

Editorial

Historical Ecology, Archaeology and Biocultural Landscapes: Cross-Disciplinary Approaches to the Long Anthropocene

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1. Conceptual Background

From the local to the global scale, human impact is the real protagonist of the Anthropocene. It is impossible to understand ecosystems and the landscape without considering the long-term processes of anthropic activities. The driving forces in landscape change are strongly related to historical dynamics. Changes in political regimes, social structures, economic modes of production, cultural and religious influences—which all traditionally fall within the domain of the humanities—are phenomena entangled with many ecological and environmental factors. Thus, understanding landscapes in the Anthropocene is impossible without a cross-disciplinary approach.

During the last few decades, the discipline of archaeology has especially increased its focus on human-environment interactions and landscape-formative processes.

Landscape trajectories can be investigated through two different points of view: reconstructing vanished landscapes and examining the historical layers in contemporary landscapes. Vanished landscapes are the main object of study for many “archaeologies” (landscape archaeology, environmental archaeology, geoarchaeology) and “paleo” disciplines (paleoecology, paleoclimatology, paleogeography) that aim to reconstruct the non-visible past. The second approach focuses on the contemporary landscape as a palimpsest formed by various historical layers in which evidence of the relationship between the human footprint and ecological patterns can be detected. Nevertheless, both approaches, one based on “hidden traces” and the other on current layered contexts, share a concept of landscape as a complex and heterogeneous mosaic of spaces where it is possible to read both the temporal dynamics (historical stratification) and the specific characteristics of individual patches situated in various ecotopes, a series of hierarchical relationships between climatic conditions, substrates, landforms, soils, vegetation and human activities.

Although the potential of a historical approach has been recognized for a full understanding of the processes in progress and in future trajectories of landscape, full interdisciplinary integration is still weak. It should be noted that an interdisciplinary approach doesn't mean that different disciplines study the same landscape at the same time but instead means that different disciplines merge together in new integrated ways. There is a long way to go to achieve this integration.

Recently (2015–2022), a synergy between archeology and landscape ecology, declined as a “middle-earth” between landscape archaeology and historical ecology, has inspired the Harvesting Memories Project [1]. This project concentrates on the Sicani Mountains as a case study, analyzing a schedule of long-term human-environment interactions with an interdisciplinary and multi-methodological approach thanks to: surveys [2]; archaeological excavations [3]; multi temporal land use changes [4]; vegetation dynamic studies [5]; archaeobotanical and archaeozoological analyses [6] and geological raw material catchment area studies [7].



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To stimulate an interdisciplinary debate, a symposium was organized at the 10th IALE World Congress, held in Milan (Italy) in July 2019, entitled “Landscape trajectories during the long Anthropocene: dialogues between Ecology and Archaeology”. The legacy of this symposium is collected in this Special Issue, whose main aim is to combine and stimulate an interdisciplinary debate between landscape archaeology, historical ecology, human-environment interaction and sustainability.

2. Structure of the Studies

The twelve papers (ten research articles and two reviews) in this Special Issue can be organized according to several aspects.

The majority of presented case studies are about Italy: four articles [8–10] and one review [11] are on Sicily and one article is on Southern Italy [12]. Four articles regard different parts of Europe, including the French Pyrenees [13], Scandinavia [14] and Slovenia [15]. The remaining studies address [16], California/French Polynesia [17] and a review on Brazil [18]. This demonstrates the global interest in the topic of Historical Ecology.

The different topics addressed by the articles of this Special Issue are divided into three thematic sections: (1) Historical Ecology; (2) Archaeology and Long Anthropocene; (3) Anthropocene and Landscape Heritage.

The first section deals with theoretical themes and case studies from the discipline of “Historical Ecology”.

Crumley [19] presents the interdisciplinary and applicative context in which historical ecology moves and shows the importance of (1) bridging the past with the present (and future) to understand current ecological problems, and (2) developing solutions and strategies based on such an understanding, integrating research results into policies. In this respect, the article presents “historical ecology” as a framework to study ecosystems, landscapes, and waterscapes in a long-term perspective. This paper evaluates how practitioners could adjust aspects of practice and improve access to policy makers, and the discussion applies to regions and localities everywhere.

With their case study of Scandinavian infield systems, Eriksson et al. [14], shows how the theoretical framework of historical ecology is fundamental for understanding the meaning and intensity of landscape changes but also for applying different theoretical models such as the theory of human niche construction as a framework for evaluating the role of internal and external driving forces in human-environment interactions.

Even beyond Europe, historical ecology has had various thematic developments and interdisciplinary applications as presented by Lazos-Ruiz et al.’s [18] review regarding Brazil. Brazilian historical ecology is shown to be an interdisciplinary field in which environmental sciences, anthropology, and archeology meet to address issues such as the impact of European colonization in landscape transformations (especially of Amazon and Atlantic Forest biomes) and also in highlighting the great role played by Brazilian ethnic diversity, even if some geographic areas (such as Pantanal, Caatinga, Pampa, and Cerrado biomes) still need to be better investigated, as well as issues concerning animal species or seascapes.

The second section concerns approaches related to the long duration and the dynamics of the Long Anthropocene according to archaeological perspectives but always from an interdisciplinary perspective.

The long-term sustainability of mountain landscapes is a central theme of the case study on the Sicani Mountains, analyzed by Bazan et al. [9], in which the archaeological and archaeobotanical data shows a precise diachronic and temporal halving used to compare the phytosociological trajectories of current vegetation with the historical use of forest resources.

Mountain landscapes are proven case studies for understanding man-environment changes in the long term to try to understand the impact on sustainability of historical changes in relation to the environmental dynamics of a territory. Gragson et al.’s study [13] of the French Western Pyrenees also moves in this direction, focusing on the role of pastoral-

ism and land change during the Long Anthropocene through the intertwining of different analysis tools such as the qualitative/quantitative study of written sources, archival sources, geospatial analyses, ethnographic interviews, surveys and archaeological excavations, in chronological and palaeoecological investigations of sedimentary archives.

A long-term correlation between historical site selection patterns and the edge effect of the ecological transition zone is addressed in the article by Zhu et al. [16] focused on mountainous and plain areas on the margins of Ningbo in Zhejiang Province in China. This approach has very promising considerations for observing the distribution of archaeological sites using tools from landscape ecology such as ecological pattern analysis or ecological patch distribution to model the characteristics of the landscape in relation to settlement location selection.

Human history, population dynamics and landscape changes of the long Anthropocene are discussed in the review by Romano et al. [11]. The cultural and demographic history of Sicily (Italy) was read through the perspectives of archaeogenetics and paleobotany, analyzing the ecological constraints imposed by the peopling of the island in relation to changes in the landscape that have taken place since prehistory. First, the paper presents the history of genetic and paleogenetic studies of the Sicilian populations, and secondly, it presents a historical study of the vegetation that aims to discover anthropization markers that could provide important insights into the reconstruction of the demographic aspects of human history.

In the third section, the concept of Anthropocene was analyzed according to various theoretical aspects and applied to different cases according to a perspective connected to the themes of cultural landscapes and seascapes.

Schicchi et al. [10] consider century-old olive trees as elements of “biocultural heritage”, like some stone monuments, because these cultivated plants tell the story of the Mediterranean landscape through the Anthropocene thanks to their long lifespan. Indeed, monumental trees are key elements for the interpretation of the traditional rural landscape, in which the historical-anthropological components are intimately connected to the natural ones.

Humans are not the only active actor changing the landscape, as shown by the study by Ellis Burnet et al. [15] on the dynamics of rewilding in the Goričko Landscape Park (North-East Slovenia). It presents an interesting perspective on the concept of the Cultural Landscape in places where abandonment and de-anthropization constitute new spaces that are ecologically favorable to the restoration of new re-naturalized habitats.

The Great Acceleration of the Anthropocene and the challenges posed by transformations taking place in those landscapes defined “reserves of history” is at the center of the article by Badami [8] on the Valley of the Temples in Agrigento (Sicily, Italy) discussing the various good practices in land management that have enhanced this landscape as a natural and cultural ecosystem.

A new interpretation of the concept of Anthropocene has been proposed by Carta and Ronsivalle [12] that they call “Neoanthropocene”. It consists in a radical innovation towards a renewed homeostatic relationship between Earth and mankind. The authors apply this new paradigm to the planning of Lucania Apennines Park’s (Southern Italy) following a circular approach to nature preservation and territorial development, testing a new protocol based on a fertile relationship between multiple interests, stakeholders, and authorities.

The debate over the Anthropocene as a “boundary object” that can also be declined in different ways such as “Capitalocene” or “Plantationocene” is at the center of the reflections in the article by Braje and Lauer [17], which examine the history of anthropogenic seascapes in two case studies in California and French Polynesia in an innovative way to demonstrate how “Anthropocene concept stimulates new lines of inquiry into the long, discontinuous, and complicated distribution and redistribution of human and non-human agencies; necessitates trans-disciplinary research agendas; and facilitates the communication of political and environmental management messages to the public” [17].

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References

1. Bazan, G.; Castrorao Barba, A.; Speciale, C.; Miccichè, R.; Pisciotta, F.; Aleo Nero, C.; Marino, P. The Harvesting Memories Project: Historical ecology and landscape changes of the Sicani Mountains in Sicily. *Ecocycles* **2022**, *8*, 51–60. [[CrossRef](#)]
2. Castrorao Barba, A.; Rotolo, A.; Bazan, G.; Marino, P.; Vassallo, S. Long-term human occupation of a rural landscape in Central-Western Sicily (Castro/Giardinello Valley and Mt Barraù): Harvesting Memories project case study. *ArkeoGazte* **2017**, *7*, 175–192.
3. Castrorao Barba, A.; Miccichè, R.; Pisciotta, F.; Speciale, C.; Aleo Nero, C.; Vassallo, S.; Marino, P.; Bazan, G. Nuovi dati sull’occupazione altomedievale dell’insediamento di Contrada Castro (Corleone, Palermo) nell’area dei Monti Sicani. *FOLDR J. Fasti Online* **2020**, *468*, 1–15.
4. Bazan, G.; Castrorao Barba, A.; Rotolo, A.; Marino, P. Geobotanical approach to detect land-use change of a Mediterranean landscape: A case study in Central-Western Sicily. *Geo J.* **2019**, *84*, 795–811. [[CrossRef](#)]
5. Bazan, G.; Castrorao Barba, A.; Rotolo, A.; Marino, P. Vegetation series as a marker of interactions between rural settlements and landscape: New insights from the archaeological record in Western Sicily. *Landscape Res.* **2020**, *45*, 484–502. [[CrossRef](#)]
6. Castrorao Barba, A.; Speciale, C.; Miccichè, R.; Pisciotta, F.; Aleo Nero, C.; Marino, P.; Bazan, G. The Sicilian Countryside in the Early Middle Ages: Human-Environment Interactions at Contrada Castro. *Environ. Archaeol.* **2021**, 1–16. [[CrossRef](#)]
7. Montana, G.; Gasparo Morticelli, M.; Bazan, G.; Pisciotta, F.; Aleo Nero, C.; Marino, P.; Castrorao Barba, A. Sources of geomaterials in the Sicani Mountains during the Early Middle Ages: A case study of Contrada Castro, central western Sicily. *Geoarchaeology* **2022**, 1–20. [[CrossRef](#)]
8. Badami, A.A. Managing the Historical Agricultural Landscape in the Sicilian Anthropocene Context. The Landscape of the Valley of the Temples as a Time Capsule. *Sustainability* **2021**, *13*, 4480. [[CrossRef](#)]
9. Bazan, G.; Speciale, C.; Castrorao Barba, A.; Cambria, S.; Miccichè, R.; Marino, P. Historical Suitability and Sustainability of Sicani Mountains Landscape (Western Sicily): An Integrated Approach of Phytosociology and Archaeobotany. *Sustainability* **2020**, *12*, 3201. [[CrossRef](#)]
10. Schicchi, R.; Speciale, C.; Amato, F.; Bazan, G.; Di Noto, G.; Marino, P.; Ricciardo, P.; Geraci, A. The Monumental Olive Trees as Biocultural Heritage of Mediterranean Landscapes: The Case Study of Sicily. *Sustainability* **2021**, *13*, 6767. [[CrossRef](#)]
11. Romano, V.; Catalano, G.; Bazan, G.; Cali, F.; Sineo, L. Archaeogenetics and Landscape Dynamics in Sicily during the Holocene: A Review. *Sustainability* **2021**, *13*, 9469. [[CrossRef](#)]
12. Carta, M.; Ronsivalle, D. Neanthropocene Raising and Protection of Natural and Cultural Heritage: A Case Study in Southern Italy. *Sustainability* **2020**, *12*, 4186. [[CrossRef](#)]
13. Gragson, T.L.; Coughlan, M.R.; Leigh, D.S. Contingency and Agency in the Mountain Landscapes of the Western Pyrenees: A Place-Based Approach to the Long Anthropocene. *Sustainability* **2020**, *12*, 3882. [[CrossRef](#)]
14. Eriksson, O.; Arnell, M.; Lindholm, K.-J. Historical Ecology of Scandinavian Infield Systems. *Sustainability* **2021**, *13*, 817. [[CrossRef](#)]
15. Ellis Burnet, J.; Ribeiro, D.; Liu, W. Transition and Transformation of a Rural Landscape: Abandonment and Rewilding. *Sustainability* **2021**, *13*, 5130. [[CrossRef](#)]
16. Zhu, J.; Yu, L.; Nie, Y.; Liu, F.; Sun, Y.; Zhang, Y.; Song, W. Ancient Environmental Preference and the Site Selection Pattern Based on the Edge Effect and Network Structure in An Ecosystem. *Sustainability* **2020**, *12*, 328. [[CrossRef](#)]
17. Braje, T.J.; Lauer, M. A Meaningful Anthropocene?: Golden Spikes, Transitions, Boundary Objects, and Anthropogenic Seascapes. *Sustainability* **2020**, *12*, 6459. [[CrossRef](#)]
18. Lazos-Ruiz, A.E.; Rodrigues, A.F.; Sales, G.P.d.S.; Brasil, L.S.C.d.A.; Fraga, J.S.; D’Orey, M.; Solórzano, A.; Oliveira, R.R.D. Historical Ecology in Brazil: A Systematic Mapping of Scientific Articles (1998–2021). *Sustainability* **2021**, *13*, 11526. [[CrossRef](#)]
19. Crumley, C.L. Historical Ecology: A Robust Bridge between Archaeology and Ecology. *Sustainability* **2021**, *13*, 8210. [[CrossRef](#)]