

Conclusion

This study delved into the part landscape and topography play in delineating the role of Koumasa at both the microscale of the settlement and the mesoscale, encompassing its location in the surrounding valley and mountains. The analysis was enhanced by employing modern GIS methodologies, the evaluation of which was the second focus of the study. While staying on the main subject, which is Minoan Koumasa and its function within its region, it indicated schemata for similar investigations and criteria for assessing their results. Each chapter within this dissertation is designed to function as an independent, cohesive unit while contributing to the overall unity of the work.

Concerning the specific area under investigation, its pivotal position within the mobility networks during the palace periods as well as its subsequent decline were aligned with the surrounding topography, the usage of which varied across different historical periods.

The area of Koumasa, where activity is primarily observed during the Prepalatial period in the necropolis and throughout the rest of the settlement during the Proto-palatial phases, as well as in LM I and later partially in LM III and in Roman times, presents a risk when assuming a monocausal use for all its occupation. Therefore, the diachronic study presented above aided in the evaluation of each phase. In the Proto-palatial and Neopalatial periods, elements that exceed the domestic use are observable that were intergraded in the local topography, be they symbolic, cultic or profane in nature.

Liminality and sensory approach of the correlation between lived-in space and livelihood was explored within the microscale, as well as seen in the implementation of architecture and the landscape in general in the mesoscale, studying the consequences of the existence of only a few access points to the southern shore of central Asterousia. The latter is the determining factor in the interaction with the macroscale. Koumasa forms a regional node where paths accumulate in a local hub. Its significance is intrinsically tied to these paths; however, the eventual decline in their importance, driven by broader historical developments on the island and shifts in the relative prominence of its territories, resulted in the region reverting to the peripheral role dictated by its topography, or the predisposition of the landscape.

In this analysis, the theoretical approaches implemented showcase the active relation of a settlement with the surrounding natural environment and, more specifically, the effect of the mountains in forming a paradigm that was mirrored in the actions of

the society, including in the architectural arrangement, especially for the most elevated parts of the settlement.

State of Research, Heritage Landscape, and Topography

To begin with, the characteristics of Koumasa's location were summarised in topographical, geological, and sociological factors and were seen in relation to the various categorisations of the region (Chapters 1.1; expanded in Chapter 3.1).

Following this, the history of research and archaeological finds in Koumasa and the perception of its location within the academic community was summarised (Chapter 1.2), emphasising the elements that aided in its categorisation as peripheral. Within this, the need to reassess older theories has become increasingly evident. This is also regarded as true for the wider region of central Messara and Asterousia, which greatly benefits from a holistic approach that integrates insights from landscape archaeology and the frameworks of *entopia* and heritage landscape. These approaches reach beyond archaeology, encompassing the surrounding topography, including land use, geology, and diachrony of human activity and the *grammar of location*.

Within this holistic approach, a diachronic summary of the region was presented alongside the evidence from Koumasa. The study of the historical evolution of the area (described in Chapter 2) illustrates Koumasa not as part of an unchanging terrain but as a palimpsest formed by the successive presence throughout the region's history, showcasing the radical oscillation in the relevance of the region from centrality to obscurity. This was first seen in relation to the rest of Asterousia, and then, in Postminoan times (Chapter 2.5), when the obscurity slowly expands to the whole of Asterousia, as characteristically evident in the relative absence of the range's name in the ancient sources, and to an extent therefore in the modern research.

Chapter 3 presented research history, input from archaeobotanical studies, the climate in the general region, and the challenges of research. The latter's challenging aspects were laid out, and nuanced approaches in the evaluation of older and new data were introduced (Chapter 3.1). In Chapter 3.2, the perception of the stark duality between mountain and valley as a modern construct was discussed, noting its impact on the analysis of past cultures, which was addressed in the rest of the study. Following this, a discussion of the status of the geological and archaeobotanical features and environment of the region in ancient times (Chapter 3.4) revealed the relative stability of the mountain and seashore, but the changes in climate and vegetation density were noted. Although these fluctuated during the span of Minoan activity, the area seems to have been more humid overall. While the cultivation in the Messara was more diverse, a significant presence of olive trees can be observed in Koumasa.

A synthesis of the topographically related studies in this work shows that Koumasa lies at the junction of the western and eastern Messara, a vertical division which – although not arbitrary as it relies on the water catchment and symmetry regarding the

Kophinas mountain – is not as influential regarding the perception of everyday activity as the horizontal division is; the one between mountain and valley. This division is clearly perceived by the dwellers in the region, delineating two realms of everyday experience: one in the valley, which is observable within the viewshed, and the other in the mountainous area, which, though concealed by the abrupt rise of the range, remains relevant.

The role of topography in shaping these historical preferences was pursued, identifying points of interest that provided Koumasa with elements of centrality and liminality during its heyday in the palatial periods, and whose absence in the subsequent periods gradually led to its phasing into obscurity. These being the degree of exclusivity regarding the control over a number of otherwise isolated harbour areas and towards the peak of the Kophinas for those approaching from the central and western Messara and beyond. These characteristics would change this region from a peripheral part with regards to the western Messara – the traditionally perceived cultural entity of the region – to one of many peripheral centres in the wider Asterousia-Messara region, with a connectivity factor between the valley, the mountain, and the sea. The gradual shift of the networks of significance could be understood in a closer look at the Postminoan activity in the region, which was deemed necessary in understanding the topographical characteristics as a tapestry which was used differently in each epoch.

Utilisation of GIS Methods

An integral part of this study was the analysis of the topography. To this aim, the GIS analysis (introduced in Part II and applied throughout this study) was implemented, using Geographic Information System (GIS) tools applied to a Digital Elevation Model (DEM), particularly the viewshed, watershed, and movement modelling tools. The utilisation of GIS methodologies has offered an innovative approach to shed light on a region that has hitherto received limited exploration, particularly the central Asterousia.

In the bibliography, these methods are not always used to their full potential, and there is room for wider and more precise applications in archaeology, for which an intrinsic understanding of the methods and functions is needed. These were analysed in various iterations, and methods of a critical approach towards them and their utilisation were proposed, also hoping to act as a model or example for similar investigations.

Modelling movement was performed in three levels. First, the ubiquitous *least-cost-paths* analysis, of which various iterations were performed, was then expanded to network connectivity analyses and focal mobility networks. Through these techniques, patterns and relationships within the landscape were discerned. Subsequently, the paths delineated by GIS were physically traversed, allowing for a firsthand assessment of their practicality as well as identification of their limitations. This combined method has provided insight into the strategic networks that underscore the importance of sites

proximate to the Messara region, such as Apesokari and Koumasa, mainly during the MM and LM periods and also beyond.

Moreover, a comprehensive analysis of water flow accumulation and watershed was conducted through hydrological analysis and watershed toolsets, followed by a critical evaluation of the findings. The examination revealed the seasonal dynamics of streams to be of particular significance, particularly in relation to the proximity of the Minoan tholoi. This systematic approach offers valuable insights into the distribution of tholoi in the Messara region in a holistic manner and adds to the discussion of early settlements and their cultural trajectories (Chapter 9.3).

The procedures were carried out utilising tools available in both QGIS and ArcGIS platforms, facilitating a nuanced discussion regarding their usability and accessibility.

As outlined in Chapter 4 and subsequently implemented in Chapter 5, the methodologies and functions employed represent a diverse array commonly utilised in archaeology. Unlike singular applications, this study integrated multiple methods concurrently and across various platforms. This approach was driven by the imperative of ensuring quality control and aimed to maximise insights and extract the most from the available methods. When scrutinised in detail, each method and function offers distinct perspectives, thereby enriching the overall analysis. Specifically, the same steps were repeated with different functions so that their results could be compared with each other and furthermore parallelised with the actual situation on the ground (a step often missing in similar applications). Indeed, the use of multiple iterations provides a nuanced perspective on the topographic features under study, enabling a comprehensive exploration of their potentials and limitations and overall applicability, as some were deemed more fitting for mountainous terrain and others more applicable in the valley. Moreover, this approach fosters a deeper comprehension of the capabilities and constraints inherent in each function. Consequently, contradictory findings are not perceived as shortcomings but rather as opportunities for heightened insight and refinement of interpretations. The evaluation of these functions was further enhanced by actually walking in the area under study, allowing for a critical assessment of the practicality and accuracy of the paths suggested by GIS against the actual terrain traversed, as elaborated in Chapter 11. This approach led to a better overall understanding of the region of central and western-central Asterousia, and the role of Koumasa within it.

Results Through the Three-Scale Approach

The main outcomes of this study are summarised below within the tripartite scale approach discussed in the preface. While the enumeration can be restrictive, it aids in condensing the main points in the presentation of the results.

First in the concise enumeration of the results is the discussion within Part I. Although encompassing various sub-results, the cumulative outcome is the exploration of

a lesser-known area through the lens of archaeology, enriched by concepts of heritage and cultural archaeology.

Regarding the role of the area within the broader context of Crete in Minoan times, referred to as the *macroscale* (Chapter 10), the focus was primarily on redefining cultural and economic dependencies with other regions, such as the Pediada region and northcentral Crete. This aimed to offer a disentanglement from the monosemantic association with the Phaistos region, which has previously dominated the interpretative frameworks, as well as the state-like understanding of territories. An exploration of state formation theories was undertaken, coupled with an analysis of the location of Koumasa within the communication networks of the island. This analysis was facilitated by the use of GIS methods in mapping and studying spatial relationships.

Thus, a second result highlights the significant Cretan connections, particularly the proximity to the lesser-studied Anapodaris basin, including sites such as Dhamantri and Rotasi, and extending further to Pediada and Galatas. Indeed, similarities of the LM I material from Koumasa with that of Skinias or Dhamantri that, as the GIS analysis shows, is closer than Phaistos alludes to more complicated sources of influence to Minoan Koumasa. The position of Koumasa shows parallels to Apesokari and Rotasi as locations on the northern Asterousia, positioned between valley and mountain, sharing similar social needs and topographical characteristics.

The relation of Koumasa with its surrounding environment of daily entanglement was dubbed the *mesoscale*. Within this, the valley and mountainous part were studied separately for reasons of approachability in Chapters 9 and 11. The other geographic characteristic is the local southwards expansion of the valley in a semicircular fashion, which is supervised by the Korakies hill at Koumasa, and whose evidence of historic habitation and usage was analysed (Chapters 2.3, 9.2).

Third, the surrounding tholoi were examined, along with aspects related to social behaviour during the period associated with them. This process, which included a viewshed analysis and determination of path networks, deemed a three-way partition of the tholoi assemblages into those in the valley, on the mountain, and shore areas necessary (Chapter 9.2). The influence of topography, i.e. their vicinity to waterways, was also analysed and quantified (Chapters 2.3, 5.5, 9.3). Particularly for those referred to as mountainous tholoi, which exist within the *mesoscale* of Koumasa, there are complementary viewsheds but almost no overlap, suggesting a degree of territoriality concerning the areas covered by each. This behaviour is also observable for the pair Platanos and Koumasa, the two largest necropoleis. Overall, this analysis underscores Koumasa's position within the parameters favouring tholoi concentration while offering greater visibility potential.

Fourth, an innovative and much-needed redefinition of the Asterousia mountains into five regions is introduced, with its areas serving as the backdrop of a palimpsest of historic development, placing them in context. This partition fits the topographical characteristics, as additionally explored on the basis of GIS analysis and walking expe-

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riences as well as social behaviour (Chapter 9.1). These are seen to influence the local trajectories throughout the habitation period in the Asterousia.

Fifth, the peripheral location of Koumasa in relation to the island's primary arteries was confirmed and an explanation for its nevertheless noticeable significance during the Protopalatial and then LM I period given. For this, particularly the role of the connection to the sea and to Kophinas sanctuary was considered for this period as well as for the lifespan of the tholoi. Specifically, it was demonstrated that the location of Koumasa serves as a regional centre, functioning as an interaction node that concentrates movement specific to the regions of central and western-central Asterousia (Chapter 11). Nestled in a niche of the valley, where the mountain is steepest, this area provides the best views and serves as a hub for paths converging from various directions. The area oversees the communication with secluded bays where activity in Minoan times and beyond is noted, with a relatively dense activity in the time coinciding with the building programme in Koumasa. The access to those in central Asterousia – namely Salamias and Ayios Ioannis – was deemed exclusive, while for Trypiti in western-central Asterousia the area of Apesokari was shown to share access. Furthermore, Koumasa lies on the vicinity of the main routes to the mountainous tholoi of west-central Asterousia and overlooks the main path to the central Asterousia, which includes the peak of Kophinas when approached from western and central Messara. It, therefore, links the trails leading to the mountainous tholoi in western-central Asterousia on one side and central Asterousia on the other, connecting both the Kophinas sanctuary and the coastal regions.

Sixth, in addition to the material reasons, the psychological and symbolic factors associated with walking in the mountains were also analysed as catalysts for the formation of a local identity, of which the association with Kophinas peak was regarded as a materialisation. (Chapters 11.1, 11.4, 12).

The *microscale* of Koumasa (mainly in Part III) was analysed in terms of movement, visibilities and general characteristics such as slope and watershed with the aid of a local DEM in Chapter 6. The area was seen as transitional between the valley and the mountain, including this quality within its topographical expanse.

The seventh result lies in the analysis of Koumasa's topographically central feature, which is in the so-called 'sanctuary'. This older term is now considered outdated and retained primarily for traditional reasons, as it is firmly established in the bibliography. However, the analysis reveals that it functioned as a focal point of the area and a site of consumption and manufactured symbolism, extending inwards and outwards of the settlement. This was examined in terms of centrality and liminality (Chapters 7, 8). The architecture appears to emphasise and literally build upon the topographical characteristics. The particularity of Koumasa that enables the manifestation of centrality and liminality is demonstrated as being embodied within the *microscale*, reflecting its role within the broader Messara-Asterousia region. Here, the location of Koumasa was irregular concerning the topographical criteria governing the region, and a regional approach was chosen to offer a framework for the interpretation of this previously noted discrepancy. Under this light, the archaeological examination of the Koumasa

‘sanctuary’, aside from its benefits for the community of Aegean Archaeology, may also provide a paradigm for applying methodological approaches that could be extended to broader social and anthropological inquiries concerning architectural practices around hill summits.

Eighth, the investigation of the aforementioned paths and terrains, in all three scales, employed a combination of GIS methods and the act of walking, yielding valuable insights into GIS methodologies, as summarised independently above. Additionally, the experiential aspect of walking itself, coupled with input from local knowledge – often overlooked in GIS analyses – hopes to provide a contribution into the application of this ever-growing methodology. This work thus presents a case study that highlights the efficacy of GIS methods in archaeology. It not only examines their reliability but also presents a methodology for outlining their limitations and applicability, thereby facilitating their acceptance within the archaeological community and serving as a guide for future applications.

This study aimed to showcase the significance of the Koumasa settlement within its broader environmental context, shedding light on how it defied its topographical constraints, as evidenced by the hierarchical communication network map. During its heyday, the nodal characteristics of Koumasa effectively addressed the specific needs of its time, leveraging its strategic positioning in order to overcome limitations, a fact that is mirrored in the architectural activity around Korakies hill. However, as societal needs evolved over time, the area gradually slipped into obscurity – a trend that persisted and became more pronounced with time, up into the 20th century. Ironically, contemporary archaeological endeavours in the region may be catalysing a reversal of this trend, highlighting the transformative potential of archaeological research in reshaping the regions where they occur, acting as yet another pen-stroke in the ever-reused and continuously evolving palimpsest that is the historical landscape of central Messara-Asterousia.