RESSOURCENKULTUREN 15

HUMAN-MADE ENVIRONMENTS

THE DEVELOPMENT OF LANDSCAPES AS RESOURCEASSEMBLAGES

Editors
Martin Bartelheim,
Leonardo García Sanjuán &
Roland Hardenberg

TÜBINGEN
UNIVERSITY
PRESS

RESSOURCENKULTUREN

TÜBINGEN
UNIVERSITY
PRESS

RessourcenKulturen
Band 15

Series Editors:
Martin Bartelheim and Thomas Scholten

Martin Bartelheim,
Leonardo García Sanjuán &
Roland Hardenberg (Eds.)

HUMAN-MADE ENVIRONMENTS

The Development of Landscapes as ResourceAssemblages

TÜBINGEN
UNIVERSITY
PRESS

Bibliografische Information der Deutschen Nationalbibliothek
Die Deutsche Nationalbibliothek verzeichnet diese Publikation in der Deutschen Nationalbibliografie, detaillierte bibliografische Daten sind im Internet über http://dnb.d-nb.de abrufbar.

Herausgeber der Reihe: Martin Bartelheim und Thomas Scholten

Die Online-Version dieser Publikation ist auf den Verlagswebseiten von Tübingen University Press frei verfügbar (open access).
http://hdl.handle.net/10900/119103
http://nbn-resolving.de/urn:nbn:de:bsz:21-dspace-1191034
http://dx.doi.org/10.15496/publikation-60477

1. Auflage 2021 Tübingen University Press
Universitätsbibliothek Tübingen
Wilhelmstr. 32
72074 Tübingen
tup@ub.uni-tuebingen.de
www.tuebingen-university-press.de

ISBN (Hardcover): 978-3-947251-45-2
ISBN (PDF): 978-3-947251-46-9

Redaktion: Marion Etzel, Hannah Bohnenberger, Uwe Müller, Henrike Srzednicki, Monice Timm
Umschlaggestaltung: Henrike Srzednicki
Coverfoto: Agro-pastoril genutzte Dehesa-Landschaft bei Munigua, Prov. Sevilla (Spanien)
(Aufnahme: Martin Bartelheim)
Layout: Büro für Design, Martin Emrich, Lemgo
Satz und Bildnachbearbeitung: Marion Etzel; Henrike Srzednicki
Druck und Bindung: medialis Offsetdruck GmbH Unternehmensbereich Pro Business
Printed in Germany

Contents

Martin Bartelheim, Leonardo García Sanjuán, and Roland Hardenberg

Human-Made Environments

The Development of Landscapes as ResourceAssemblages: An Introduction

1. Resources and Landscapes: Problematising an Old Concept

Landscapes bear traces of the use of resources over long periods. This reflects the history of human handling of environments in order to shape them in accordance with their ways of life. Resources can be material as well as immaterial and constitute the basis for the development and decline of societies. They are usually not exploited in isolation, but as parts of complexes whose specific constellations in time and space can be best described as assemblages.

This topic was the subject of the session 'Human-Made Environments: The Development of Landscapes as ResourceAssemblages' held at the 24th Annual Meeting of the European Association of Archaeologists (Barcelona, September 5th–8th 2018) and forms the basis of this volume. The aim was to debate new concepts concerning the interrelation of social dynamics and resource use and their suitability for a better understanding of European Prehistory as well as present day societies studied by anthropologists. The session resulted from the collaboration of the University of Tübingen (Germany) with other institutions, such as the University of Sevilla (Spain), the CNRS (France) and the Frobenius Institute, Frankfurt (Germany) in connection with the study of resource landscapes through archaeology and anthropology. Both theoretical questions and case studies were the substance of discussion about how landscapes were shaped to facilitate the utilisation of resources. Their characterisation implies not only material, but also spiritual aspects linked to the use of resources. Since ResourceAssemblages are products of historical transformations and mutual relations, the mechanisms of these processes are of great importance.

A look through research literature reveals that approaches to the topic of resources vary significantly and provide the basis for intense debates such as those that characterised the abovementioned EAA session. A recurrent approach to resources focuses on the demands and basic needs of people as individuals and emphasises the role that resources play for the creation, reproduction and transformation of societies. A material approach to the notion of resources would focus on the satisfaction of biological demands to make human life sustainable, including oxygen, water and food. As a species that has travelled far and away across the planet, *Homo sapiens* has developed substantial needs to adapt to a wide range of climatic conditions; dwellings, clothing and technology demand a broad range of resources to make stable human life possible.

Expanding on this approach, the collaborative research centre ResourceCultures (SFB 1070) at the University of Tübingen works on a definition of resources that places the emphasis on the role of resources in the development of societies (Bartelheim et. al. 2015; Hardenberg 2017; Hardenberg et al. 2017). According to this 'resource-as-culture perspective', resources are the result of cultural constructions. As such, they form the foundations

of societies, and these foundations do not simply exist 'naturally' and their use is not just a response to universal needs. Humans not only use the naturally pre-existing elements that ensure their biological continuity, but they also do create or construct resources and ensure their preservation, availability and use. At the same time, people are constantly changing their social relationships in the process of valorising these resources. This, in turn, has an impact on the resources, that are also transformed in the process of social reproduction. Thus, resources operate at multiple levels: they sustain human life, making it reproductible, they are socially created as a result of community action, and they can become critical for the renewal of social constructs. The way in which they are handled triggers complex socio-cultural dynamics, especially with regard to social developments, mobility and valuations (Scholz et al. 2017). According to this view, the concept of resources must be expanded to encompass the value they receive through cultural attribution and which makes them of great importance for the corresponding societies.

The attributions of value that turn something into a resource change over time and space. There is a widespread understanding that environmental and biological constraints are essential in identifying what a resource is. For example, hunters and gatherers living in the tropical forests of the Amazonia are not in desperate need of furs, but indigenous groups in the polar regions are. According to this view, human societies have evolved into a bewildering variety of cultures across space and over time and as many of them grew bigger (especially over the last ten thousand years), an increasing amount and variety of resources became socially demanded. In Europe, Neolithic societies had no demand for certain resources such as petroleum, which is an exceedingly critical resource in the life of most humans at the beginning of the 21st cent. AD. But they had a demand for green stones, particularly jadeite or variscite, which were widely sought after, transformed and used as body ornaments and charms, or jade and jadeite, which were transformed into beautifully polished axes (Pétrequin et al. 2017). All those objects became increasingly important for status display and as resources for increasingly sophisticated forms of political economy. While jade and jadeite were in large demand and use as early complex societies and pristine states developed in regions as distant as Mesoamerica, Europe or China (Rodríguez-Rellán et al. 2019), which would suggest either an in-built desire for that particular type of stone, a remarkable convergence or, more likely, a much earlier common origin to such interest, going back to Palaeolithic societies, the exploitation and use of variscite remained more specific to western European prehistoric societies.

From a 'resource-as-culture perspective', almost anything can be regarded as a resource in human life. Conspicuous or beautiful natural formations lay at the core of most worldviews (Salisbury 2015): mountains, forests, rivers and lakes are considered to be resources not only because they provide material means to sustain human life, or socially-demanded raw materials, but also because they inspired, quite early on, ways in which human beings could interpret their position in the universe and organise themselves socially.

The analysis of prehistoric landscapes shows how 'special' natural places frequently became the focus of social action quite early on (Bradley 2000) and how they became important social and ideological resources susceptible of manipulation, competition or struggle. The same applies to human creations; material culture, such as portable artefacts or buildings, can become resources of remarkable social and political significance. When in the 8th cent. AD wannabe-king of Asturias Don Pelayo and his son were buried next to two Neolithic megalithic monuments, they were drawing on the prestige and significance of constructions that were already about 5000 years old (De Blas Cortina 2015). Those very old megaliths were regarded as resources to support the establishment of a new ruling house that would endure – Spanish Bourbons still acknowledge their symbolical ancestry to Pelayo by using the title of Prince or Princess of Asturias for the heirs to the crown. Even the materiality of the human body can become a powerful resource, both economic and ideological. In the Middle Ages, monastic institutions competed for the possession of the relics of holy men and women including, especially, fragments of their

bones (Walker Bynum/Gerson 1997). Those relics, inevitably fake in many cases, became extraordinary resources of political, economic and ideological power, not to say of religious fervour, as they acted as attractors for the pious (pilgrimages, gatherings, etc.) as well as magnets for donations from the wealthier members of feudal society.

In cultural anthropology and archaeology, the concept of resources is now a broad one and, therefore, narrow 'economicist' definitions that refer primarily to raw materials that are used to produce material goods are increasingly seen as not very useful. Resources cannot be reduced to 'all raw material deposits physically present on earth' (Wacker/Blank 1999, 4) for which there is a social interest (Niemann 2006, 11). New approaches define resources beyond their economic use. For example, Müller-Christ (2011, 167–170) distinguishes between resource definitions within the framework of production theory (input-transformation-output theory), competition theory (resource-based view) and systems theory (means-end continuum). In the first case, resources are primarily production factors, in the second case they are organisational prerequisites for economic success, and in the third case they are manifold means of maintaining systems. Giddens (1984, 258), on the other hand, differentiates between authoritative and allocative resources: while the former designate means and abilities that serve the exercise of power, the latter guarantee access to the material foundations of life. For Bourdieu (Bourdieu/Waquant 1992, 119), as is well known, resources are the basis of the various types of capital (economic, social, cultural, symbolic), which can be converted into one another and which depend quite decisively on social networks. Lowenthal (1985) has incorporated the concept of resources into so-called 'Heritage Studies', in which different cultural studies participate in order to investigate how societies use cultural resources to represent their history (or histories) and to evaluate or make current processes understandable (Hemme et al. 2007; Sørensen/Carman 2009). In the historical sciences, Ash has detached the concept of resources from its purely economic meaning in order to describe the mutual relations between science and politics. For him, resources can also be 'cognitive, apparatus, personnel, institutional and rhetorical' (Ash 2002, 32).

In all these broader approaches, the specific value of resources is often expressed in recurring, usually organised collective actions or through investments in extensive collective labour which is then materialised as objects, monuments or knowledge coded in texts or memories. These actions are directed at various resources, for the extraction and use of which people invest extensive collective labour and thus set socio-cultural processes in motion. Whether these foundations of social life are material or immaterial resources is secondary; what is decisive is that resources are linked to a social and cultural value for the forms of living together. Through actions, the values of resources are made visible and integrated into larger social contexts.

Problematising the concept of resources is also helpful in order to identify and challenge Eurocentric assumptions. It is tempting to see the 'economicist' approach, according to which resources are located in nature and seen primarily as a means of capitalist production (Hausmann/Perreaux 2018, 188–190), as resulting from the process of economic and social mercantilisation and industrialisation that Europe has experienced in the past five centuries. Today, this concept of resources is almost inseparable from prevailing capitalist and consumerist notions of nature resulting from neoliberal market economies and the main traits that characterise our lifestyles: compulsive shopping, extreme commodification and high energy consumption. From this understanding, in which the accumulation of resources as capital plays a central role (Hausmann/Perreaux 2018, 190), similar resources and their capitalist forms of use can now be identified and compared almost worldwide. However, leaving aside the issue of the origins of capitalism as an economic form, the fact remains that much of modern thinking about resources has been developed in Europe under social conditions that gave primacy to ideologies of mercantilisation and industrialisation. Thus, in order to grasp what material and immaterial resources other societies have used in the past to maintain and develop their ways of life, we need a more open understanding of the concept, an

understanding that is also applicable to a wider range of human activity.

Applying a New Approach

In this volume, the potential of this approach is explored in order to encourage a 'resource turn' (Hardenberg et al. 2017). A first central consideration here is that the distinction between natural and cultural resources is not always helpful, as this dichotomy very often would hide the cultural embedding of all resources, regardless of their origin or characteristics. Socially, something becomes a resource when people ascribe a culturally shaped interest to it, that is give it value, construct it materially and symbolically and use it within the framework of socially and culturally shaped practice. To some, the only possible exceptions to this are the fundamentals of the individual human life mentioned above; not all human societies consume variscite, but all consume water. But even among the 'building blocks' essential for life, substantial cultural differences may arise: water and food are valued in widely differing ways by different societies depending on climatic conditions, ecological availability and cultural sanctions.

This leads to a second consideration: if resources are defined by shared ideas (or interests) and integrated into cultural practice, then they have an impact on the social relationships that people enter into in order to use these resources. This means that resources not only have an impact in terms of meeting individual needs and demands, but are also highly relevant to their respective societies. They form the culturally defined foundations of a society, and are thus closely linked to the way of life and the values that hold a community together. To this extent, the use of resources always has social effects, for example by creating, preserving or changing groups and their identities. It could also be said that resources have a social agency, which becomes particularly evident when resources become scarce or crises make access to resources more difficult.

A third central consideration is that resources can best be understood as being processes themselves. This means that resources are constantly changing in the course of their social use. Thus, by becoming resources, raw materials are processed, changing their appearance, form, value, significance, consistency and others. As human knowledge changes, new characteristics and forms of use of these resources may be recognised, and different social dynamics may result in new evaluations and symbolisations of the resource. In this respect, resources are always in a process of becoming.

Fourthly, an attempt is made to open up the concept of resources to different societies and their economic 'base' (see Gudeman 2001; 2012). This is achieved by making resources an object of study, which means it is always necessary to first explore what were or are the resources that form the central base for the ways of life in different societies at different times. According to this approach, there are no things that are to be understood as resources *per se*, but rather the most diverse material and immaterial aspects of life can be transformed into resources and often form a particular ResourceComplex (see below). However, the aim of scientific research is not only to identify something as a resource for a society, but to use this resource as a category for analysis, which means as a starting point for investigating various questions, such as: What social developments result from the use of particular resources? What forms of spatial mobility characterise the use of certain resources? How are the resources symbolically represented and used?

Finally, it is important to note that social formations attach 'strategic' or 'key' value to certain resources. Such resources vary widely through time and space, depending on their cultural connotation: the bodily parts of purportedly holy men and women that were so important economically, socially and ideologically in Medieval Europe do not seem to play a major role in today's capitalist markets. By 'key' resources, we understand the resources that are crucial for sustaining an established social order and/or have the potential to trigger societal change. The domestication of animals, and particularly cattle and pigs because of their high return, endowed these animals with 'strategic' or 'key' economic and social significance at the onset of the Neolithic way of life. However, the spread of the domesticated riding horse throughout Eurasia in the 3rd mill. had profound

economic, social and ideological consequences (Anthony 1986; Anthony/Brown 2000) and horses became a new 'key' resource, triggering societal change and giving support to new ways of life.

Landscapes as Resources

Understanding landscapes as resources, as proposed in this volume, expresses these perspectives well. The concept of landscape has been one of the most successful ones in both cultural anthropology and archaeology over the last four decades. A look at the development of the concept in both disciplines shows that it is not problem-free and there has been a significant transformation in its usage. Like with the notion of resources, an earlier understanding of landscape was shaped by the dichotomy between nature and culture. As Knapp and Ashmore pointed out, the American geographer Carl Sauer already understood cultural landscapes as something 'fashioned' from nature in an essay entitled 'The morphology of landscapes' in 1925 (Knapp/Ashmore 1999). Even later theoreticians did not overcome this dualism. Daniels and Cosgrove, for example, saw landscapes as a 'cultural image, a pictorial way of representing or symbolising surroundings' (1988, 1, cit. in Ingold 1993, 154) and contrasted it with nature, that is the 'surroundings' that are the object of these symbolic constructions. Tim Ingold was one of the first theorists to develop a more dynamic view of the concept when he defined a 'dwelling perspective' by which people are part of lived relationships, landscapes being a kind of archive of the life and work of past generations: '[T]he landscape tells – or rather is – a story' (Ingold 1993, 152). This perspective characterises Ingold's understanding of environment and landscape. He distinguishes both concepts by introducing the distinction between function and form. An environment offers 'affordances' to the beings that dwell in it, and therefore, according to his argument, the environment has concrete functions for human life. Landscapes, according to Ingold, are, by comparison, like the form of the body, they arise and change in the process of interaction. Ingold uses the term 'embodiment' in this context, making it clear that bodies like landscapes become a visible expression of the relationships and actions that have shaped them (Ingold 1993, 156). Thus, this concept of 'landscape' complements the one widespread in ecology, which appears closer to 'environment' (e.g. Wu 2013), with a cultural or perceptional dimension.

A complementary concept to that of landscape that needs to be taken into account is that of territory. The notion of territory is strongly marked by its usage in ecology and biology, as part of the study of species showing highly patterned spatial behaviour (many types of insects, most mammals, etc.). Perhaps for that reason, its incorporation into the conceptual toolkit of human geography places a great deal of emphasis on the control of resources, including raw materials, objects or people, partly in line with the 'economicist' approach to the concept of resources mentioned above. From this perspective, territoriality can be defined as 'the attempt to affect, influence, or control actions, interactions, or access by asserting and attempting to enforce control over a specific geographic area' (Sacks 1983, 56). However, the development of theoretical approaches in human geography (see Cloke et al. 1991 for a discussion) has led to an expansion of its specificities in terms of human behaviour. A good example of a definition of territory from an approach which deals with cultural strategies is provided by Michael J. Casimir: 'Human territorial behaviour is a cognitive and behaviourally flexible system which aims at optimizing the individual and hence often a group access to temporarily or permanently localised resources, which satisfy either basic or universal or culture-specific needs and wants, or both, while simultaneously minimising the probability of conflicts over them' (Casimir 1992, 20).

In archaeology, concepts of territoriality expanded significantly in the 1960s and 1970s with the rise of the so-called spatial archaeology, heavily inspired by locational and human geography, and later, from the 1990s on, through the incorporation of GIS-based approaches to spatial behaviour. Such approaches were criticised during the 1980s and 1990s from advocates of post-processual archaeology who relied heavily on a phenomenological point of view according to which the notion of landscape was better suited for the study of the subjective perceptions (individual or collective), which were seen as the main

aim of archaeology (Tilley 1994, 12). While such 'radical' relativist propositions have been widely criticised, the concept of landscape has made a powerful impact in the discipline.

There are numerous definitions of landscape. In Anthropology, Filippucci, for example, defines a landscape 'as something constructed by humans in the course of their daily lives and interactions, both physically and also symbolically, by being invested with meaning, memory, and value. But moreover, anthropologists argue that the two – investing with meaning and shaping physically – go hand in hand and cannot really be separated' (Filippucci 2016). Knapp and Ashmore (1999) distinguish between constructed landscapes, conceptualised landscapes and ideational landscapes. For them, the former describes the fact that 'sedentary groups [...] structure their landscapes [...] obtrusively, physically constructing gardens, houses and villages on the land, often in the near vicinity of natural landmarks' (Knapp/Ashmore 1999, 10). They contrast this with the conceptualised landscapes, which 'are characterized by powerful religious, artistic or other cultural meanings invested in natural features' (Knapp/Ashmore 1999, 11), a process that is more typical for mobile groups. The latter type, the ideational landscapes, is more mental and emotional and is formed by moral messages, mythic stories or genealogies (Knapp/Ashmore 1999, 12). These characterisations are ultimately still based on the opposition between natural/physical and cultural/spiritual, thus perpetuating dichotomies that, as we mentioned above, are not very helpful when dealing with social realities.

The success of the concept of 'landscape' in archaeology, human geography and cultural anthropology has led to its incorporation into legal texts that seek to protect places and spaces of especial cultural significance. For example, the UNESCO has developed its own definition of 'cultural landscapes' by distinguishing 'clearly defined landscapes' (e.g. gardens, parklands), 'organically evolved landscapes' (e.g. disrupted fossil landscape or continuing landscapes with material evidence of long-term evolution) and 'associative landscape' (e.g. landscapes which carry significant religious, artistic and other cultural meanings for the people) (Fowler 2003, 19). Another legal definition of landscape is available in the European Landscape Convention promoted by the European Council in a meeting held in Florence (Italy) in November 2000: 'Landscape means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors.' Legally, the concept of 'landscape' has significantly expanded previously held notions of 'site' that could not encapsulate all the complex relationships people maintain with their environments. Scientifically, the concept of 'landscape' has greatly expanded our understanding of past and present societies, helping archaeologists to break away from limiting notions of 'site' and contributing to a more contextual approach to the understanding of action.

The two disciplines, archaeology and cultural anthropology, have diverging potential to deal with two main elements integrated within the concept of landscape: 'time' and 'meaning', which blend into 'memory'. Cultural anthropology, using basically qualitative methods from the social sciences for studying living societies, does usually not focus on the temporal dimension of landscapes. Archaeology, on the other hand, has different tools to establish the evolving nature of human relationship with the changing environments, from the deep past of the genus *Homo*, three million years ago, to the most recent historical periods. In turn, whereas cultural anthropologist, interacting either directly with living informants or studying written documents of the past, can gain insights to systems of symbolic communication based on 'meaning' and 'value', archaeologist have less access to such aspects. Cultural anthropologists, however, are aware that these meanings are not clear, undisputed data. On the contrary, meanings are notoriously elusive, as they operate at many different levels (individual vs. collective) and change constantly over time, depending partly on the context, but also on the intent (meanings can be hidden, manipulated, falsified, misinterpreted). Therefore, while in both cultural anthropology and in archaeology meanings are often seen as important, their study does not offer simple solutions and sometimes raises more questions than answers. Without living informants, archaeology can aim at establishing 'shared-meanings' at a general level, at most, but individual meanings are largely lost.

Here, we want to avoid the 'economicist' approach to territoriality as much as the 'subjectivist' approach to landscapes. In our view, both cultural anthropology and archaeology can collaborate towards a scientific approach to how human societies have interacted with their environments and how they have used a wide-ranging suit of resources of both material and immaterial character, over millennia, creating, in the process, what we have termed 'resource landscapes'. Inspired by definitions of territory and landscape as those provided by Casimir or Ingold respectively, this concept of 'resource landscape' bridges multiple approaches to human spatial interaction while at the same time connects with the aforementioned approach to resources.

Landscapes of resources are understood as an expression of collective work as well as places of remembrance and as a means of creating social relationships. Like resources that acquire their own effectiveness through their 'affordances' (Gibson 1977) and embedding in social contexts, landscapes are also found to have agency, for example when they are the sites for constructing identities or expressing political claims. In other words, 'landscapes are a focus, and indeed a means, of political contestation and of the formation of different and competing identities' (Filippucci 2016, 2). For both, archaeologists as well as anthropologists, the common themes when dealing with landscapes are memory, identity, social order and transformation (Knapp/Ashmore 1999, 13). To understand the network character of resource landscapes, the notion of ResourceComplexes as proposed by the SFB 1070 (Teuber/Schweizer 2020) is considered next.

Complexes, Assemblages, and Landscapes

When looking at the wider socio-cultural dynamics, it may be useful to understand resources not in isolation, but as part of ResourceComplexes. These are, according to the definition of the collaborative research centre ResourceCultures (SFB 1070), networks of materials and environments, actors, objects or media, monuments and landscapes, knowledge, techniques, infrastructures, practices and systems, in which individual elements can interact in a certain way through the interplay of intention and materiality in order for resources to be used by a community. Therefore, ResourceComplexes serve in specific spaces and at particular times to develop, extract and use socially relevant resources and are intentionally and functionally linked to each other. They are also an expression of human planning, the effort to create stable orders and to have long-term access to resources. In such a ResourceComplex, a wide variety of material and immaterial things work together, implying different people, things, forms of knowledge and contents. The concept of the ResourceComplex is to be understood primarily as an analytical tool to grasp these components that come together when resources are used (Teuber/Schweizer 2020).

Thus, ResourceComplexes involve also the co-occurrence of certain elements considered as resources in particular regions by certain people. This is in many cases influenced by their geological, climatic and ecological availability, while those elements not available in the territory of a given community will have a constrained access, dependent on exchange. One school of thought in archaeology therefore argues that communities inhabiting environments with a wide range of affordances had a head-start in the development of well-functioning ResourceComplexes. From this perspective, all major societal transformations occurred in regions endowed with a wealth and variety of affordances – including communication and networking – such as ecotones. Ecotonal regions are defined as areas where two or more environments meet and overlap, thus generating a richer environment whose characteristics are a mixture of the ones in contact (Gosz 1993). According to this approach, demographic growth, economic intensification and increased social complexity are more likely to happen in ecotonal regions combining marine resources, arable land and access to abiotic resources (rocks suitable for tool-making, salt, metals, etc.).

For reconstructing past ResourceComplexes, the understanding of the corresponding environments is therefore an important task. Archaeology has devoted a great deal of effort to develop the necessary tools, both theoretical and technical, to understand how the physical environment has

changed over time, especially during the Holocene, when the intensification of human action has caused growing anthropogenic footprints (Davidson/Shackley 1976; Butzer 1982).

However, networks like ResourceComplexes are only partially planned by humans and under human control. What is regarded and used as resources is subject to constant change, new human and material contextualisations and attributions of value and significance, which are characterised by contingency. The term ResourceAssemblage is intended to analytically grasp the unpredictable or unstable.

In archaeology an assemblage usually refers to a collection of material remains (faunal remains, lithic tools, pottery fragments) coming from an identified context. In this sense, an assemblage is therefore a series of objects that are likely to convey some kind of significance in their composition and associations, in terms of human behaviour. In cultural anthropology, the concept of assemblage has a more theoretical connotation. Originally coined by Deleuze and Guattari (Deleuze/Guattari 1992 [1980]), an assemblage is an arrangement which provides coherence and consistency to heterogeneous elements (Deleuze 2007, 179). 'In assemblages', Deleuze argues, 'you find states of things, bodies, various combinations of bodies, hodgepodges; but you also find utterances, modes of expression, and whole regimes of signs' (Deleuze 2007, 177). The further development of the assemblage concept in anthropology and archaeology is the result of a number of different intellectual inspirations which entered the debates through the Material Turn (Miller 2005), New Materialism (Coole/Frost 2010), the influence of Bruno Latour's Actor Network Theory (Latour 1996; 2005), the renewed interest in animism and ontologies (Descola 2011) and the study of different perceptions of environment as mentioned above (Ingold 2000).

Assemblage theory combines many of these new ideas as it stresses the links and interactions between heterogeneous elements of different materiality and temporality which can become part of larger compositions. In cultural anthropology, it provides a way to understand how people and things are part of wider institutions, are embedded in systems of meaning and form contingent and often relatively unstable constellations. Assemblage theory further recognises that each of these arrangements has different degrees of territorialisation, homogeneity and coding (DeLanda 2016, 22).

Cultural anthropologists and archaeologists have employed the concept of an assemblage in various ways. Ursula Rao, for example, has employed the concept of a 'biometric assemblage' in her study of the relations between bodies, machines, regimes of knowledge and power in the context of using fingerprint technologies in India (Rao 2018). Stephan Kloos in his research on herbal medicine in Asia uses the idea of a 'pharmaceutical assemblage' to trace the connections between drugs, human health, subjectivity, contemporary forms of science, governance and markets (Kloos 2017). The concept of 'sensorial assemblage' has been used by the archaeologist Yannis Hamilakis to describe the participatory relationship between humans and food substances within the context of feasting in Bronze Age Crete (Hamilakis 2017).

Landscapes as well can be understood as assemblages, because they consist of very heterogeneous elements (earth, rocks, rivers, climate, animals, plants, people, buildings, fences and walls, paths and streets, etc.), which have a certain spatial extension, show different degrees of heterogeneity and homogeneity and are part of sociocultural processes. The peculiarities of landscapes are an expression of the interaction of the individual components that have entered this structure at different times and have shaped it or still shape it. The concept of the assemblage helps on the one hand to understand how a landscape was created, but also what dynamics characterise it, since the latter partly derive from the relationships between the elements. An approach like this surpasses the formerly common contrast between natural and cultural landscapes and goes beyond the simplistic idea that humans construct their landscapes. In a landscape assemblage, humans are only one component in a much larger network. For archaeologists, this approach is helpful because, due to the continuous interaction between humans and their physical environment, all things always contain 'traces' of human past actions and are therefore 'assemblages of humans and non-humans' (Joyce 2015).

2. Characterisation of Resource Landscapes in the Papers

The papers assembled in this volume help to explore this wide theoretical frame and offer some concrete examples of how resource landscapes could be analysed. Here, the focus is on the identification of what has been considered a key resource by the respective societies as well as the exploration of the means and mechanisms through which the corresponding landscapes were transformed. These refer not only to ways of using, shaping, organising, controlling and exchanging resources, but also knowledge, perceptions, motivations for actions and related social dynamics. The central questions defined for the EAA session were:

- Is it possible to detect a conscious human attempt in the shaping of landscapes in order to suit the use of resources?
- How are landscapes created to serve the requirements of resource use? What are the social practices connected to this?
- Is there specific evidence for a personal or group identification with resources or resource use and if so, which social practices, ideas and values are linked with these identities?
- Which perceptions of resources and landscapes as well as motivations for action can be traced?
- How are socio-cultural dynamics linked to the use of resources?

The broad implications and complexity of these issues made it necessary to incorporate approaches and empirical experiences from a wide interdisciplinary field that encompasses many disciplines from the Social Sciences and Humanities.

Because of its research-related close contact with the actors and their respective understanding of landscapes and resources, cultural anthropology provides relevant insights into local perceptions of landscapes and the character of ResourceComplexes and ResourceAssemblages. This widens the horizon by providing examples of perspectives alternative to those of our contemporary Western perception and thus represents a valuable extension of the explicatory scope in the interpretation of findings, primarily from the more distant past, for which current Western ways of thinking may not necessarily be assumed.

Archaeological approaches, on the other hand, reveal the complex depth of human interaction with resources, the wide-ranging and ever-changing nature of the resources at play, while at the same time displaying the evidence of the persistence and endurance of certain resources and social practices, technologies and cultures surrounding them.

Cultural anthropology as well as archaeology deal with a vast range of social systems, from hunter-gatherers to recent colonial empires and can therefore offer a huge amount of empirical evidence to understand the wealth and variety of human interaction with resources.

The study presented by Roland Hardenberg demonstrates vividly that people like the Dongria Kond, who practise swidden agriculture, growing mainly various types of grain, pulses, tubers and fruits in the Niamgiri mountains of Odisha in present-day eastern India, do not see the environment as something independent and separate, but as part of their social (and cultural) world. Humans are not above or beyond nature, they are part of the environment. Thus, the surrounding landscape is considered as a world populated by various animated beings with whom they establish and maintain social relationships. In his interpretation of Dongria Kond socio-cosmic views, dwelling in the environment is shaped by relationships based on exchange, rearing, hunting, sharing and marrying, that is by activities that also structure the relations between humans. In the same way these modes of attachment form the relationship between the Dongria Kond and their animated environment. Their engagement with the environment is meant to create ‘we-ness’ instead of maintaining an ‘otherness’ of a nature that has to be controlled and exploited by human culture. Gods, environment and people are connected and their relations formed by giving and taking. As in an assemblage, this is not a fixed arrangement but in the constant process of becoming: relationships get disturbed and have to be restored, new relationships have to be created or expanded. For all agents the whole landscape is a continuously changing assemblage of resources with humans being only one part of it.

This case study suggests that non-modern people subjectify (or personify) rather than objectify their environment, which is of great potential interest when studying the interaction of prehistoric societies with their environments. It should therefore be considered that similar to the Dongria Kond environments and specific landscapes were not seen as 'the other' but as part of one's society. Correspondingly it seems reasonable to assume that the landscapes of the past were assemblages created by social, not simply economic activities. Following this perspective, humans of prehistory may be expected not to 'use' and 'exploit' their environment driven by economic constraints ('scarcity') and maximising calculations ('profits'). It seems much more likely that they dwelled in it by respecting mutual concerns as well as behaving socially and on the basis of their socio-cosmic concepts shaped landscapes of meanings that constituted resources in a multiple sense.

A rather different approach towards landscape and resource use – although also regarded as a complex interaction of natural and human elements – is presented in the study by Maike Melles, which deals with how the Spanish *dehesa* economy is portrayed in 'official' exhibitions. The *dehesa* is a multifunctional agro-sylvo-pastoral system and cultural landscape found in central and south-western Iberia, based on human-managed natural forests of oaks, usually holm oak (*Quercus ilex*) and cork oak (*Quercus suber*) which, besides the forestry exploitation, is used primarily for grazing of animals, very especially Iberian pigs, which are allowed to roam freely, feeding on acorn. The *dehesa* economy has a long history probably dating back to the 4th mill. BC (García Sanjuán 2017, 241). The two exhibitions analysed by Melles are primarily designed to promote a positive image of the present-day handling of the *dehesa*. The author highlights the dichotomy between nature and culture underlying the view of the landscape, with a strong emphasis on resource exploitation by humans. Key element of both exhibitions is the production of the typical Iberian ham, around which a ResourceComplex consisting mainly of a special breed of pigs, climate, oaks, acorns, workforce and artisanal knowledge has formed. Both exhibitions, which are called 'museums' but in fact are more like marketing centres for ham, highlight the natural background of the production of ham: movement of animals in open nature, feeding acorns from the surrounding trees, production of ham according to traditional principles. The associated characterisation of *dehesa* as a 'natural' landscape, which produces this natural product ham, is countered by a long-lasting massive anthropogenic influence, which makes what is presented in these exhibitions as a 'natural' landscape a profoundly culturally-shaped one. Various historical events, social and cultural developments, as well as varying forms of use, have had an impact on the landscape and have left their mark on it. Thus, with the contingent character of the events, they make the *dehesa* appear as a ResourceAssemblage and a primarily cultural and social phenomenon. Behind the practices that have shaped the *dehesa* are also the corresponding values and beliefs as well as social relations. Therefore, the *dehesa* cannot be seen in a typical nature-culture distinction; it is not exclusive, but rather a reflection and mediator of what we call nature, cultural and social life. Reducing landscape to any of these components would deny the complexity of relationships inherent to it.

Ethnographic examples such as these demonstrate the multitude of socio-cultural aspects that imply the use of ResourceComplexes or ResourceAssemblages in landscapes. Furthermore, they also provide an insight into the (intellectual) complexity of the relationship between humans and nature, which is part of the complex histories of landscape use and can only be tentatively explored in archaeological studies through the combination of environmental data, contextual associations and artistic creations. In cases in which historical documents can add at least some information about the political background of events in landscapes and about the motives of actors – ideally complemented by own testimonies – the archaeological record on the development of landscapes, resource use and the associated socio-cultural dynamics can be interpreted more specifically.

In fact, three of the contributions to this volume combine evidence from the archaeological record with historical documents and personal accounts in order to explore the evolution of landscapes in Mediterranean Europe. The first of

them by Heleni Simoni et al. compares patterns of landscape in two elevated plains in Greece, one in Epirus in the north and one on the Peloponnese in the south, to investigate resource use over a period of about 600 years. Within the predominantly agropastoral use of the landscapes it is possible to identify a specific ResourceComplex in both areas that consists of the consciously established link between animal husbandry and the preservation of sacred forests. Later developments allow also the analysis of the landscapes in question as ResourceAssemblages to describe the culturally driven formation of the landscape. One of these historical events would be the poverty driven migrations during the 19th and 20th cent. leading to considerable depopulation. This made them attractive for lifestyle migrants, for example educated people from big cities of Europe or Greece, who were searching for a 'rural idyll' in an attractive landscape. These developments were caused by external factors not at all linked to the two elevated plains in Greece, like on the one hand the industrialisation in other parts of the world, mostly northern Europe, and the allurement of the earning potential there. On the other hand, a change of life style in urban zones due to a widened horizon of the inhabitants and development of living conditions brought people to move to the abandoned mountain plains in search of resources, which are not connected to subsistence and survival, but to aesthetics and pleasure provided by the interaction of nature and culture. The consequences were substantial changes in the use of the landscape in the two elevated plains and in what is regarded to be a resource.

The chapter by Oscar Jané Checa et al. has a similar aim, as it looks into the transformation of rural landscapes in the eastern Pyrenees of Spain. Traces of earlier use are recognisable in abandoned villages and their economic areas which were shaped mostly by agriculture and animal husbandry. Historical events, such as the Spanish Civil War and the enduring hardships of Franco's dictatorship, including repression and poverty, especially during the post-war period, led to major economic disruption as well as massive emigration to the more prosperous industrial countries of Northern Europe during the 1950s and 1960s. This reflects the effects of economics, politics, social behaviours and ideologies during the 20th cent., which led to abandonment, and illustrates the functioning of the corresponding social and political networks in the Pyrenees.

Leonardo García Sanjuán et al. deal with the pervasive presence of aquatic resources in the Antequera region, in southern Spain. The point of departure of their analysis is a water well found in 2005 inside Menga, the largest dolmen in the Iberian Peninsula and one of the most special megalithic monuments world-wide. This water well, a remarkable hydraulic feature itself, is discussed with the support of geographic, archaeological and historical evidence in order to understand the multiple, complex and subtle roles played by water in the region over the last 6000 years. Important elements of this contribution are, therefore, its deep temporal focus, and the multi-disciplinary character of the evidence. Antequera is marked by the geologically-determined brackish character of most of its surface water. Yet, at the same time, it boasts a formidable resource of fresh-water: the aquifer underlying the El Torcal karstic formation, which provides a large amount of fresh water all year around. This is a water resource of critical importance in a Mediterranean region subject to intra and inter-annual water shortages. At the same time, Antequera is situated in an ecotonal region, right between the Baetic mountains, full of abiotic resources, and the Antequera plain, with high-quality agricultural land, which, in turn, is where major communication routes of southern Spain meet. All these elements combined form an exceptional landscape of resources, in which waterscapes have played a major role through time. Salt exploitation, aquatic sanctuaries, healing waters, irrigation agriculture and enduring prehistoric monuments feature highly in a contribution that explores the pervasiveness of some ResourceComplexes.

Various other contributions to this volume rely more exclusively on the archaeological record. Depending on the evidence and the state of knowledge, these case studies discuss different aspects of the handling of landscapes and the use of resources therein. Whereas symbolical aspects stand in the forefront in some of the contributions, socio-economic questions are highlighted in others. In accordance with the spectrum of the available

information, which differs from those of the other examples, the focus of the archaeological investigations is primarily on observations of long-term developments in landscapes.

In a study on settlement systems in Neolithic southern Italy, Roberto Filloramo et al. investigate the use of landscape as a resource by analysing the visibility areas of settlements. The landscape is viewed as a repository for resources in the sense of natural goods, and its analysis is tied to questions regarding the exchange of culturally connoted resources like ideas, practices and techniques. The visibility areas of settlements are considered to have been closely linked to zones of control over the landscape and thus areas of resource use. In this way, the control over land and a close link to communication routes for the exchange of goods, information and innovations are viewed together with knowledge, practices and methods as an important ResourceComplex. It changes over time as it is revealed mainly by the shifting of the location of the sites and the variations in the viewsheds.

The landscape of the southern Spanish Guadalquivir valley offered a number of possibilities for resource use during the Bronze Age as it is discussed by Martin Bartelheim et al. Apart from the use of minerals, the use of transit areas or places with transcendental meanings, refers mainly to agriculture and husbandry. The use of the fertile lowland soils has been demonstrated sufficiently for the preceding Chalcolithic by settlers living close-by. For the Bronze Age a similar resource use can be assumed, but a shift of settlements to elevated positions at the transition from the 3rd to the 2nd mill. BC points towards a reorganisation and a shaping of the landscape with a visual control from those defensive sites to meet modified social interests. The transformation was probably an answer to socio-economic consequences of climatic changes, whose accidental character allows to describe the ResourceComplex around subsistence production, social networks and landscape use also in a long-term perspective as a ResourceAssemblage.

For Iron Age Denmark Astrid Skou Hansen postulates a conscious and planned human shaping of a landscape according to archaeological features from north-western Jutland. This is thought to have served the interests of a ResourceComplex around arable land as well as trade and communication. A series of pit field alignments are interpreted as a means to direct movement to certain roads that gained importance at a time when the landscape was redefined and the settlement structure became more centralised, moving from single farmsteads into larger, more coherent settlements. Together with the new agricultural production system of the Celtic Fields, a more efficient system of land use was established that together with the reformed system of transportation led to a stronger social coherence and new ways of getting access to resources and external communication. The transit routes became part of a ResourceComplex related to infrastructure, comprising exchange of goods, maintenance of political ties or herding of livestock, and an overall understanding of the organisation of space as well as a ‘correct’ way to move in the landscape.

In his regional study on the Upper Rhine Valley in the area of today‘s Alsace (France) and Baden (Germany), Michael Kempf analyses parameters that influenced the use of soil as a resource within the ResourceComplex of agriculture during the early Middle Ages. Water supply plays a central role in the analysis, on the one hand with regard to the avoidance of flood zones, on the other hand because of the need for sufficient irrigation of agricultural land. A further factor is the soil properties and their suitability for agriculture and livestock breeding, which is why the abundant loess soil areas in the Upper Rhine Valley form preferred settlement and economic areas. It has been shown that knowledge of the most suitable sites and their use can be found as traces in the landscape and is handed down over long periods of time. It is conceivable that from about 700 AD onwards – as a result of the institutionalisation of the church as an important organisational factor – the establishment of fixed locations of village churches consolidated the locations of villages and thus created the landscape structures still visible today. Previously, settlement sites were moved more frequently within the area. With the influence of the church as an organising power, an independent external factor comes into play, which adds a further contingent component to the ResourceComplex of agriculture, landscape and knowledge and, applying

a longer chronological perspective, turns it into a ResourceAssemblage. This goes hand in hand with further continuously changing technological, cultural and social adaptation processes which, as a consequence of local as well as supra-regional developments, can be found in the archaeological and historical memory of a landscape and contribute significantly to its shaping.

Although the presented case studies constitute a heterogeneous collection of examples in terms of time and space, they demonstrate that analysing the use of landscapes and the specific resources therein can contribute to a better understanding of the dynamics within the corresponding societies. 'Landscapes' and humans mutually constitute each other. Landscapes thus contain traces of everyday life, interactions, social relations, identities as well as symbolic spheres of meaning within a certain space. The composition of landscapes can vary strongly showing different degrees of heterogeneity and homogeneity and is formed within cultural processes. The application of the concept of ResourceComplexes or alternatively ResourceAssemblages as heuristic devices help to illustrate the interplay of the relevant factors, since neither resources nor landscapes can be understood in isolation.

Martin Bartelheim
Eberhard-Karls Universität Tübingen
Institut für Ur- und Frühgeschichte und Archäologie des Mittelalters
Schloss Hohentübingen
72070 Tübingen, Germany
martin.bartelheim@uni-tuebingen.de

Leonardo García Sanjuán
University of Sevilla
Department of Prehistory and Archaeology
María de Padilla s/n
41004, Sevilla, Spain
lgarcia@us.es

Roland Hardenberg
Goethe University Frankfurt
Institute of Social and Cultural Anthropology
Norbert-Wollheim-Platz 1
60323 Frankfurt am Main, Germany
hardenberg@em.uni-frankfurt.de

Bibliography

Anthony 1986: D. W. Anthony, The ‚Kurgan Culture', Indo-European Origins, and the Domestication of the Horse. A Reconsideration. Current Anthropology 27, 1986, 291–313.

Anthony/Brown 2000: D. W. Anthony/D. R. Brown, Eneolithic Horse Exploitation in the Eurasian Steppes. Diet, Ritual and Riding. Antiquity 74.283, 2000, 75–86.

Ash 2002: M. G. Ash, Wissenschaft und Politik als Ressourcen füreinander. In: R. vom Bruch/B. Kaderas (eds.), Wissenschaften und Wissenschaftspolitik. Bestandsaufnahmen zu Formationen, Brüchen und Kontinuitäten im Deutschland des 20. Jahrhunderts (Stuttgart 2002) 32–51.

Bartelheim et al. 2015: M. Bartelheim/R. Hardenberg/T. Knopf/A. Scholz/J. Staecker, ResourceCultures. A Concept for Investigating the Use of Resources in Different Societies. In: A. Danielisová/M. Fernández-Götz (eds.), Persistent Economic Ways of Living. Production, Distribution, and Consumption in Late Prehistory and Early History (Budapest 2015) 39–50.

Bradley 2000: R. Bradley, An Archaeology of Natural Places (London 2000).

Bourdieu/Waquant 1992: P. Bourdieu/L. J. D. Waquant, An Invitation to Reflexive Sociology (Chicago 1992).

Butzer 1982: K. Butzer, Archaeology as Human Ecology (Cambridge 1982).

Casimir 1992: M. J. Casimir, The Dimensions of Territoriality. An Introduction. In: M. J. Casimir/A. Rao (eds.), Mobility and Territoriality. Social and Spatial Boundaries Among Foragers, Fishers, Pastoralists, and Peripatetics (New York 1992) 1–26.

Cloke et al. 1991: P. Cloke/C. Philo/D. Sadler, Approaching Human Geography. An Introduction to Contemporary Theoretical Debates (London 1991).

Coole/Frost 2010: D. Coole/S. Frost, Introducing the New Materialisms. In: D. Coole/S. Frost (eds.), New Materialisms. Ontology, Agency, and Politics (Durham 2010) 1–43.

Davidson/Shackley 1976: D. A. Davidson/M. L. Shackley (eds.), Geoarchaeology. Earth Science and Past (London 1976).

DeLanda 2016: M. DeLanda, Assemblage Theory (Edinburgh 2016).

Deleuze/Guattari 1992 [1980]: G. Deleuze/F. Guattari, Tausend Plateaus. Kapitalismus und Schizophrenie II (Berlin 1992 [1980]).

Deleuze 2007: G. Deleuze, Two Regimes of Madness. Texts and Interviews 1975–1995 (Cambridge 2007).

Descola 2011: P. Descola, Jenseits von Natur und Kultur (Frankfurt am Main 2011).

De Blas Cortina 2015: M. A. De Blas Cortina. Megaliths and Holy Places in the Genesis of the Kingdom of Asturias (North of Spain, AD 718–910). In: M. Díaz-Guardamino/L. García Sanjuán/D. W. Wheatley (eds.), The Lives of Prehistoric Monuments in Iron Age, Roman and Medieval Europe (Oxford 2015) 205–224.

Filippucci 2016: P. Filippucci, Landscape. In: F. Stein/S. Lazar/M. Candea/H. Diemberger/J. Robbins/A. Sanchez/R. Stasch (eds.), The Cambridge Encyclopedia of Anthropology 2016, <http://doi.org/10.29164/16landscape> (last access 7.5.2020).

Fowler 2003: P. J. Fowler, World Heritage Cultural Landscapes 1992–2002 (Paris 2003).

García Sanjuán 2017: L. García Sanjuán, Farming Economy and Wealth Economy in the Copper Age of the Lower Guadalquivir River. Debating Strategic Resources at Valencina de la Concepción (Seville, Andalusia, Spain). In: M. Bartelheim/P. Bueno Ramírez/M. Kunst (eds.), Key Resources and Socio-Cultural Developments in the Iberian Chalcolithic. RessourcenKulturen 6 (Tübingen 2017) 237–256.

Gibson 1977: J. Gibson, The Theory of Affordances. In: R. Shaw/J. Bransford (eds.), Perceiving, Acting, and Knowing (Hoboken 1977) 127–143.

Giddens 1984: A. Giddens, The Constitution of Society. Outline of the Theory of Structuration (Cambridge 1984).

Gosz 1993: J. R. Gosz, Ecotone Hierarchies. Ecological Applications 3.3, 1993, 369–376.

Gudeman 2001: S. Gudeman, The Anthropology of Economy. Community, Market, and Culture (Malden 2001).

Gudeman 2012: S. Gudeman, Community and Economy. Economy's Base. In: J. G. Carrier (ed.), A Handbook of Economic Anthropology 2 (Cheltenham 2012) 95–108.

Hamilakis 2017: Y. Hamilakis, Sensorial Assemblages. Affect, Memory and Temporality in Assemblage Thinking. Cambridge Archaeological Journal 27.1, 2017, 169–182.

Hardenberg 2017: R. Hardenberg, Dynamic Correspondences. ResourceCultures. In: A. K. Scholz/M. Bartelheim/R. Hardenberg/J. Staecker (eds.), ResourceCultures. Sociocultural Dynamics and the Use of Resources – Theories, Methods, Perspectives. RessourcenKulturen 5 (Tübingen 2017) 25–34.

Hardenberg et al. 2017: R. Hardenberg/M. Bartelheim/J. Staecker, The ‚Resource Turn'. A Socio-Cultural Perspective on Resources. In: A. K. Scholz/M. Bartelheim/R. Hardenberg/J. Staecker (eds.), ResourceCultures. Sociocultural Dynamics and the Use of Resources – Theories, Methods, Perspectives. RessourcenKulturen 5 (Tübingen 2017) 13–24.

Hausmann/Perreaux 2018: D. Hausmann/N. Perreaux, Resources. A Historical and Conceptual Roadmap. In: I. Amelung/H. Leppin/C. A. Müller (eds.), Discourses of Weakness and Resource Regimes. Trajectories of a New Research Program. Discourses of Weakness and Resource Regimes 1 (Frankfurt am Main 2018) 179–208.

Hemme et al. 2007: D. Hemme/M. Tauschek/R. Bendix, Prädikat „Heritage". Wertschöpfungen aus kulturellen Ressourcen (Münster 2007).

Ingold 1993: T. Ingold, The Temporality of the Landscape. World Archaeology 25, 1993, 152–174.

Ingold 2000: T. Ingold, The Perception of Environment. Essays on Livelihood, Dwelling and Skill (London 2000).

Joyce 2015: R. A. Joyce, Transforming Archaeology, Transforming Materiality. Archaeological Papers of the American Anthropological Association 26.1, 2015, 181–191.

Kloos 2017: S. Kloos, The Pharmaceutical Assemblage. Rethinking Sowa Rigpa and the Herbal Pharmaceutical Industry in Asia. Current Anthropology 6, 2017, 693–717.

Knapp/Ashmore 1999: A. B. Knapp/W. Ashmore, Archaeological Landscapes. Constructed, Conceptualized, Ideational. In: A. B. Knapp/W. Ashmore (eds.), Archaeologies of Landscape. Contemporary Perspectives (Malden 1999) 1–30.

Latour 1996: B. Latour, On Actor-Network Theory. A Few Clarifications. Soziale Welt 47.4, 1996, 369–381.

Latour 2005: B. Latour, Reassembling the Social. An Introduction to Actor-Network-Theory (Oxford 2005).

Lowenthal 1985: D. Lowenthal, The Past is a Foreign Country (Cambridge 1985).

Miller 2005: D. Miller, Materiality. An Introduction. In: D. Miller (ed.), Materiality (Durham 2005) 1–50.

Müller-Christ 2011: G. Müller-Christ, Sustainable Management. Coping with the Dilemmas of Resource-Oriented Management (Heidelberg 2011).

Niemann 2006: S. Niemann, Kontext und Relativität von „Ressourcen". In: D. Hummel/C. Hertler/C. Janowicz/A. Lux/S. Niemann (eds.), Ressourcen und Bevölkerungsdynamiken. Ausgewählte Konzepte und sozial-ökologische Perspektiven. Demons Working Papers 6 (Frankfurt 2006) 7–19, <http://www.demons-project.de/material/demons_wp6.pdf#page=9> (last access 7.5.2020).

Pétrequin et al. 2017: P. Petrequin/E. Gauthier/A.- M. Pétrequin (eds.), JADE 2. Tomes 3 et 4. Objets-signes et interprétations sociales des jades alpins dans l'Europe néolithique. Dynamiques territoriales 10 = Cahiers de la MSHE Ledoux 27 = Presses universitaires de Franche-Comté 1379 (Besançon 2017).

Rao 2018: U. Rao, Biometric Bodies. Or How to Make Electronic Fingerprinting Work in India. Body & Society 24.3, 2018, 68–94.

Rodríguez-Rellán et al. 2019: C. Rodríguez-Rellán/B. Nelson/R. Fábregas Valcarce (eds.), A Taste for Green. A Global Perspective on Ancient Jade, Turquoise and Variscite Exchange (Oxford 2019).

Sacks 1983: R. D. Sacks, Human Territoriality. A Theory. Annals of the Association of American Geographers 73.1, 1983, 55–74.

Salisbury 2015: J. Salisbury, Before the Standing Stones. From Land Forms to Religious Attitudes and Monumentality. In: M. Díaz-Guardamino/L. García Sanjuán/D. W. Wheatley (eds.), The Lives of Prehistoric Monuments in Iron Age, Roman and Medieval Europe (Oxford 2015) 19–33.

Scholz et al. 2017: A. K. Scholz/M. Bartelheim/R. Hardenberg/J. Staecker (eds.), ResourceCultures. Sociocultural Dynamics and the Use of Resources – Theories, Methods, Perspectives. RessourcenKulturen 5 (Tübingen 2017).

Sørensen/Carman 2009: M. L. S. Sørensen/J. Carman (eds.), Heritage Studies. Methods and Approaches (London 2009).

Tilley 1994: C. Tilley, A Phenomenology of Landscape. Places, Paths and Monuments (Oxford 1994).

Teuber/Schweizer 2020: S. Teuber/B. Schweizer, Resources Redefined. Resources and ResourceComplexes. In: S. Teuber/A. K. Scholz/T. Scholten/M. Bartelheim (eds.), Conference Proceedings for "Waters as a Resource" of the SFB 1070 ResourceCultures and DEGUWA (Deutsche Gesellschaft zur Förderung der Unterwasserarchäologie e.V.). RessourcenKulturen 11 (Tübingen 2020).

Wacker/Blank 1999: H. Wacker/J. E. Blank, Ressourcenökonomik II. Erschöpfbare natürliche Ressourcen (München 1999).

Walker Bynum/Gerson 1997: C. Walker Bynum/P. Gerson, Body-Part Reliquaries and Body Parts in the Middle Ages. Gesta 36.1, 1997, 3–7.

Wu 2013: J. Wu, Key Concepts and Research Topics in Landscape Ecology Revisited. 30 Years after the Allerton Park Workshop. Landscape Ecology 28, 2013, 1–11.