Michael Doneus, Die hinterlassene Landschaft. Prospektion und Interpretation in der Landschaftsarchäologie. Mitteilungen der Prähistorischen Kommission, Österreichische Akademie der Wissenschaften (Hrsg. Herwig Friesinger), volume 78. Österreichische Akademie der Wissenschaften, Wien 2013. €125.00. ISBN 978-3-7001-7197-3, ISSN 0065-5376. 399 pages, 217 figures.

Michael Doneus' book "Die hinterlassene Landschaft" ("The Bequeathed Landscape") is devoted to theory and methodology in landscape archaeology, with a special focus on the tradition and the current spectrum of concepts and models in German-language research. In particular, he aims to define the unique heuristic value of landscape archaeology, in terms of its ability to contribute to comprehension of physical phenomena. He also highlights possible future directions of landscape archaeology as an integrating concept for multiple approaches from different etic and emic perspectives on landscape biographies. The basic manuscript for this book was submitted to the Institute of Pre- and Protohistory at Vienna University in 2009 as a (post-doctoral) habilitation thesis (*Habilitationsschrift*) and has since been updated with more recent literature. Michael Doneus currently works at the Ludwig Boltzmann Institute for archaeological prospection and has much experience in landscape archaeology, with special expertise in remote sensing, geophysics and GIS.

The book is structured into four parts, starting with conventional definitions, and a discussion of keywords and approaches to the interpretation of landscapes (part 1, pp. 17–46); next is a debate of various aspects of the physical and cultural structure of landscape and their display in a GIS system (part 2, pp.47–125); then a detailed description of prospection methods (part 3, pp. 126–274); and finally, Doneus critically discusses the application of these methods based on various case studies (parts 4 and 5, pp.245–355). Furthermore, he provides a bibliography with 30 pages of references (pp. 356–398).

Doneus introduces his research questions in chapter 2, giving an overview of non-invasive survey methods that enable scientific analysis of human impact on landscapes, as well as presenting different theoretical approaches making use of these methods. He scrutinises the specific ways these approaches deal with 'landscape' – a term with a sometimes diffuse meaning – and their respective applicability for the interpretation of human remains therein. Finally, he turns towards different characteristics of landscapes. His aims are to discuss how these characteristics in some way determine and affect human action; how to better interpret human remains in the landscape also from 'intuitional acting'; and to present ways to validly measure and logically deduce such interpretations.

Part 1 outlines definitions and key terms of landscape archaeology (space, place, environment and landscape; chapter 3), and presents a historic-conceptual retrospective of the three major approaches defining and analysing landscapes: settlement archaeology, environmental archaeology and landscape archaeology. Doneus introduces in detail epistemological concepts for the description of landscapes and summarises the history of spatial archaeology in Central and Northern Europe. He asserts that there are inconsistencies in the use of the terms as applied to the analysis of material culture in relation to space. Following the philosopher Nicolai Hartmann, he explains the term 'landscape' as an interplay of three aspects, 'real space' ("Realraum"), 'ideal space' ("geometrischer Raum") and 'intuitive space' ("Anschauungsraum"); he applies this definition as the basic concept of his work (p. 26).

According to Doneus, settlement, environmental and landscape archaeology mainly differ in the category of space each of them primarily addresses: settlement archaeology investigates cultural structure and mainly looks at 'ideal' or geometrical space, environmental archaeology investigates physical and sociological implications in 'real space', and landscape archaeology analyses all facets

of 'intuitive space', including economic, social, religious and political concepts underlying cultural structures within real and ideal space. Nevertheless, he advises not subsuming the settlement and environmental archaeology under the term of landscape archaeology (p. 46), because their conceptual models are different; the approaches of culture-historic settlement archaeology and landscape archaeology especially lack common ground. In this, he contradicts previous opinions, which propose 'landscape archaeology' as an overall concept, encompassing the other two (e. g.: T. Darvill, Pathways to a panoramic past. A brief history of European landscape history. In: B. David / J. Thomas (eds), Handbook of Landscape Archaeology [Walnut Creek 2008] 60–76; cf. A. Gramsch, Landschaftsarchäologie – ein fachgeschichtlicher Überblick und ein theoretisches Konzept. In: J. Kunow / J. Müller (eds), Landschaftsarchäologie und Geographische Informationssysteme. Prognosekarten, Besiedlungsdynamik und prähistorische Raumordnung [Wünsdorf 2003] 35–54).

In his survey of the history of the three approaches, Doneus makes clear that the empiric environs-centred approaches enabled a broadening of views from site to landscape and, in Anglo-American research, led to the coexisting concepts of 'total archaeology' and 'landscape archaeology'. They resulted in the application of large range data acquisition techniques and the development of 'off-site' and 'non-site' strategies aiming at gathering data from settlement clusters or landscapes rather than single sites. Doneus then contrasts post-processual understandings of landscape that added awareness of subjectivity, individual viewpoints and agency to 'landscape studies', which have developed in German-language research since the mid-1990s. Many of the latter, he concludes, touch upon single aspects, such as settlement hierarchies and formation, rather than addressing holistic landscape issues. This was mainly due to a missing terminological differentiation between the different approaches as well as a lack of genuine theoretical discussion and an ignorance of ongoing discussions in other countries.

Consequently, Doneus investigates the term 'landscape archaeology' in more detail (chapter 5), referring to its long tradition in Anglo-American archaeology, where the term gained prominence in the 1970s, and to processual and post-processual approaches in particular. Investigating the German-language approaches, Doneus agrees with Gramsch's emphasis on the necessity of retrieving information about social conditions and ethical values – i. e. the ideological framework of a society – to be able to make statements about past decisions and actions that left traces in the landscape (Gramsch op. cit.). All accessible sources must be integrated in order to succeed in this task.

The second part of the book is dedicated to landscape description in terms of its physical and cultural structure. After describing the physical earth, i. e. atmosphere, lithosphere, hydrosphere, biosphere and how they interact and affect each other (chapter 6), Doneus exemplarily highlights criteria influencing the cultural structure of landscape. While he investigates physical criteria that may determine cultural structures to show their potential influence on cultural decisions, he also reminds us to avoid an environmental deterministic perspective that would mostly derive from modern economic concepts of resource exploitation and profit maximisation. This is only one model among many that aim to define rational action (and, in a prehistoric context, not a particularly satisfying model), and there are others that seek to balance various facets of human decision-making, such as the RREEMM-model (Resourceful, Restricted, Expecting, Evaluating, Maximizing Man, p. 78–79). He points out that proper research of landscape genesis would be necessary to best equate and understand former conditions. He further stresses the importance of social factors, such as economic and socio-religious reasoning, as well as political strategy and historical considerations. Eventually, he concentrates on the description of the material aspect of landscape, i. e. the description of landscape in a form comparable to traditional maps and GIS. Here he characterises the expression of relief, soil, hydrography, climate and biosphere and lists possible pitfalls and problems in integrating them into archaeological analysis. The last section in part 2 is dedi-

cated to the identification and description of cultural structures, which are not restricted to settlements, burials and monuments, but include intermediate and remote space, transport infrastructure, field clusters, sacred or other community areas. He discusses different approaches to identify and characterise them within landscape archaeology using environmental analysis. Doneus assumes that settlement archaeology is able to reveal cultural structures in archaeological sites. Following E. Neustupný (Structures and events. The theoretical basis of spatial archaeology. In: Id. (ed.), Space in Prehistoric Bohemia [Prague 1998] 9–44), he stresses that landscape archaeology aims to move from single site analysis to a correlation (spatially and diachronically) of sites with each other and the landscape to perceive them as an area of interaction, as 'community space' ("Gemeinschaftsraum", p. 121). He finally reflects on the term 'site' ("Fundstelle"), mainly following W. Neubauer (Stratigraphische Grabungsmethode. Theorie und Praxis [Wien 2008]), who defines a site as being a spatially-confined archaeological stratification caused by human impact. Sites, he further explains, can be expressed as specific points, encircling polygons or as interpolated density maps – depending on scale and expression. They can also be represented in GIS (pp. 121–125).

Part 3 is dedicated to 'landscape building' and methods of landscape archaeology. Doneus analyses mechanisms of landscape transformation and the modern means to detect and interpret landscape. First, he describes patterns of dynamics of archaeological stratigraphy (chapter 9), e. g. aspects of archaeological taphonomy, the formation of different features (he uses the term 'immobile artefacts'), and deposits of artefacts and ecofacts underneath and above the surface, their present appearance, as well as different kinds of surveys to detect them. He also addresses the different dynamic processes transforming and dislocating those features, e. g. erosion, glacial drifts or agricultural activity, and how such processes can lead to structural destruction, e. g. decomposition. Moreover, he directs the view to common spaces and other places of interaction that do not necessarily manifest within cultural traces. Finally, he focuses on the recognition and interpretation of this dynamically-formed archaeological evidence.

Chapter 10 introduces and discusses the diversity of archaeological surveys, starting with a discussion of 'contrasts' as the underlying concept of field-archaeological recognition, as well as annotations to the English expressions 'prospection', 'survey' and 'reconnaissance'. He defines the following methods of archaeological survey: 1) field survey; 2) remote sensing (i. e. aerial photography, satellite remote sensing, ALS / LiDAR); 3) geophysics (i. e. geomagnetics, geoelectrics, geo-radar, electromagnetics, seismic technology and sonar); 4) terrestrial topographic surveys; 5) chemical prospection (without coring); 6) biological prospection; 7) analysis of literature, documentation of finds, and enquiries; 8) analysis of historic sources and field name research (p. 137–240). Doneus afterwards unfurls the first five items methodically, with their characteristics and properties, as well as possibilities of interpretation, and illuminates the technical background. The last subchapter (10.8.) is dedicated to archiving survey data in the AERLOC database, which combines site data and aerial photography. The following chapter is dedicated to current state-of-the-art survey practices, predominantly on the basis of examples from Doneus' own research. Doneus considers field surveys as still being the most common survey practice, and its most appreciated advantage is the chronological classification of a site via finds. Geophysics he esteems the most efficient way to discover archaeological structures, and as a tool to map material residues within larger areas. But he warns that a proper mapping of structural remains can only be constructed by a combination of suitable survey methods. Chemical prospection, though currently not often applied, could help to further classify information from other survey methods and therefore should be applied more frequently in project designs. Furthermore, to Doneus, ALS holds high potential for the detection of unknown structures and new sites, especially in areas out of reach for common survey methods. He finally intensively discusses aerial photography, since its value to landscape research is still underestimated in German-language research. Thus, he investigates previous argu-

ments within this field (e. g. visibility / non-visibility of certain time periods or usability of orthographic photographs). As best example, he refers to his project in the Leitha Mountains (at the boundary of Lower Austria and Burgenland) and shows the results of three years' intense aerial surveying. He finally refers to the necessity of integrated prospection of a landscape as the best way for capturing its change throughout time and for its comprehensive understanding, though he still warns that applying (all) prospection methods does not automatically imply 'landscape archaeology'; rather, it provides the base for intellectual, critical landscape analysis.

In part 4, he divides deductive-nomological from interpretive approaches to landscape analysis and discusses the strengths and weaknesses of both of them. He concisely describes processual methods based on geographic distribution and statistics (e. g. kernel density, triangulation, site catchments, predictive modelling), and their use in estimating settlement density and structure, resources and preferences or social organisation and associated models based on location factors like core-periphery, rank-size or gravity. He deduces that processual as well as culture-historical approaches tend to explain the spatial choices of man mostly within eco-deterministic scenarios that would not meet the expansionary forces of human behaviour. Post-processual approaches, in particularly phenomenology, on the other hand, though being on a subjective-experiential level, would inevitably be devoid of prehistoric socio-cultural backgrounds, which would not be reproducible now. Doneus describes the strengths and weaknesses of both perspectives and refers to further works that seek to combine both approaches. These, he observes, are few but have become more frequent in the recent decade. He emphasises that most of these attempts to map perception within spatial analysis (viewsheds, topographic prominence, cost-surface analysis and augmented reality approaches) manage to show tendencies, but they cannot unequivocally point to reasons for previous decisions. Furthermore, their interpretation is not without difficulty and is subject to the underlying data or the research question and design. In chapter 14.3, Doneus summarises further approaches to the investigation of behaviour of ancient societies in order to retrieve information about their moral concepts and worldview ("Weltanschauung"). He emphasises that most comprehensive results would be obtained by consulting all archaeological information in the landscape, not just settlements, but also other places containing information about society, religion, politics and economy. Moreover, he advocates that landscape archaeology should overcome the focus on archaeological sites and involve landscape features and landmarks of a region in their interpretation. Also the research of cosmological aspects of site selection and orientation, as well as of ethnographic parallels, could help to reach a better understanding of prehistoric settlement patterns and landscape use. An additional approach could be diachronic landscape-biography. Doneus further claims that individual actions are better addressed as a parameter of landscape analysis.

In part 5 ("Interpretive Explanation", "Verstehende Erklärung"), Doneus elaborates on another theoretical and methodological approach that combines empirical and subjective data within a stochastic model. For this, he utilises the RREEMM (see above) as a framework of the subjective expected utility theorem. This appears to be a variation of rational choice theory that not only employs effort-utilisation parameters (as do 'hard applications' of rational choice in landscape analysis), but also takes into account the ideas of the individual actor about the goal and expected consequences of an action. Among several options an individual would favour the action whose expected consequences would be valued most or rated best. The evaluation also takes into account the benefit and the potential probability of its application. This way, Doneus argues, the concept would also match the dualism between real space ("Realraum") and intuitive space ("Anschauungsraum"). These factors are e. g. addressed by cost-surface-analyses, although these calculations result in more or less useful approximations. However, they basically show the potential relevance of certain observations and assumptions.

Doneus develops two scenarios to determine subjective expected utility with methods of landscape analysis in order to show their usability. The first application scenario (chapter 16) is ancient pathways research. After discussing state-of-the-art research on ancient roads and pathways ("Altwegeforschung"), he exemplarily applies the subjective expected utility theorem in combination with a cost surface to a partly known and partly hypothetical road system in the Leitha Mountains. An intense LiDAR survey in the region revealed a bunch of blurred connections, invisible to the naked eye, interlinking three Late Bronze Age / Early Iron Age hillforts, supporting the assumption that these connecting structures may have been ancient traffic patterns. In a detailed description of the different routes and their scenic particularity and landmarks, he also refers to sites newly discovered with the help of the ALS. A recurrent topic in pathway research is the identification of the specific traffic pattern that might have been in use within a certain time span as well as the factors relevant for the occurrence of the specific pattern. Since the traffic pattern is relatively evident in this case, he lists determining factors like technology of transport, visibility, tabooed areas, memorial places, topography, barriers (like streams), bedrock / soil and vegetation that might have influenced the choice of routes. Applying least-cost-path algorithms to that landscape, he researches slope, visibility (openness) and prominence and reasons that slope and openness are the most important factors in the determination of the particular traffic pattern that occurred.

Another example he uses (chapter 17) is site selection analysis of the short-term friary of 'St. Anna in der Wüste' (founded in 1644 and abandoned in 1738), comprising farm buildings, land holdings and hermitages. After describing the historical and geographical background of the site, he shows that the consideration of real space factors alone (water supply, good soil quality etc.) renders an insufficient interpretation; the reasons behind choice of place become much more evident combing through criteria of intuitive space, which are accessible via religious concepts and friary rules of this special branch of the 'discalced' Carmelite order. Thus, he investigates the etic perspective with the tools of settlement archaeology (soil preferences, water supply), which all seem not to sufficiently explain the selection of the remote place. An emic perspective, consulting monastic rules, the friary chronicle and an etching of the friary from AD 1689, provides the programmatic conception of the site in contrast to the evidence from the landscape. In this case study, rational choice theory is applied to religious conceptions: in this case, the concept of reclusiveness can be traced by scientific methods and the results support the written / drawn sources. This testifies to the possibility of methodically providing evidence for emic implications. The object of his test is the idealised form of the outer wall in the etching (shape of a heart) and its real irregular drop-shaped form; Doneus modelled visibility, topographic prominence and created a cumulative map on the basis of geographical information. These show that the core area of the friary has not particularly visible from the outside, but, on the other hand, there are unobstructed views from the hermitages towards the monastery. Moreover, the church spire is entirely visible from all places along the outer wall (and vice versa), while the wall is not particularly visible from outside positions. Doneus points out that several considerations preceded the erection of the monastery, which fit exactly into the religious views of the Carmelites, but might have been more difficult to explain without this specific knowledge. Nevertheless, he was able to retrace conceptual behaviour utilising objective expected utility theory and scientific methods.

A final summary (chapter 18) reiterates the main strands of discussion within the book.

The clear structure and consistent design of the book helps the reader to follow Doneus' argumentation easily. He thoroughly introduces the reader to historic and current theoretical discussion in landscape archaeology, as well as to the basics of survey methods. The deconstructions of 'settlement archaeology', 'environmental archaeology' and 'landscape archaeology', which all

address different scales, have different research backgrounds and address different questions, are especially helpful. His Solomonic suggestion is that each approach has its merits, and might warrant use depending on the research questions of each particular investigation. His message is not to completely abandon one concept and adopt another, but to carefully evaluate which of them serves best to resolve the particular research questions under investigation and to be aware of the underlying theoretical framework.

He also gives a comprehensive insight into all survey methods currently available, their methodical background and a critical discussion of each survey tool, indicating their weaknesses with regard to their analytical qualities, thus raising the awareness of the potential of each of them, including those which might not yet be widely recognized – chemical analyses, for example.

Doneus' book addresses not just landscape archaeology practitioners but also newcomers to theory and practice. For the work of the latter over the next years, his book will provide knowledge about basic aspects of landscape archaeology and survey methods. Although experts in the field might be more or less acquainted with many of the basics, it is a good resource for everybody to remind themselves of details, to work with and to add onto ongoing research. With his work, he provides a compendium of landscape archaeological theory, terminology and methodological basics that researchers can work with and respond to.

The scope of this book in terms of methods and topics means that depth of discussion is inevitably restricted in some areas. Experts on different areas of remote sensing techniques might sometimes get the impression that a method is not presented exhaustively. Since Doneus' approach is not focused on thorough problematisation of the different methods, but on a comprehensive integrative analysis of the evidence documented and processed with those methods, this density is legitimated and necessary.

While the theoretical and methodological discussion is diverse and based upon an array of different concepts, the fieldwork examples are all derived from Doneus' and his colleagues' research at the Vienna Ludwig-Boltzmann-Institute, with few exceptions. This is reasonable, since this is the institution he has worked at for decades and he has best access to the excellent and exemplary work. However, there might be additions of important research projects on one or the other survey technique or methods that are not addressed within the book. The reader should not misunderstand it as a compendium of all ways in which survey methods can be applied; rather, Doneus specifically addresses their ability to contribute to landscape archaeology. In regard to geomagnetics, one might wish a few more words about its still rarely utilised potential for a more detailed archaeological analysis of single features and areal structures (as e. g. lately shown by V. A. Kruts / A. G. Korvin-Piotrovskiy / C. Mischka / R. Ohlrau / A. Windler / K. Rassmann, Talianki-2012. The geomagnetic prospection. In: V. A. Kruts / P. Korvin-Piotrovskiy / V. V. Chabanyuk / L. A. Shatilo, Talianki – Settlement-Giant of the Tripolje Culture. Investigations 2012 [Kiev 2013] 85–103). Although Doneus refers to the potential of differentiation of soils and materials within geomagnetics (pp. 223–224), he does not follow up this possibility in the practical part 3 of his book. Since he concentrates on landscape analysis, the analysis of such specifics that might be more valuable within the field of settlement archaeology are not necessarily addressed. However, since landscape use is strongly connected to settlement activity, the intrinsic differentiation within a settlement might also be part of landscape analysis and the discussion of survey methods that help understand inner structuring and diachronic development within a site should have been included by Doneus, too.

From a post-processual point of view, there might be some objections against the approach of the 'interpretative explanation', since the workflow does not start with the theoretical concept but

with gathering the empirical data. Post-processual approaches are applied here to track individual behaviour in an attempt to include structured parameters of human agency in basically processual models.

In general, Doneus succeeded in delivering a detailed overview of the history and state-of-the-art of theories and methods of landscape archaeology – esp. for the German-speaking archaeological community. Well-documented case studies provide a continuous practical relevance and make his book a valuable resource for archaeologists.

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Jodi Reeves Flores / Roeland Paardekooper (Hrsg.), Experiments Past. Histories of Experimental Archaeology. Sidestone Press, Leiden 2014. € 34,95. ISBN 978-90-8890-251-2. 284 Seiten, 54 s/w-Abbildungen, 64 Farbabbildungen.

Der vorliegende Band versammelt 18 Beiträge einer Tagung 2013 in Lejre, Dänemark, umfasst 284 Seiten und hat die Entwicklung und den Forschungsstand der Experimentellen Archäologie (EA) in Europa zum Thema. Der Sammelband verfolgt unter der Herausgeberschaft von Jodi Reeves Flores und Roeland Paardekooper das Ziel, die historische Verwendung der Methode in verschiedenen Ländern zu beleuchten und Erkenntnis darüber zu vermitteln, welcher Wissenszugang dadurch für die Forscher und die Öffentlichkeit erreicht wurde (S. 8).

Ausgehend von John Coles epochemachendem Werk „Experimental Archaeology" aus dem Jahre 1979, verweisen die Autoren in der Einleitung auf verschiedene bereits erschienene Bibliographien mit Arbeiten zur EA seit 1972. Eine im Netz zugängliche und stetig wachsende Zusammenstellung von R. Paardekooper mit über 11 400 Referenzen (siehe http://exarc.net/bibliography [letzter Zugriff: 15.12.2016]) findet Erwähnung, zudem eine deutsche Bibliographie zur Experimentellen Archäologie mit 2000 Titeln, deren explizite Benennung oder Besprechung jedoch weder in den einleitenden Worten noch im Kapitel über die Situation in Deutschland erfolgt. Sie darf als Zusammenfassung und Ergänzung an dieser Stelle für die eingehendere Betrachtung des Themas angemerkt werden: D. Vorlauf, Experimentelle Archäologie. Eine Gratwanderung zwischen Wissenschaft und Kommerz (mit ausführlicher Bibliografie mit Sachregister). Schriftenreihe Landesmus. Natur u. Mensch 86 (Oldenburg 2011).

Die Archäologie gewinnt nach den Herausgebern ihre Erkenntnisse vor allem durch die Beobachtung und Interpretation von Funden und Befunden. Dabei versucht die EA diese Fragestellungen zu vertiefen, zu verifizieren oder zu falsifizieren. Eine genaue Dokumentation ist hierfür unerlässlich, frühe Arbeitstechniken der Menschen sind nur so zu erschließen, eine verbindliche Kommunikation der Forschenden untereinander ist noch nicht erreicht – mit diesen allgemeinen Angaben und methodischen Hinweisen beginnt der Sammelband, ohne jedoch methodologisch tiefer zu gehen, eine Aufgaben- oder Fragestellung zu formulieren oder einen durchaus darüber bestehenden kritischen Diskurs innerhalb der Archäologie Mitteleuropas zu besprechen oder nur auch anzudeuten.

Archäologische Experimente gibt es – folgt man der Einleitung – in Europa seit weit mehr als 100 Jahren: so etwa die 1879 durchgeführte Rekonstruktion eines Blockhauses mit steinernen Werkzeugen im dänischen Soholm durch Frederik Sehested oder die Arbeiten des steirischen Lan-