can be related to claims of ownership, jurisdiction, collective rights, taxation or regulated access to resources. Stagno's analysis of the materiality of possession provides a clear example of how technical practices may simultaneously constitute legal and social acts (Stagno 2023), while the documentary reconstruction of the *compascuo* examined by Chiti et al. shows how material landscapes can be read together with changing forms of resource regulation (Chiti et al. supra). At Piuro, documentary evidence and archaeological investigation likewise make it possible to place settlement, extraction and the organisation of slopes within a historically defined economic and territorial system (Saggioro 2025). Orgères offers a comparable integration of archaeological evidence with written sources concerning routes, markets, political authority and the exploitation of Alpine resources (Lebole and Di Gangi 2020).

The disciplinary background of medieval and post-medieval archaeology is significant in this respect. Its long-standing engagement with documentary criticism and institutional history encourages questions that are not always accessible with the same resolution in earlier periods: not only how a resource was exploited, but by whom, under which rights, through which forms of negotiation and within which political framework. This chronological asymmetry should not be removed in the search for common models of mountain occupation. On the contrary, recognising it allows comparison to become more rigorous: similar material configurations may result from very different social arrangements, while historical cases can provide interpretative questions—rather than direct analogies—to be tested against prehistoric evidence.

From this perspective, 'making mountains' means producing environment and society at the same time. Practices modify soils, vegetation, waters and slopes; those same practices define relationships of access, cooperation and conflict; infrastructure connects different activities; rights establish who can use, cross or control particular spaces. Archaeology is particularly well placed to grasp this materiality, especially when it succeeds in integrating physical traces with written documentation, palaeoenvironmental data and local knowledge. It is at this intersection that the notion of landscape acquires its fullest historical meaning.

Concluding remarks. From elevation to mountain systems

The contributions show that it is no longer sufficient simply to reaffirm that mountains are not marginal. The task now is to construct comparable evidence, identify scales capable of making historical systems legible, and integrate environmental, economic, social and political processes without reducing one to another.

The first perspective concerns the record. The assessment of archaeological detectability should become systematic, with visibility, cover, erosion and accessibility conditions recorded alongside the evidence and with procedures developed to allow comparison between areas investigated using different strategies. Contemporary transformations make this issue more urgent. Reforestation, the abandonment of traditional practices, extreme weather events and slope instability are rapidly changing both landscapes and the possibility of documenting fragile structures: channels, enclosures, routes, terraces, charcoal-burning platforms and light structures may disappear or become illegible within a few decades. Environmental history is therefore not only an interpretative tool for the past, but a present condition of preservation.

The second perspective concerns method and scale. Rather than a 'mountain method', what is needed are transparent and adaptive protocols in which survey, excavation, remote sensing, GIS, environmental analyses, written sources and ethnography are combined in relation to specific problems. The effect of operational choices on results should be made explicit, turning bias from an implicit limitation into an explicit component of the research record.

The third perspective is historical: verticality and connectivity should be studied together. Valley floors, slopes and high-elevation areas form complementary systems; passes and corridors insert them into wider networks. Future research should reconstruct flows of people, animals, raw materials, products and rights, using archaeometric provenance studies, isotopes, mobility models tested in the field and the study of infrastructure.

The fourth perspective concerns the social construction of the environment. Woodlands, pastures, waters, quarries and routes should be studied as products of historical practices, with closer attention to the materiality of rights, collective uses, conflicts, infrastructure and the transmission of knowledge. Dialogue between archaeology and environmental history will need to avoid both ecological determinism and an exclusively social reading of territory.

Climate change should also become a more explicit field of future research in mountain archaeology. Climatic variability needs to be considered on two different levels: as a historical factor interacting with land use, mobility, vegetation and resource availability, and as a present-day process that is rapidly modifying the conditions under which the archaeological record

is preserved and detected. Recent Alpine syntheses also caution against establishing direct or deterministic correlations between climatic fluctuations and settlement dynamics, which appear to depend on the interaction of environmental, economic and social factors (Nicolussi supra). Future research should therefore combine high-resolution palaeoenvironmental proxies with archaeological sequences, while also developing monitoring strategies for sites increasingly exposed to erosion, slope instability and extreme events (Angelucci 2024; Putzolu et al. supra).

A final methodological issue concerns chronological comparison itself. The search for recurring patterns in mountain archaeology should not flatten the different epistemological conditions of the periods under investigation. Historical archaeology benefits from the possibility of confronting material evidence with written, legal, fiscal and cartographic sources, often allowing practices to be related to identifiable institutions, actors and systems of rights (Andrén 1998; Moreland 2001). Prehistoric archaeology necessarily reconstructs many of the same processes—mobility, control of resources, territoriality and social organisation—through different sets of proxies. These differences are not an obstacle to comparison, but one of its conditions. Future research should therefore combine the search for long-term processes with greater attention to the specific resolution of the available sources, avoiding both the projection of historically documented institutions into earlier periods and the opposite tendency to treat the mountain as a timeless socio-ecological system.

Within this framework, relationships with contemporary communities also acquire value. MoLuLaP shows how local knowledge and participatory mapping can make practices and places visible that would otherwise be difficult to recognise; at Orgères, excavation has shown how archaeological work can generate knowledge, training and territorial awareness; research on historic built environments highlights the value of techniques and forms of knowledge that are rapidly disappearing. Participation does not, of course, replace archaeological verification, but it can broaden the source base and contribute to preserving information that would otherwise be lost.

Perhaps the most significant shift, then, is from elevation to system. Elevation remains an important environmental parameter, but it is not sufficient to define either an archaeological object or a historical explanation. A site at 1,800 or 2,000 m may be peripheral in one system and central in another; it may be seasonal or permanent, ritual, productive, military or multifunctional; it may depend on the valley floor or control a resource essential to distant communities. Mountain archaeology gains interpretative power when it reconstructs these relationships, measures the filters that condition the record, and treats the environment as an active and historically transformed component of the processes observed. It is in this direction—more relational than altitudinal—that the contributions to the volume seem to indicate some of the most promising avenues for future research.

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