

Chapter 12

Rewilding Time in the Vale do Côa

Caitlin DeSilvey

Opening

For much of the twentieth century, both history and ecology were understood to be entities with a certain structure and orientation – gradually progressing along more or less linear paths towards states of increasing stability, set within a shared interpretive framework of succession and serialisation. Now, the storyline has shifted. We live in an era in which concepts of stability have been superseded by an insistence on contingency; singular linear pathways have been replaced with multiple, interleaving possibilities; coherence has given way to complexity. This general shift is evident in both ecological thinking and in contemporary discourses around time and history, and has the effect of troubling foundational precepts and overturning previous assumptions about the way the world works. Some have diagnosed this temporal and ecological upheaval as a signature feature of the Anthropocene, in which the deep past and the deep future are subject to unpredictable processes of interpenetration and cross-contamination, which converge in a volatile present (Dibley 2012). In this chapter, I aim to think temporality and ecology in relation to each other, through the concept of rewilding. In rewilding, I argue, emerging, alternative frameworks of ecology and history are fused, as the desire for restoration (to an imagined ecological baseline) is replaced by an embrace of radical ecological uncertainty (which draws on latent pasts to animate possible futures). I explore these ideas through reference to a specific landscape – the Vale do Côa in north east Portugal.

Temporalities of rewilding

The concept of rewilding can refer to multiple different contexts and practices, and its definition is frequently contested and debated (Lorimer et al. 2015; Helmer et al. 2015; Jepson 2016; Navarro and Pereira 2012; Monbiot 2014). Many rewilding initiatives share, however, a focus on supporting processes of naturalistic grazing, predation and plant succession (Lorimer and Driessen 2014; Robbins and Moore 2013), often attempted through the reintroduction of keystone species to formerly intensively-managed landscapes. Rewilding has emerged into academic and ecological discourse alongside a broader re-evaluation of core ecological concepts, in which assumptions about ecological succession towards stable climax states are being replaced with new paradigms that explore the significance of ongoing disturbance and dynamic change in the formation of non-equilibrium ecologies and novel ecosystems. The

implications for the practice of ecological restoration have been profound, as summarised by Stephen T. Jackson and Richard J. Hobbs:

[P]erhaps the most natural feature of the world in which we find ourselves is continual flux... If natural states are elusive, if the environment is always changing and ecosystems are always coming and going, and if multiple realisations are normal, then the premises underlying ecological restoration to a historic standard come into question. (Jackson and Hobbs 2009: 567–8)

Within critical academic discourse, opinion is divided on whether rewilding should be classified as a conservative and reactionary attempt to return ecological systems to a pre-human past or a radical experimentation with possible ecological futures. Questions of history and temporality – the nature of time and the time of nature – are central to this debate.

The term ‘rewilding’ contains within it an implicit temporal orientation, which suggests both that there existed a prior state of ‘wildness’ and that it is possible, or desirable, to restore elements of its structure and function – claims which have been thoroughly critiqued by contemporary scholars (Castree 2013; Cronon 1996; Jackson and Hobbs 2009). Dolly Jørgensen has argued that rewilding’s focus on the reintroduction of animals which have been ‘extirpated by humans’ implies a baseline ‘before human habitation’ (2015: 486). She catalogues the different historic reference points that guide goal-setting in rewilding initiatives, and concludes:

Rewilding as currently practiced disavows human history and finds value only in historical ecologies prior to human habitation. The rewilding concept has been deployed in a myriad of ways to exclude humans in time and space from nature. (Jørgensen 2015: 487)

This critique suggests that any attempt to ‘return’ to a pre-human past is inherently suspect, and relies implicitly on a conceptualisation of time as linear and irreversible.

Others have argued, however, that the temporalities of rewilding are not so neatly organised along a clear demarcation between the past and the present, and that representing rewilding as a desire to ‘restore’ a past state misses the point. The release and re-introduction of selected animal species has become a core strategy in rewilding efforts, but the ecological outcome of these interventions is often unknown, and the emphasis usually lies on creating the

conditions of possibility for the (re)establishment of autonomous natural processes, rather than restoration as such (DeSilvey and Bartolini 2018). In a recent policy brief, Frans Schepers (managing director of Rewilding Europe) and Paul Jepson explain:

[T]he baseline for conservation policy in many European nations has been preindustrial agriculture, which requires the protection and maintenance of wildlife-rich patches of cultural landscapes through active scientific management. This conservation approach, which has been compared to restoring a painting that then needs curating, is at odds with the process-oriented ethos of rewilding and the uncertain ecological and conservation dynamics this entails. (Jepson and Schepers 2016: 25)

They go on to describe rewilding as: ‘Taking inspiration from the past but not replicating it, by developing new natural heritage and values that evoke the past but shape the future – with the point of reference in the future, not in the past’ (Jepson and Schepers 2016: 26). The relationship between the past and the present in this statement is considerably more slippery (if not sloppy) than suggested by the critique summarised above.

Jamie Lorimer and Clemens Dreissen, in their research on Heck cattle, have explored the way that rewilding engages with ‘dynamic future pasts’ (2016: 647), a term which seems more sympathetic to temporal complexity which characterises many rewilding initiatives. In these initiatives, the past emerges into the present as an active and constitutive force; latent materialities (and biologies) emerge to shape unpredictable futures. The past provides ‘inspiration’ but not necessarily evidence; efforts are directed towards production of a ‘new natural heritage’, with a future-orientation that evokes past patterns. Some scholars have proposed that ‘neo-wilding’ would be a more appropriate term to describe what is happening in these contexts (Bridgewater 2015).

These ideas have a clear resonance with the work of scholars who are exploring alternatives to the chronological, historicist ‘time regime’ (Hartog 2016; Tantaka 2015), and their proposals for the study of ‘mnemohistory’ (Assmann 1997; Tamm 2013, 2015), ‘relational time’ (Harvey 1996; Fitzpatrick 2004) and ‘heterogeneous time’ (Serres and Latour 1995; Schwanen 2007). Consider Laurent Olivier’s musings on the implications of the re-evaluation of historical time, read in relation to the Jackson and Hobbs quote above:

[I]f historical time is no longer a time which links, little by little, events which strictly follow on from each other – in a word, if time is now released – it can then create a

correlation between events which are very distant from each other. If the past remains embedded in the present, it can therefore reawake[n] and reactivate in the present processes which were thought to be over for good, because they belonged to a past which was over and done with. (Olivier 2004: 209)

Olivier writes of composite, heterogeneous time, characterised by the persistence of elements of the material past in present physical environments – ideas also explored in depth by geographers in relation to specific places and landscapes (Pred 2004; Crang and Travlou 2001; Bartolini 2013; Bastian 2014; Massey 2006). Bruce Braun has recently argued that the Anthropocene calls for an understanding of time that acknowledges both how the ‘past haunts the present’ (Braun 2015: 240) and how time flows ‘toward us, from the future to the present’ (Braun 2015: 239). This chapter picks up on these ideas to imagine what it might look like to ‘rewild’ time, exploring rewilding as a conceptual metaphor which opens out alternative temporalities of release and recurrence.

A river in time

The Côa River cuts a northward course from its source in the mountains near Sabugal, Portugal, winding 135 kilometres to meet the Douro River below the town Vila Nova de Foz Côa, in the far northeast of the country, close to the Spanish border (Figure 1). In this remote and rugged location, ancient people left their trace in an open air art gallery along the banks of the river. Most of the rock art was created during the Upper Paleolithic, roughly 20,000 years ago, and depicts the animals that shared the prehistoric landscape, including horses, ibex, aurochs and deer. More than a thousand rock art carvings and paintings have been found in 70 different sites, and more continue to be discovered. New carvings appear to have been created sporadically into the modern period, and images of trains, boats and airplanes sometimes appear adjacent to the depictions of extinct fauna.

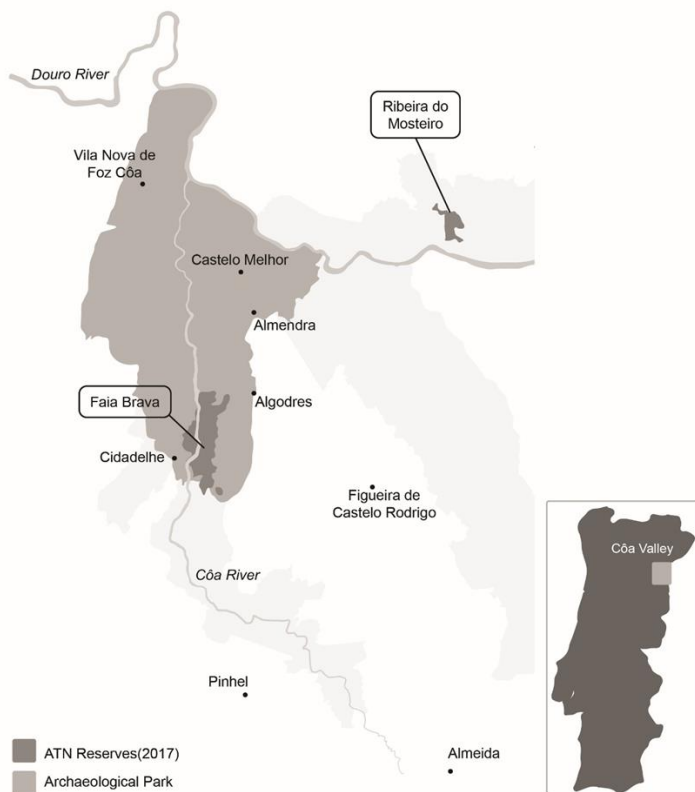


Figure 1: Map showing the confluence of the Douro and C\u00f4a Rivers, in relation to the C\u00f4a Valley Archaeological Park and ATN reserves. Produced by the University of Exeter Design Studio.

Although there is some evidence of continuity in the rock art tradition, by the second half of the twentieth century the presence of the carvings and paintings had been all but forgotten (Luis and Garcia Diez 2008). Many of the villagers who formerly tended their fields and grazed animals in the steep fields and pastures along the river had passed on or moved away, and those who remained kept the knowledge of the rock art to themselves, with no reason to share it with outsiders. The depopulation of rural Portugal – an effect of mass emigration, falling birth rates, and changing rural economies – meant that an already remote area became even more isolated during the course of the twentieth century. When a dam was proposed for the C\u00f4a in the 1990s, the concentration of carvings was (re)discovered by surveyors and archaeologists and brought to public attention (Lawson 2012). UNESCO classified the lower stretches of the C\u00f4a River valley as a World Heritage Site in 1998, and the area was protected in an archaeological park, and interpreted in a new museum. The Upper Paleolithic engravings in the C\u00f4a have been described as ‘an exceptional illustration of the sudden development of creative genius during the dawn of human’s cultural development’ (Gomes and Lima 2009: 4). Recent research suggests that the engravings were associated with seasonal hunting camps, where dispersed

tribal groups would come together to ‘fulfill their economic, social and cultural needs’ (Aubry et al. 2012: 543; Gomes and Lima 2009: 2); the collective, artistic depiction of their animal prey likely served a symbolic or ritual purpose which remains unknown, and unknowable.

The global recognition of the rock art and the creation of the archaeological park occurred against a backdrop of continued depopulation and land abandonment. Between 2001 and 2011 the region’s population declined by 2% every year (‘Wo Europa wächst und wo es schrumpft’ 2015). In the scattered villages above the valley, mostly elderly residents remained, living in homes alongside the ruins of former dwellings. As villages emptied out, once-cultivated fields and grazing meadows grew over in broom and scrub. One group of people saw an opportunity in the disused agricultural lands. In 2000, a group of biologists established the Faia Brava reserve, on parcels of land just upstream of the main concentration of rock art. Their organisation, Associação Transumância e Natureza (ATN), initially focused on improving habitat for raptors, but they soon began to experiment with reintroduction of horses and cattle, in the hope that their grazing activity would improve habitats and reduce fire risk, by gradually edging out the scrub vegetation and creating space for a mosaic of open meadows and revegetated woodland (a landscape type known in Portugal as ‘montado’).

Since 2012, ATN has been working with Rewilding Europe to run a rewilding pilot project in the Faia Brava reserve. In 2016 they released a new population of horses into an extension of the reserve (bringing the total reserve area to over 1,000 hectares), and they are supporting the animals as they gradually adapt to the rugged conditions and transition to a ‘de-domesticated’ semi-wild state (Lorimer and Driessen 2016). The organisation is also participating in the Tauros back-breeding programme (which involves selective breeding to produce a contemporary breed that resembles the extinct auroch) and have submitted proposals to reintroduce the Pyrenean ibex. By minimising active management and returning ‘iconic European nature species’ to the landscape, they hope to create ‘a true wilderness area... where natural processes work on their own’ (ATN 2015).¹

For the purposes of this chapter, I will focus on one aspect of the Faia Brava rewilding initiative: the proposed ibex introduction. The ibex (also known as the *bucardo*) was once common in Iberia, and profile images of their goat-like bodies and distinctive sweeping horns appear in many of the carvings along the river (Figure 2). As agriculture came to dominate the landscape and hunting pressures took their toll, ibex were gradually cornered into remote parts of the region, and several distinct sub-species arose in isolated regional populations. The Portuguese ibex subspecies (*Capra pyrenaica lusitanica*) became extinct in 1892, but the related Pyrenean ibex (*Capra pyrenaica pyrenaica*) was declared extinct only in 2000 (Folch

et al. 2009). When ATN proposed the ibex for reintroduction in the C \hat{o} a as part of their rewilding initiative, they intended to introduce animals from the Geres Mountains in the north, where they had spread from a reintroduced Spanish population. The reintroduced ibex would have taken their place alongside Faia Brava's 'semi-wild' horses and cattle.



Figure 2: Upper Paleolithic ibex carving at Penascosa (Rocha 5B 1). Reproduced with permission of the photographer, Jo \tilde{a} o Romba.

However, the Portuguese national nature conservation body, ICNF, rejected the application for ibex reintroduction two times, claiming that there was no 'physical evidence' of their former presence in the landscape, despite the extensive depiction of ancient ibex in the carvings (personal communication 25 November 2016). Presumably, archaeological documentation of bone fragments and other tangible remains would have made ICNF more inclined to consider the reintroduction plan; the carvings were deemed to be inadmissible as ecological evidence. The decision, also, however, contains within it the assumption that ecological restoration to a historic baseline, when informed by appropriate evidence, is possible. The idea that the reintroduced ibex would take their place in a novel ecosystem, characterised by emergence and uncertainty, is not entertained. In this sense, the rejection of the ibex reintroduction can be read, in part, as the residue of a conception of linear, singular time.

Reintroduction is explicitly framed as a ‘return’ to a point along a prior temporal trajectory, rather than an expression of the past in the present, with unpredictable future effects.

The interpretation of the ibex images in the Museu do Côa, the main interpretive site for the archaeological park, also falls into line with this temporal conservatism. Inside, in a series of darkened rooms, the visitor can view backlit panels with reproductions of many of the most significant carvings discovered to date. The museum organises the carvings into thematic groupings (‘horses’, ‘aurochs’, ‘ibex’) and describes each theme as a sign: ‘Each rock art theme must be understood as a sign that, in combination with other themes, produces *discourses*. The communitarian meaning of a given *place* is behind the specific *discourse* of that same place.’ The museum sorts the respective themes along projected timelines, with distinct periods marked out to indicate when the carvings were created, and when their creation ceased. The interpretive panel devoted to the ibex discourse shows that ibex appear in the rock art up to 10,000 BC. With the dawn of the Mesolithic, the ibex disappear from the representational timeline; the timeline itself ends in 1995. In the museum space, periodization operates as a tool for controlling time, breaking it into sequences and organising it into a linear progression (Tanaka 2015). The ibex carvings belong to the past, ‘the beyond’. The museum interpretation – in line with the ICNF rejection – seems to close off the potential for the images to signify otherwise, or to reach into the future.

In a curious parallel development, the extinct ibex has also become entangled with an experiment that radically unsettles assumptions about ecological and historical time. Shortly before the death of the last surviving Pyrenean ibex in 2000, scientists preserved skin samples (ear scrapings) from the individual in liquid nitrogen. Using DNA taken from these skin samples, in 2009 the scientists were able to clone a female Pyrenean ibex (who they named ‘Celia’). The experiment was celebrated as successful attempt at ‘de-extinction’ (Folch et al. 2009). The newborn ibex kid died shortly after birth due to physical defects in its lungs. In this reorganisation of time and ecology, extinction is no longer ‘forever’, and latent genetic potential is drawn on to invent previously unthinkable future-natures (Ogden 2014). The cautionary tale presented by the instance of the cloned ibex exists in an uneasy relation to the softer experiments with reintroduction and rewilding, which are more focused on restoring certain ecological interactions and functions than on bringing back particular life forms or species (Adams 2017: 4).

Aesthetic-causal alliances

One particular carving, etched into an upright slab at Quinta da Barca (Figure 3), provides a glimpse of another way of thinking about the ibex in relation to landscape and temporality. It shows an ibex with two heads: one head is looking forward and the other appears to be looking back. The two heads are linked in an arc made by their touching horns. Archaeologists have interpreted this image as marking a major innovation in the representation of movement, which came over 14,000 years ago (Baptista 2015: 203). By showing the heads in two positions, the artist implies that the ibex has just turned, and the static form is broken with the impression of animation. The way the carving is oriented along the river, the ibex head that turns over the back of the animal looks downstream, towards the part of the valley where most of the ancient carvings have been found; the forward-facing ibex head looks upstream, towards Faia Brava, and the future vision represented by the rewilding pilot project.²



Figure 3: Two-headed ibex carving at Quinta da Barca (Rocha 3). Reproduced with permission of the photographer, António Martinho Baptista.

Until their rediscovery in the 1990s, the Côa carvings, and the ancient ibex, remained a latent presence in the landscape – a reservoir of dormant potential. In conceptions of chronological time, causality is assumed to emerge from flow in a unilinear direction (Tantaka 2015: 162). Timothy Morton, in contrast, asks what difference it would make to understand time not as a passive medium but as an effect that emerges from our encounters with objects and images (Morton 2013: 34–5). Causality, in his opinion, is fundamentally an aesthetic process. He explains this concept in his discussion of his encounter with a painting by Australian Aboriginal artist Yukultji Napangati:

The image is not a mute object waiting to have its meaning supplied by a subject, nor is it a blank screen; nor is it something objectively present ‘in’ space. Rather the painting emits something like electromagnetic waves, in whose force field I find myself. The painting powerfully demonstrates what is already the case: space and time are emergent properties of objects... The aesthetic form of an object is where the causal properties of the object reside. (Morton 2013: 35)

If we are willing to accept (even provisionally) that time and causality are emergent properties of objects, then we can understand the ibex images in the rock art as aesthetic forms that cast effects both ‘backwards’ into the past and ‘forwards’ into the future, bending and twisting along the way to interrupt expectations of the ‘has been’ with expressions of what might yet be (Olsen 2010: 128). Such a perspective collapses temporal distance to allow the images to exist not ‘in time’ but as objects that ‘time’ in their own right, with the perception of temporality activated by encounter (Morton 2011: 153). Following on from ideas explored by Bernard Steigler, we can perhaps understand the ibex images as a form of ‘tertiary memory’, stretching across generations: the carved images function as a prosthetic memory support, reactivated by our gaze, and our touch (Figure 4).



Figure 4: A very small carving of an ibex at Vale de João Esquerdo. Reproduced with permission of the photographer, Mário Reis.

Here we begin to see how linear, chronological time might be rewilded to (re)introduce other temporal frameworks. The ‘process-oriented ethos’ which defines ecological approaches to rewilding (Schepers and Jepson 2016) could be adopted to enliven our understanding of how the world ‘times’, with a renewed focus on experimental epistemologies and emergent relationships. Rewilded time might encourage recognition of the way time flows and eddies, speeds up and slows down, iterates and irritates, pleats and plaits (Serres and Latour 1995). Bronislaw Szerszynski elaborates on what it might look like to ‘release’ time in this way:

[T]ime in the non-human world as much as the human world can be seen as displaying multiple, overlaid temporalities, and qualitative characteristics, such as those of intention and adaptation. Such accounts render problematic any simple distinction... between the wild and the domestic. Making the environment temporally meaningful... could even perhaps be seen as restoring rather than imposing a qualitative dimension to time, and thus at one and the same time taming time – making it socially meaningful – and setting

it free – releasing it from the strictures of quantitative clock time that have been imposed on it by the discourses of modern science. (Szerszynski 2002: 189)

The rewilding experiment on the Côa can be understood as a kind of temporal ecological activism. The conservationists responsible for managing the Faia Brava reserve take care, however, to explain that the Paleolithic carvings do not provide a literal reference for their reintroduction plans. They see the carvings instead as a ‘portrait of what people saw and valued’ in the ancient landscape, and also a record of the way that humans and animals have coexisted in the Côa for thousands of years. Their interest is not in the rock art in isolation, but in the ‘landscape behind the engravings’ (personal communication 26 January 2015). For them, the rewilding initiative is not about reaching some arbitrary baseline of pre-historic wildness, but about the process of ‘becoming wild’ again, in the context of the present, and appreciating how the past can animate the future.

Kathryn Yusoff writes about rock art a ‘gesture of time given to the future’ (2015: 391), and as such, she suggests, its aesthetic charge lies in its power to actualize different temporalities: ‘The image holds the survival of its coming into being, and its survival through geologic time,’ she writes; it also ‘fore-sees the future, in its creative power to survive as a possibility’ (Yusoff 2015: 400). In the Côa river valley, the rock art opens up a ‘space of communication’ (Yusoff 2015: 399) in which we recognise that we share a ‘corporeal heritage’ with bodies that are not our own (Yusoff 2015: 396). This space of communication connects us, through our encounters with the rock art, with the people who lived in the Côa valley thousands of years ago; but it also, critically, connects us to the animals who lived in that landscape as well, and who impelled the human inhabitants to idealise them in their rock art imagery, for unknowable symbolic or ritual reasons. In Morton’s terms, the images operate as ‘aesthetic-causal alliances with nonhumans’, performing time in our encounter with them (Morton 2011: 154).

Stefan Tanaka has argued that only a ‘history without chronology’ allows us to recognise discontinuous patterns of co-evolutionary change, born out of extended interaction between animals and people over time (Tanaka 2015: 179; LeCain 2016). One might argue that what we are witnessing now can be understood as *co-devolutionary* change, which unstitches the agricultural advances of the Neolithic to weave a future that integrates elements of older, more unpredictable and autonomous, human-animal relations. If, as Tanaka claims, linear, chronological time forces us into a ‘default progressivism’ and an attendant politics of growth and accumulation, then rewilded time open up the possibility of intentional decline and creative

deceleration, and the formation of new Anthropocene storylines which allow us to reimagine human/nonhuman relations in a more reciprocal and receptive mode (Tanaka 2015; see also Kallis and March 2015). Lesley Head has suggested that we should cultivate an appreciation of spatial and temporal variability in our understanding of past relationships between humans and nonhumans, in order to prepare ourselves for the conceptual labour that is required to think ourselves into the Anthropocene creatively, open to contingency and chance (Head 2014). The work of these scholars suggest that it may be an opportune moment to rewild our conceptualisations of time, opening ourselves to the possibility of release, multiplicity and convergence. The future assembled through the practice of rewilding (in the C^ôa, if not elsewhere) is not about restoration, but about understanding conservation as a ‘series of wild experiments – speculative practices uncertain of future outcomes’ (Lorimer 2015: 9).

Acknowledgements

A first draft of this chapter was completed while the author was resident at the Centre for Advanced Study in Oslo, Norway, as a fellow on the research project ‘After Discourse: Things, Archaeology and Heritage in the 21st Century’; the chapter benefited from comments from the research group and from participants in the CAS ‘Past Presences’ workshop in December 2016. Field research was supported by ‘Heritage Futures’, an Arts and Humanities Research Council (AHRC) “Care for the Future: Thinking Forward through the Past” Theme Large Grant (AH/M004376/1), awarded to researchers at University College London, University of Exeter, University of York and Linnaeus University (Sweden). I am grateful to Nadia Bartolini, Heritage Futures Transformation theme Research Associate, and Antony Lyons, Senior Creative Fellow on the Heritage Futures project, who shared the fieldwork experience in Portugal and informed this work through our ongoing intellectual and creative collaborations. Additional thanks to ATN (Associação Transumância e Natureza) and AC^ôOA (Friends of the C^ôa Museum and Archaeological Park), Bárbara Carvalho, Pedro Prata and the other individuals who participated in our research in the C^ôa Valley and generously offered their insights and expertise.

References

- Adams, B. (2017) ‘Geographies of conservation 1: De-extinction and precision conservation’, *Progress in Human Geography*, 41 (4): 534–45.
- Assmann, J. (1997) *Moses the Egyptian. The Memory of Egypt in Western Monotheism*, Cambridge, MA, and London: Harvard University Press.

- ATN 2015 = Nature Conservation Strategic Plan Figueira de Castelo Rodrigo, Portugal.
- Aubry, T., Luís, L. and Dimuccio, L. A. (2012), 'Nature vs. Culture: Present-Day Spatial Distribution and Preservation of Open-Air Rock Art in the Côa and Douro River Valleys (Portugal)', *Journal of Archaeological Science*, 39: 848–66.
- Baptista, A. M. (2015), 'Parque Arqueológico do Vale do Côa – Portefólio I', *Côa Visão: Economia, Ciência e Cultura*, 17: 187–244.
- Bartolini, N. (2013), 'Rome's Pasts and the Creation of New Urban Spaces: Brecciation, Matter, and the Play of Surfaces and Depths', *Environment and Planning D: Society and Space*, 31: 1041–61.
- Bastian, M. (2014), 'Time and Community: A Scoping Study', *Time and Society*, 23: 137–66.
- Braun, B. (2015), 'Futures: Imagining Socioecological Transformation – An Introduction', *Annals of the American Association of Geographers*, 105: 239–43.
- Bridgewater, P. (2015), 'Rewilding the World for the Future: Using Novel Ecosystems as a Key Conservation Tool', unpublished paper presented at 'Wild Thing? Managing Landscape Change and Future Ecologies, 9th to 11th September 2015, Sheffield Hallam University.
- Castree, N. (2013), *Making Sense of Nature*, London: Routledge.
- Crang, M. and Travlou, P. S. (2001), 'The City and Topologies of Memory', *Environment and Planning D: Society and Space*, 19: 161–77.
- Cronon, W. (1996), 'The Trouble with Wilderness: Or, Getting Back to the Wrong Nature', in W. Cronon (ed.), *Uncommon Ground: Rethinking the Human Place in Nature*, 69–90, New York: Norton and Co.
- DeSilvey, C. and Bartolini, N. (2018) 'Where Horses Run Free? Autonomy, Temporality and Rewilding in the Côa Valley, Portugal', *Transactions of the Institute of British Geographers*, advance online access, <https://doi.org/10.1111/tran.12251> (accessed 12 June 2018).
- Dibley, B. (2012), "'The Shape of Things to Come": Seven Theses on the Anthropocene and Attachment', *Australian Humanities Review*, available online: <http://australianhumanitiesreview.org/category/issue/issue-52-may-2012/> (accessed 12 June 2018).
- Fitzpatrick, T. (2004), 'Social Policy and Time', *Time & Society*, 13: 197–219.
- Folch, J., Cocerob, M. J., Chesnéc, P., Alabart, J.L., Domínguez, V., Cognié, Y., Roche, A., Fernández-Árias, A., Martí, J.I., Sánchez, P., Echegoyen, E., Beckers, J.F., Sánchez Bonastre, A. and Vignon, X. (2009), 'First Birth of an Animal From an Extinct

- Subspecies (*Capra pyrenaica pyrenaica*) by Cloning', *Theriogenology*, 71 (6): 1026–34.
- Gomes, P. D. and Lima, A. C. (2009), *Vale do Côa, a Landscape of Freedom, Between Prehistory and Medieval Villages: A Tour Around the Archaeological Park and a Trip from Malcata to Planalto Mirandês*, Vila Nova de Foz Côa: Parque Arqueológico do Vale do Côa.
- Hartog, F. (2016), *Regimes of Historicity: Presentism and Experiences of Time*, transl. S. Brown, New York: Columbia University Press.
- Harvey, D. (1996), *Justice, Nature and the Geography of Difference*, Oxford: Blackwell.
- Head, L. (2014), 'Contingencies of the Anthropocene: Lessons from the "Neolithic"', *The Anthropocene Review*, 1: 113–25.
- Helmer, W., Saavedra, D., Sylvén, M. and Schepers, F. (2015), 'Rewilding Europe: A New Strategy for an Old Continent', in H. M. Pereira and L. M. Navarro (eds), *Rewilding European Landscapes*, 171–90, New York: Springer.
- Jackson, S. T. and Hobbs, R. J. (2009), 'Ecological Restoration in Light of Ecological History', *Science*, 325: 567–68.
- Jepson, P. (2016), 'A Rewilding Agenda for Europe: Creating a Network of Experimental Reserves', *Ecography*, 39 (2): 117–24.
- Jepson, P. and Schepers, F. (2016), 'Rewilding in a European Context', *International Journal of Wilderness*, 22: 25–30.
- Jørgensen, D. (2015), 'Rethinking Rewilding', *Geoforum*, 65: 482–88.
- Kallis, G. and March, H. (2015), 'Imaginaries of Hope: The Utopianism of Degrowth', *Annals of the Association of American Geographers*, 105: 360–68.
- Lawson, A. J. (2012), *Painted Caves: Palaeolithic Rock Art in Western Europe*, Oxford: Oxford University Press.
- LeCain, T. J. (2016), 'How Did Cows Construct the American Cowboy?', in M. W. Ertsen, C. Mauch, and E. Russell (eds), *Molding the Planet: Human Niche Construction at Work, RCC Perspectives: Transformations in Environment and Society*, 5: 17–24.
- Lorimer, J. (2015), *Wildlife in the Anthropocene: Conservation After Nature*, Minneapolis: University of Minnesota Press.
- Lorimer, J. and Driessen, C. (2016), 'From 'Nazi Cows' to Cosmopolitan 'Ecological Engineers': Specifying Rewilding Through a History of Heck Cattle', *Annals of the American Association of Geographers*, 106: 631–52.
- Lorimer, J., Sandom, C., Jepson, P., Doughty, C., Barua, M. and Kirby, K. J. (2015), 'Rewilding: Science, Practice, and Politics', *Annual Review of Environment and*

Resources, 40: 39–62.

- Luís, L. and García Díez, M. (2008), 'Same Tradition, Different Views: The Côa Valley Rock Art and Social Identity', in I. Domingo Sanz, D. Fiore, and S. K. May (eds), *Archaeologies of Art: Time, Place, and Identity*, 151–70, Walnut Creek, CA: Left Coast Press.
- Massey, D. (2006), 'Landscape as a Provocation: Reflections on Moving Mountains', *Journal of Material Culture*, 11: 33–48.
- Monbiot, G. (2014), *Feral: Rewilding the Land, Sea and Human Life*, London: Penguin.
- Morton, T. (2011), 'Objects as Temporary Autonomous Zones', *Continent*, 1: 149–55.
- Morton, T. (2013), *Realist Magic: Objects, Ontology, Causality*, Ann Arbor: Open Humanities Press.
- Navarro, L. M., Pereira, H. M. (2012), 'Rewilding Abandoned Landscapes in Europe', *Ecosystems*, 15: 900–12.
- Olivier, L. (2009), 'The Past of the Present: Archaeological Memory and Time', *Archaeological Dialogues*, 10 (2): 204–13.
- Olsen, B. (2010), *In Defense of Things: Archaeology and the Ontology of Objects*, Lanham: AltaMira Press.
- Ogden, L. (2014), 'Extinction is Forever... Or is It?', *BioScience*, 64 (6): 469–75.
- Pred, A. (2004), *The Past is Not Dead: Facts, Fictions and Enduring Racial Stereotypes*, Minneapolis: University of Minnesota Press.
- Schwanen, T. (2007), 'Matter(s) of Interest: Artefacts, Spacing and Timing', *Geografiska Annaler: Series B Human Geography*, 89: 9–22.
- Serres, M., Latour, B. (1995), *Conversations on Science, Culture, and Time*, Ann Arbor, MI: University of Michigan Press.
- Stiegler, B. (1998), *Technics and Time: 1. The Fault of Epimetheus*, transl. R. Beardsworth and G. Collins, Stanford: Stanford University Press.
- Szerszynski, B. (2002), 'Wild Times and Domesticated Times: The Temporalities of Environmental Lifestyles and Politics', *Landscape and Urban Planning*, 61: 181–91.
- Tamm, M. (2013), 'Beyond History and Memory: New Perspectives in Memory Studies', *History Compass*, 11 (6): 458–73.
- Tamm, M., ed. (2015), *Afterlife of Events: Perspectives on Mnemohistory*, Basingstoke: Palgrave.
- Tanaka, S. (2015), 'History Without Chronology', *Public Culture*, 28: 161–86.
- 'Wo Europa wächst und wo es schrumpft' (2015), available online:

http://www.bbsr.bund.de/BBSR/DE/Home/Topthemen/bevoelkerung_europa.html

(accessed 28 March 2018).

Yusoff, K. (2015), 'Geologic Subjects: Nonhuman Origins, Geomorphic Aesthetics and the Art of Becoming Inhuman', *Cultural Geographies*, 22: 383–407.

¹ The rewilding pilot project in the Côa Valley features in several films produced by Heritage Futures Senior Creative Fellow Antony Lyons, including Gifts To The Future - Episode 2 (<https://vimeo.com/246869108>) and Côa Valley - Voices 1 (<https://vimeo.com/245361962>).

² Thank you to Bárbara Carvalho for drawing the significance of the orientation to my attention.