

# **Sustainability in Antiquity? Archaeological Data from Attica and Sicily**

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Classical archeology was established in the 18<sup>th</sup> century as a science of ancient art.<sup>1</sup> Of course, at the beginning of the 21<sup>st</sup> century, it developed into a much broader science of the material legacies of antiquity, focusing on structures, cities, cemeteries, and sanctuaries while taking into account environmental factors,<sup>2</sup> the natural influences on settlements and economics and even on the great Greek colonization.<sup>3</sup> Landscape Archeology looks at ancient settlements and economic forms on a large scale and addresses the environmental influences in cooperation with the natural, geoscience and landscape sciences.<sup>4</sup>

It is clear that natural space has had a decisive influence on ancient civilizations. The Greek culture with its tiny states, Poleis, would be inconceivable without the sea and its many islands. In addition, even individual islands are often divided into different poleis. The marble sculpture, which can be considered a fundamental phenomenon of ancient material culture and art, and the marble temples would not have been possible without the exploitation of various marble deposits on the islands<sup>5</sup> and in mainland Greece.<sup>6</sup>

The Greek pictorial art and the myth also thematized the natural foundations of the poleis. In the western pediment of the Parthenon, the dispute between the gods Athena and Poseidon for the possession of Attica is shown. This is one of the founding myths of the Attic polis, which due to the powerful position of the city gains new relevance in the 5<sup>th</sup> cent. BC and was iconographically conceived in a new way. The quarrel is carried out in the manner of a Greek competition (agon) with the gifts of nature: Poseidon hits with his trident a spring of salty water, while Athena plants an olive tree.<sup>7</sup> Both divine acts were worshiped at the Erechtheion on the Acropolis.<sup>8</sup> Of course, Athena won the competition, because the olive tree has been the dominant crop of Attica since ancient times. Nature gives the guidelines for human development. Spiritual and religious ideas evolve not least around natural resources.

## **Sustainability and Archaeology**

However, sustainability describes an even more complex relationship between man and nature. In Greco-Roman antiquity, a word for sustainability was missing. It came into being only in the 18<sup>th</sup> century,<sup>9</sup> and nowadays it finds an unexpected frequent use in different contexts.<sup>10</sup> Sustainability is required not only for dealing with the resources of nature, but also for social interaction and much more. However, literary sources have confirmed that the idea of conserving resources already existed in antiquity.<sup>11</sup>

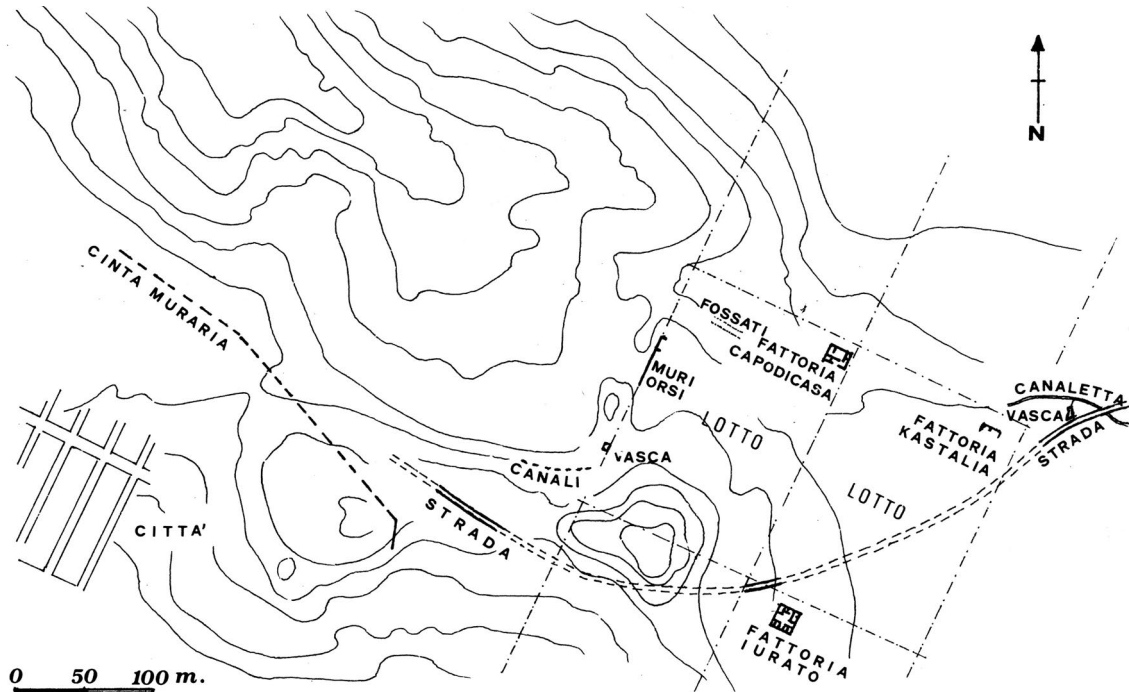


Fig. 1: Lots in the Chora of Camarina.

In the archaeological literature, as collected in the most complete bibliography ([www.dyabola.de](http://www.dyabola.de)), in fall 2018 the German term “Nachhaltigkeit” comes up only once, related to building physics concepts for museums.<sup>12</sup> The English word “sustainability”, however, is already found five times.<sup>13</sup> Of course, the use of the terminology “sustainability” in the archeological literature is growing rapidly. Only a few months ago, the German version was lacking at all, the English only found once.

### Sustainability, Romanticism and Cultural Criticism

For the ancient world, one would, therefore, have to start from a rather simple concept of sustainability, in essence, that of the 18<sup>th</sup> century: Was there a discourse on how one could use natural resources in such a way that these were available in the long term? Naturally, the discourse will be less visible from the archaeological and material sources than from the outcomes and results. One might ask whether Greco-Roman antiquity was able to sustainably manage natural resources in this sense. However, it cannot be a matter of romanticizing early societies or of declaring the ancients sustainable by necessity. A conceivable alternative would have been that the ancient cultures had failed to act sustainably, that the discourse on sustainable economics had failed or not been conducted at all. Especially Roman antiquity is often assumed to have caused the



Fig. 2: Bellaccio, Farm and necropolis.



Fig. 3: Bellaccio, black gloss and louterion.





Fig. 4: Torre Piombo, probable Roman villa.

deforestation of large parts of the Mediterranean through shipbuilding or the excessive use of firewood in the thermal baths. In a culture-critical approach, the Roman Empire is more likely to be seen as a destroying force to the environment.<sup>14</sup>

### **Overexploitation and Sustainability in the Attic Mining District of Laureion**

An important economic resource of classical Athenian democracy was the silver of Laureion. It was obtained in shafts in south Attica and processed in numerous laundries and smelting furnaces.<sup>15</sup> The landscape in south Attika was until a few decades ago characterized by macchia and lack of forest, while in early times undoubtedly forests were present.<sup>16</sup> It is unclear when the forest has disappeared. It is clear, however, that the processing of silver ore and the extraction of silver in ancient times required large quantities of water and wood. For example, large concentrations of laundries can be found in the Soureza and Agrileza valleys, as well as in the Berzeko valley and in Thorikos itself. In Thorikos one can study how the laundries were designed and placed. On the one hand, there were silver deposits, because in the immediate vicinity there were shafts for the extraction of ore. At the same time, however, the situation in sloping valleys was extremely favorable for the collection of water from the slopes. It was kept in large cisterns, each providing for a laundry.<sup>17</sup>



Fig. 5: Torre Piombo, italian and african terra sigillata.

However, there is only one 5<sup>th</sup> century BC furnace in this area. Altogether only three or four furnaces are known. In the 4<sup>th</sup> century BC, the smelting was done at the coast. An example of this is the bay Panormos between Thorikos and Sounion. Above the beach, on a rocky ridge, several kilns for silver smelting were installed. Only a few meters away, in the flat beach water, to this day various walls are visible, that should belong to the harbor. Further smelting furnaces are known near Thorikos in the Frangkolimani and south of today's Lavrio on the peninsula Oxygono.<sup>18</sup> It was possible to import wood from woody regions, e.g. from northern Greece and to operate the silver kilns. A little further inland was a large peristyle, perhaps an agora for the sale of the goods.<sup>19</sup>

This results in a picture of a sustainable water use and an unsustainable wood industry. The water could only be used in the quantities available through the winter rains. Therefore, the water was handled with great care, collected in the cisterns, and used several times by taking it out of the circuit of the ore washery at the end, in order to use it again, probably several times. The water was sustainably managed. Not so, the wood, which must have been exhausted quickly after the beginning of the silver industry, so that one relied on imported wood. Therefore, the smelting was moved to the shores, where the wood could be landed with ships.





Fig. 6: Carnala, Roman village.

### **Göttingen Archaeological Survey Projects in Sicily and Sustainability**

Landscape Archeology has evolved into a tool ideally suited to answer questions regarding the economy, sustainability, and landscape change. The University of Göttingen has conducted several archaeological surveys in Sicily. While in Gela an archaeological pottery survey was carried out, enriched by geological investigations of coastal change and scientific analysis of some of the collected materials.<sup>20</sup> In the hinterland of Agrigento<sup>21</sup> and Camarina<sup>22</sup> geophysical investigations were carried out additionally; in Camarina paleobiological research took place as well. Within the framework of the Göttingen project “Sustainability as an argument: sufficiency, efficiency, and resilience



Fig. 7: Carnala, african terra sigillata.

as parameters of anthropogenic action in history”, the results of the mentioned projects were augmented with the aspect of sustainability.

### **Settlement Shift from Greek to Roman Times in the Hinterland of Camarina**

In the surroundings of Camarina (founded 599 BC) in 461 BC the ownership of the land has been redistributed, according to historical sources. On this occasion, a regular division of land was implemented, whose rectangular lots were aligned with streets and covered a part of the country close to the city (fig. 1).<sup>23</sup> In the area close to the city, this resulted in a very dense land use, almost every 200 m there is a site, mostly individual farms and associated necropolises like in the location Bellaccio (fig. 2. 3). This dense settlement of the Camarina countryside dates mainly to the 5<sup>th</sup> and 4<sup>th</sup> centuries BC, given the pottery evidence. After that, the density of sites in this area is decreasing dramatically, falling from the 4<sup>th</sup> to the 3<sup>rd</sup> century BC from 20 to only 10 occurrences of the 3<sup>rd</sup> to 1<sup>st</sup> century BC. This is connected on the one hand to the end of the city of Camarina in the 3<sup>rd</sup> century BC and its destruction in the First Punic War. As in other cities on the south coast of Sicily, namely in Gela, the settlement of the surrounding area after the abandonment of the urban centers is significantly reduced.<sup>24</sup>



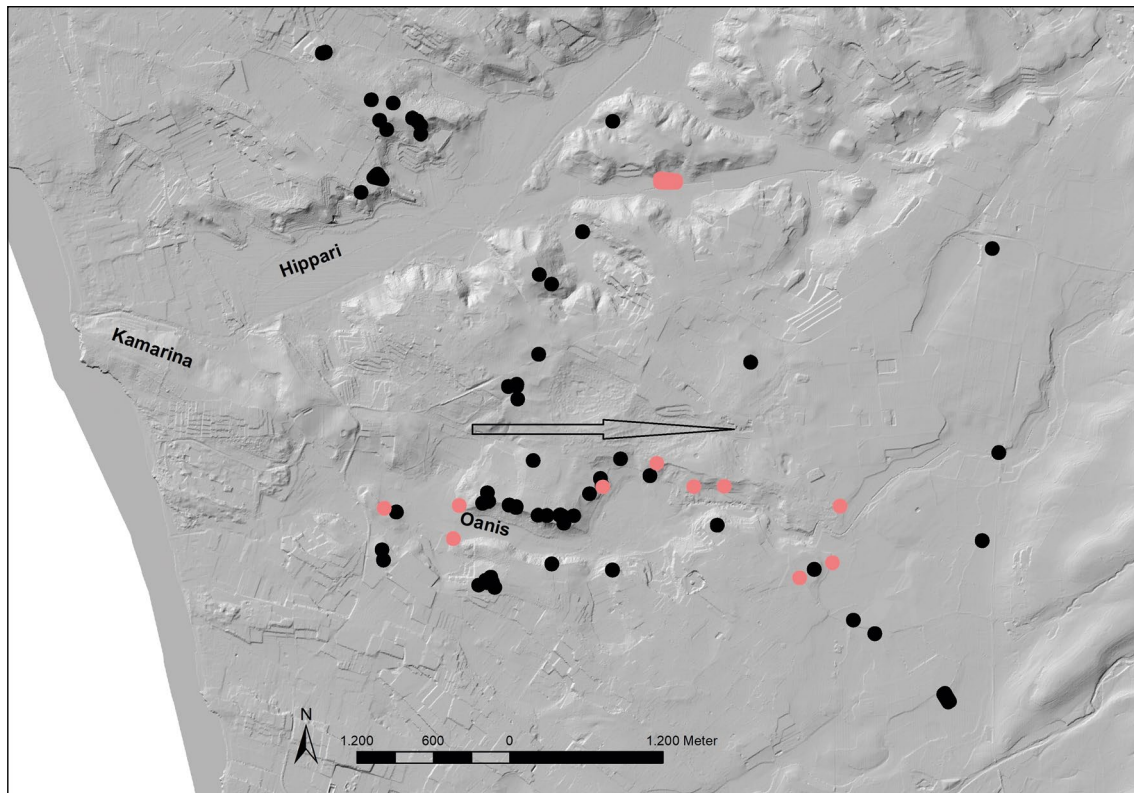


Fig. 8: Camarina Chora: black gloss (black), terra sigillata (pink).

Nevertheless, there is another possible explanation. Instead of the gridded, regular land distribution of the 5<sup>th</sup> and 4<sup>th</sup> centuries BC in Roman times, a new settlement system developed, which is based on *villae rusticae* and village settlements and established farther away from the coast at the foot of the Hyblean mountains. A good example is the site Torre Piombo (fig. 4. 5)<sup>25</sup>, where since the early Imperial period on the upper edge of the Oanis valley a small area with a high proportion of terra sigillata was located, thus probably a *villa rustica*. A little further inland a village settlement at Casa Carnala (fig. 6. 7)<sup>26</sup> is situated. On the ground there was a dense scatter of the Roman period with high proportions of roof tiles and terra sigillata, as is common elsewhere for Roman *vici*. Years ago, a wall was uncovered there. Subsequently, a complex settlement structure with several buildings and streets could be determined in the geomagnetic image. At a short distance, moreover, the necropolis belonging to the settlement was excavated.<sup>27</sup> It must be a larger rural settlement, which existed from Hellenistic times to Late Antiquity. Overall, the number of sites has increased from Hellenistic times slightly to 14, but there are only six major sites, while the other sites have no residential aspects, perhaps barns or other agricultural facilities.



The Greek homesteads are located close to the town of Camarina on the low flat plateaus between the rivers Oainis and Ippari, which also flank the city hill of Camarina. This area is quite small divided by the 20 to 30 m deep river valleys. The Roman settlements, on the other hand, lie further inland at the foot of the Hyblean Mountains and the long rise of their plateau (fig. 8). There, the land is flatter, the brooks are hardly cut into the terrain so that a large-scale agriculture could be operated at a time when there was no urban center in the area anymore. Proper cities existed at that time in Syracuse and Catania, both over 100 km away. The villa and the *vicus* had become the dominant living environments in these areas, far away from urban culture.

However, it is questionable whether this displacement of the settlements in the Camarina area from Greek to Roman times from the coast to the inland, and from the more articulated small-scale areas to the large plains, is due solely to a change in agriculture. Possibly the use of soils in the immediate vicinity of Camarina had already led to an exhaustion of fertility in Hellenism and eventually this was due to an overuse of soils in the 5<sup>th</sup> and 4<sup>th</sup> centuries BC. In this case, one would have to speak of a lack of sustainability and a lack of discourses on sustainability in the Greek society of the city of Camarina.

Whether we are dealing with an over-exploitation of soils during the Greek Classical period, or simply with a change in agricultural practices and a shift in settlements following the end of the urban center of Camarina, Mario Rempé's contribution will examine, using archaeological and interdisciplinary methods.

### Notes

<sup>1</sup> Graepler – Migl 2007; Graepler 2014, 75–108.

<sup>2</sup> Bintliff 2012; Bergemann 2020.

<sup>3</sup> Posamentir in print.

<sup>4</sup> Bintliff 2012, 270–284; Attema 2017, 426–435; Bergemann – Belvedere 2017; Kluiving – Guttman-Bond 2012.

<sup>5</sup> Tambakopoulos – Maniatis 2017, 468–482; Schneider 2015, 215–237.

<sup>6</sup> Korres 1995, 1–5; Korres 1992.

<sup>7</sup> Meyer 2017, 119–131; Patay-Horváth 2002, 119–129.

<sup>8</sup> Pirenne-Delforge 2010, 147–163.

<sup>9</sup> von Carlowitz 1713, 105.

<sup>10</sup> Ekardt 2016.

<sup>11</sup> Scheer in print.

<sup>12</sup> Exner – Jakobs 2005.

<sup>13</sup> Marston 2017; Nikolova 2017, 19–25; Citter 2015, 253–272; Bintliff 2014, 319–326; van der Leeuw 2012, 45–58.

<sup>14</sup> Boyle et al. 2011.

<sup>15</sup> Konophagou 1980; Jones 1982, 169–183; Goette 2000; Kakabogiannes 2005.

<sup>16</sup> Renault-Miskovsky 1981, 633–647; Kouli 2009, 43–51; Kouli 2012, 267–278. For advice on this I have to thank S. Brandt (Göttingen).

<sup>17</sup> Liefferinge 2013, 109–126.

<sup>18</sup> Konophagos a. O. (Anm. 15) 274–303 Abb. 11, 1–12; 12, 1–20; Jones a. O. (Anm. 15) Abb. 6; Goette a. O. (Anm. 15) 104–106 Abb. 138–140 Beil. 1; Kakabogiannes a. O. (Anm. 15) 261 f.

<sup>19</sup> Goette a. O. (Anm. 15) 63 f.

<sup>20</sup> Research at Gela was carried out with the permission of the Soprintendenza of Caltanissetta. The budget was given by Fritz-Thyssen-Stiftung, Köln, and DFG.-Bergemann 2010.

<sup>21</sup> Research in the hinterland of Agrigento was carried out with the permission of the Soprintendenza of Agrigento. The budget was given by Gerda Henkel Stiftung, Düsseldorf.- Publication in preparation.- Bergemann 2012, 98–103 Abb. 1. 2 Taf. 7–9,1; Bergemann 2015, 341 f. Abb. 19, 4–7; Bergemann 2013, 71–74 Abb. 3. 4; Bergemann 2014, 376–378 Abb. 3–5; Bergemann 2017; Blasetti Fantauzzi 2017, 113–122; Klug 2017, 123–136.

<sup>22</sup> Ongoing research at Camarina is carried out with the permission of Polo Museale di Ragusa, Museo Regionale di Camarina and Soprintendenza of Ragusa. The budget was given by Universität Göttingen and Volkswagenstiftung. Publication in preparation. Bergemann 2018.

<sup>23</sup> di Stefano 2000, 204–210 Abb. 27. 30; di Stefano – Ventura 2012, 63–69 besonders 68 f. Abb. 4–6.

<sup>24</sup> Bergemann 2019.

<sup>25</sup> UTM 33N ED50 455200 / 4080102.

<sup>26</sup> UTM 33N ED50 456109 / 4079946.

<sup>27</sup> Uggeri 2015, 257 f. Abb. 227 f. 182 (D); Di Stefano – Ventura 2011, 207–214 especially 209 fig. 4. 5; Di Stefano 1984 – 85, 763 f. 782–792 Abb. 6–9 Taf. 163. 164. 169–172.

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Fig. 1: di Stefano 2001, 694 fig. 3. – Fig. 2–7: Camarina Survey project, Göttingen. – Fig. 2. 4. 6: Drone flight E-Science Center Tübingen. – Fig. 8: J. Bergemann.

## References

### Attema 2017

P. Attema, Landscape Archaeology in Italy. Past Questions, Current State and Future Directions, in: T. C. A. De Haas – G. W. Tol (eds.), *The Economic Integration of Roman Italy. Rural Communities in a Globalizing World* (Leiden 2017) 426–435.

### Bergemann 2010

J. Bergemann (ed.), *Der Gela-Survey. 3000 Jahre Siedlungsgeschichte in Sizilien 1–3*, Göttinger Studien zur mediterranen Archäologie 1 (Munich 2010).

**Bergemann 2012**

J. Bergemann, Gela und Monti Sicani. Surveys an der Küste und im Binnenland im Vergleich, in: J. Bergemann (ed.), Griechen in Übersee und der historische Raum, Kolloquium Göttingen 13–16 Oktober 2010, Göttinger Studien zur Mediterranen Archäologie 3 (Rahden 2012) 98–103.

**Bergemann 2013**

J. Bergemann, Dal tardo antico ai Musulmani. Risultati di Surveys a Gela e Agrigento sul cambiamento del sistema insediativo, in: S. Modeo – M. Congiu – L. Santagati (eds.), La Sicilia del IX secolo tra Bizantini e Musulmani, Atti del IX Convegno di Studi (Caltanissetta 2013) 69–75.

**Bergemann 2014**

J. Bergemann, Funde der islamischen Phase im Gebiet von Gela und im Hinterland von Agrigent, in: A. Nef – F. Ardizzone (eds.), Les dynamiques de l'islamisation en Méditerranée centrale et en Sicile. Nouvelles Propositions et découvertes récentes, Collection de l'école Française de Rome 487 (Rome 2014) 376–378.

**Bergemann 2015**

J. Bergemann, Drehscheiben der Kulturen? Ländliche Heiligtümer in Sizilien. Gela und Agrigent im Vergleich, in: E. Kistler (ed.), Sanctuaries and the Power of Consumption. Networking and the Formation of Elites in the Archaic Western Mediterranean World, Internationale Konferenz Innsbruck 20–23 March 2012 (Wiesbaden 2015) 339–348.

**Bergemann 2017**

J. Bergemann, Ein Survey zwischen 30 und 1500 üNN: Die Monti Sicani im Vergleich zu den Ebenen Gelas, in: J. Bergemann – O. Belvedere (eds.), Survey-Archäologie. Naturwissenschaftliche-technische und historische Methode in Italien und Deutschland, Kolloquium Loveno di Menaggio 30 March – 2 April (Rahden 2017) 81–98.

**Bergemann 2018**

J. Bergemann, Vici, Villen und die Agrarproduktion in Sizilien im Hellenismus und in der Kaiserzeit – Archäologischer und geophysikalischer Survey im Vergleich. Gela, Agrigent, Kamarina, in: O. Belvedere – J. Bergemann (eds.), Römisches Sizilien. Stadt und Land zwischen Monumentalisierung und Ökonomie, Krise und Entwicklung – La Sicilia Romana. Città e Territorio tra monumentalizzazione ed economia, crisi e sviluppo, Kolloquium Göttingen 25.–27. November 2017 (Palermo 2018) 31–45 fig. 1–10.

**Bergemann 2019**

J. Bergemann, Stadt und Umland im Hellenismus. Das Zeitalter der verschwundenen Städte, in: Cityscapes of Hellenistic Sicily, Kolloquium Berlin 2017 (2019).

**Bergemann 2020**

J. Bergemann (ed.), Kultur und Natur in der antiken Mittelmeerwelt. Italienische und deutsche Forschungen in Archäologie und Geschichte und ihre Bedeutung für die moderne Diskussion über Klimawandel, Kolloquium Villa Vigoni, Loveno die Menaggio 2.–5. April 2018 (Rahden 2020).

**Bergemann – Belvedere 2017**

J. Bergemann – O. Belvedere (eds.), Survey-Archäologie. Naturwissenschaftlich-technische und historische Methode in Italien und Deutschland. Villa Vigoni Gespräch, Loveno di Menaggio, 30 March – 2 April 2015. La ricognizione archeologica. Metodi tecnico-scientifici e approccio



storico in Germania e in Italia, Convegno Villa Vigoni, Loveno di Menaggio, 30 March – 2 April 2015. (Rahden 2017).

**Bintliff 2012**

J. Bintliff, *The Complete Archaeology of Greece from Hunter-Gatherers to the 20th Century A.D.* (Chichester 2012).

**Bintliff 2014**

J. Bintliff, Prosperity, Sustainability, and Poverty in the Late Antique World. Mediterranean Case Studies, in: I. Jacobs (ed.), *Production and Prosperity in the Theodosian Period* (Leuven 2014) 319–326.

**Blasetti Fantauzzi 2017**

C. Blasetti Fantauzzi, Il territorio ad ovest del fiume Platani (Monti Sicani, Agrigento). Ceramica e topografia tra il periodo preistorico e l'età arcaica, in: J. Bergemann – O. Belvedere (eds.), *Survey-Archäologie. Naturwissenschaftliche-technische und historische Methode in Italien und Deutschland, Kolloquium Loveno di Menaggio 30 March – 2 April 2015* (Rahden 2017) 113–122.

**Boyle et al. 2011**

J. F. Boyle – M.-J. Gaillard – J. O. Kaplan – J. A. Dearing, Modelling Prehistoric Land Use and Carbon Budgets. A Critical Review, *The Holocene* 21, 2011, 715–722.

**Citter 2015**

C. Citter, Landscapes, Settlements and Sustainability, in: A. Chavarría Arnau – A. Reynolds (eds.), *Detecting and Understanding Historic Landscapes* (Mantua 2015) 253–272.

**di Stefano 1984/1985**

G. di Stefano, Ricerche a Camarina e nel territorio della provincia di Ragusa, 1980 – 1984, *Kokalos* 30/ 31, 1984/1985, 727–799.

**di Stefano 2000**

G. di Stefano, I recenti scavi a Camarina, in: A. Di Vita (ed.), *Un ponte fra l'Italia e la Grecia. Atti del Simposio in onore di Antonio di Vita, Ragusa 13–15 February 1998* (Padua 2000) 204–210.

**di Stefano 2001**

G. di Stefano, La chora di Camarina, in: Istituto per la Storia e l'Archeologia della Magna Grecia (ed.), *Problemi della chora coloniale dall'Occidente al Mar Nero, Atti del Quarantesimo convegno di studi sulla Magna Grecia, Taranto 29. September – 3. Oktober 2000* (Taranto 2001) 689–705.

**di Stefano – Ventura 2011**

G. di Stefano – G. Ventura, Nuovi mosaici e altri pavimenti dalle ville rurali di Giarratana (scavi 2009), Margi e Piombo (scavi 2008), nell'antico territorio di Camarina e dal Fortilitium di Ispica (Ragusa, Sicilia), in: *Atti del XVI Colloquio dell'associazione italiana per lo studio e la conservazione del mosaico. Palermo, 17–19 March 2010, Piazza Armerina, 20 March 2010* (Tivoli 2011) 207–214.

**di Stefano – Ventura 2012**

G. di Stefano – G. Ventura, Camarina (Sicilia) e la sua Chora. Luoghi e spazi produttivi, in: J. Bergemann (ed.), *Griechen in Übersee und der historische Raum, Kolloquium Göttingen 13–16 October 2010, Göttinger Studien zur Mediterranen Archäologie 3* (Rahden 2012) 63–69.

**Ekardt 2016**

F. Ekardt, *Theorie der Nachhaltigkeit. Ethische, rechtliche, politische und transformative Zugänge – am Beispiel von Klimawandel, Ressourcenknappheit und Welthandel* (Baden-Baden 2016).

**Exner – Jakobs 2005**

M. Exner – D. Jacobs (eds.), Klimastabilisierung bauphysikalische Konzepte. Wege zur Nachhaltigkeit bei der Pflege des Weltkulturerbes. Climatic Stabilization and Building Physics. Sustainable Approaches to Safeguarding the World Cultural Heritage, Tagung des Deutschen Nationalkomitees von ICOMOS in Zusammenarbeit mit dem Landesdenkmalamt Baden-Württemberg, Insel Reichenau, 25–27 November 2004 (Munich 2005).

**Goette 2000**

H. R. Goette, O axiologos demos Sounion. Landeskundliche Studien in Südost-Attika (Rahden 2000).

**Graepler 2014**

Daniel Graepler, Antikenstudium für junge Herren von Stand. Zu Christian Gottlob Heynes archäologischer Lehrtätigkeit, in: B. Bäbler – H.-G. Nesselrath (eds.), Christian Gottlob Heyne. Werk und Leistung nach zweihundert Jahren, Tagung Göttingen 13–14 July 2012, Abhandlungen der Akademie der Wissenschaften zu Göttingen N. F.32 (Berlin 2014) 75–108.

**Graepler – Migl 2007**

D. Graepler – J. Migl (eds.), Das Studium des schönen Altertums. Christian Gottlob Heyne und die Entstehung der klassischen Archäologie, Ausstellung Paulinerkirche Göttingen, 11 February – 15 April 2007 (Göttingen 2007).

**Jones 1982**

J. E. Jones, The Laurion Silver Mines: A Review of Recent Researches and Results, Greece and Rome 29, 1982, 169–183.

**Kakabogiannes 2005**

E. Ch. Kakabogiannes, Metalla Ergastima kai Syklexoremena (Athens 2005).

**Klug 2017**

R. Klug, Römisches Siedlungssystem in den Monti Sicani (Agrigent-Hinterland-Survey), in: J. Bergemann – O. Belvedere (eds.), Survey-Archäologie. Naturwissenschaftliche-technische und historische Methode in Italien und Deutschland, Kolloquium Lovenno di Menaggio 30 March – 2. April 2015 (Rahden/Westf. 2017) 123–136.

**Kluiving – Guttmann-Bond 2012**

S. J. Kluiving – E. B. Guttmann-Bond (eds.), Landscape Archaeology between Art and Science. From a Multi- to Interdisciplinary Approach (Amsterdam 2012).

**Konophagou 1980**

K. Konophagou, To Archaio Laurio (Athens 1980).

**Korres 1995**

E. M. Korres, The Ancient Quarries on Mount Pentelikon, in: Y. Maniatis – N. Herz – Y. Basiakos (eds.), The Study of Marble and Other Stones Used in Antiquity, Symposium Athens 17–19 May 1993 (London 1995) 1–5.

**Korres 1992**

M. Korres, Vom Penteli zum Parthenon. Werdegang eines Kapitells zwischen Steinbruch und Tempel. Ausstellung Glyptothek München (Munich 1992).

**Kouli 2009**

K. Kouli – M. Triantaphyllou – K. Pavlopoulos – T. Tsourou – P. Karkanis – M. D. Dermizakis, Palynological Investigation of Holocene Palaeoenvironmental Changes in the Coastal Plain of Marathon (Attica, Greece), *Geobios* 42, 2009, 43–51.

**Kouli 2012**

K. Kouli, Vegetation Development and Human Activities in Attiki (SE Greece) during the last 5,000 years, *Vegetation History and Archaeobotany* 21, 2012, 267–278.

**Liefferinge 2013**

K. van Liefferinge, Water Management and Cistern Technologies in the Silver Industry of the Laurion. An Unknown Page of Athens' History, *BABESCH* 88, 2013, 109–126.

**Marston 2017**

J. M. Marston, Agricultural Sustainability and Environmental Change at Ancient Gordion, *Gordion Special Studies* 8 (Philadelphia 2017).

**Meyer 2017**

M. Meyer, Contexts of Contest. Athena, Poseidon and the Martyria in the West pediment of the Parthenon, in: D. Rodríguez Pérez (ed.), *Greek Art in Context. Archaeological and Art Historical Perspectives* (Oxon 2017) 119–131.

**Nikolova 2017**

L. Nikolova, Sustainability, Health, and Society. Prehistoric Artefacts as Sustainable Materials, in: D. Gheorghiu – P. Mason (eds.), *Working with the Past. Towards an Archaeology of Recycling* (Oxford 2017) 19–25.

**Patay-Horváth 2002**

A. Patay-Horváth, Ein Deutungsversuch des Westgiebels des Parthenons, *ActaArchHung* 53, 2002, 119–129.

**Pirenne-Delforge 2010**

V. Pirenne-Delforge, Un oikèma appelé Erechtheion (Pausanias, I, 26, 5), in: P. Carlier – C. Lerouge-Cohen (eds.), *Paysage et religion en Grèce antique. Mélanges offerts à Madeleine Jost* (Paris 2010) 147–163.

**Posamentir in print**

R. Posamentir, Search for Resources as an Incentive for 'Processes of Colonization'?, in: *Kultur und Natur in der Antiken Mittelmeerwelt / Cultura e Natura nel Mediterraneo antico*, Kolloquium Villa Vigoni 2–5 April 2018 (in print).

**Renault-Miskovsky 1981**

J. Renault-Miskovsky, in: N. Lambert (ed.), *La grotte préhistorique de Kitsos (Attique)* (Paris 1981) 633–647.

**Scheer in print**

T. Scheer, in: A. Reitemeier (ed.), *Nachhaltigkeit als Argument*, Öffentliche Ringvorlesung, Göttingen Sommersemester 2018 (in print).

**Schneider 2015**

L. Schneider, Marmor gefragt. Zur Marmorverarbeitung auf den Kykladen im 7. und 6. Jahrhundert v. Chr., in: S. Faust – M. Seifert – L. Ziemer (eds.), *Antike. Kultur. Geschichte. Festschrift für Inge Nielsen zum 65. Geburtstag* (Aachen 2015) 215–237.



**Tambakopoulos – Maniatis 2017**

D. Tambakopoulos – Y. Maniatis, The Marble of the Cyclades and its Use in the Early Bronze Age, in: M. Marthari – C. Renfrew – M. J. Boyd (eds.), *Early Cycladic Sculpture in Context* (Oxford 2017) 468–482.

**Uggeri 2015**

G. Uggeri, Camarina. Storia e topografia di una colonia greca di Sicilia e del suo territorio (Galatina 2015).

**Van der Leeuw 2012**

S. van der Leeuw, Invention, innovation and sustainability. Lessons from and for archaeology, in: J. Giraud – G. Gernez (eds.), *Aux marges de l'archéologie. Hommage à Serge Cleuziou* (Paris 2012) 45–58.

**Von Carlowitz 1713**

H. C. von Carlowitz, *Sylvicultura oeconomica. Anweisung zur wilden Baum-Zucht* (Leipzig 1713).