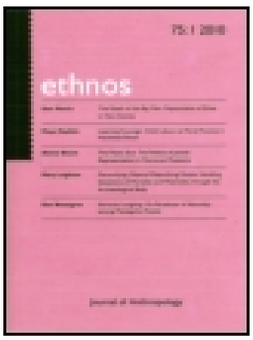

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Ethnos

Journal of Anthropology

ISSN: 0014-1844 (Print) 1469-588X (Online) Journal homepage: https://www.tandfonline.com/loi/retn20

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To cite this article: Morten Nielsen, Annette Højen Sørensen & Felix Riede (2020): Islands of Time. Unsettling Linearity Across Deep History, Ethnos, DOI: 10.1080/00141844.2019.1710548

To link to this article: https://doi.org/10.1080/00141844.2019.1710548

Published online: 09 Jan 2020.

ETHNOS
https://doi.org/10.1080/00141844.2019.1710548

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Islands of Time. Unsettling Linearity Across Deep History

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ABSTRACT
Based on archaeological and anthropological data on the socio-political effects of two historically distant extreme occurrences in nature, we explore how certain types of events unsettle progressive chronology to the extent of establishing periodic intervals of circular and repetitive temporality; 'islands of time'. The article is built around a comparison of the socio-temporal repercussions of two extreme natural events: the El Niño-related flooding that hit southern Mozambique early in 2000 CE and the Thera eruption on Crete around 1600 BCE. Using the former as a 'trans-temporal hinge' for connecting otherwise disparate temporal occurrences, we show how event episodes like the Mozambique floods and the Thera eruption twist free from the hold of linearity by continuously 'looping' time around themselves and thereby (re)actualising their own conditions of existence. In our analysis, the empirical point of contact between the two cases is architecture and how negotiations of the built environment reflect temporal looping..

KEYWORDS Theraeruption; El Niño; Mozambique; Crete; Temporality

Introduction

Linear time is a powerful and sticky notion of Western ontologies, in part because narratives of the past are commonly presented as chronicles as much as they are presented as narratives. As a consequence, cultural history continues to largely follow the partitioned time of linear chronology, which affixes events to particular historical moments, one thing after another. This is most readily expressed in the periodisation of prehistory into the conceived linear progression of the Ages of Stone, Bronze and Iron and the universal timelines of contemporary school and undergraduate textbooks. The implication is that each period or occurrence is historically unique and needs to be examined in relation to the linear progression that systematizes their internal relationship. In order to compare events across this deep history (*sensu* Shryock *et al.* 2011), it is therefore necessary to operationalise a time scale that organises empirical particulars (periods, occurrences, processes) in relation to its universal properties (e.g. progressive linearity). By so doing, chronological linearisation reveals time as existing

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independently of singular processes. As argued by Hull (2005), it is a 'measuring device for comparing processes according to some common standard'. Still, the linearity and by extension the progression of the Western historical narrative is increasingly proven to be seriously undermined by the conditions of the so-called Anthropocene: Once cherished universal achievements of humanity or, rather, of Western civilisation – fire, agriculture, world exploration – are increasingly seen as ultimately destructive agents (Malm and Hornborg 2014; Lewis and Maslin 2015). By now anthropogenic carbon combustion, cattle farming, the globalisation of diseases and the world-wide extinction of indigenous populations during the last 10,000 years signpost the *longue durée* of the Palaeoanthropocene (Foley *et al.* 2013) or, in other words, the deep historical pathway to humanity's own undoing (Szerszynski 2012). At the same time, some very recent and very reasonable candidates for the starting date of the Anthropocene (e.g. 1950 CE) threaten to collapse the supposedly *significant* part of history into a modernist singularity. Yet, within archaeology, anthropology and environmental history, there is an increasing awareness that chronology *sensu* chronicle provides only one scale for gauging natural and socio-cultural processes that inherently ushers narratives towards not just linearity but progress (Cronon 1992; Lucas 2005; Bailey 2007; Hodges 2008; Chakrabarty 2009; Nielsen 2014). These different movements challenge traditional notions of temporal linearity and its regular unfolding.

Processes and occurrences that involve only small trepidations to existing conditions can have huge effects on broader historical developments (McGlade 1995: 127). Although imperceptible both from the perspective of contemporaneous actors as well as in relation to a static chronological scale, immediate and contingent occurrences might fundamentally reshape those natural and socio-cultural patterns and structures that orient practices and processes in a given historic present (cf. Sewell 1996a). Hence, while there are ample practical reasons for relying upon unitary chronological measures of 'static multiple synchronies' (Deetz 1988: 17) – periods and phases – in order to examine the causations of historical progressions, it is problematic to reduce processes on one scale (say, the yearly harvest cycle among farmers) to that of another (say, the transformation of agricultural farming practices; cf. Pauketat 2001).

Still, even if the importance of seemingly imperceptible processes could be measured using a static linear scale, the question remains whether singular occurrences *ipso facto* elicit transformative qualities that are inherently progressive. Inspired by the work of Gilles Deleuze, the relevant question to consider is therefore whether such processes and occurrences come to constitute *events*, which are neither decisive ruptures nor beginnings but, rather, an introduction of change and variation into already existing socio-spatial formations (Deleuze 1997, 2004).[1] When examining the effects of transformative but difficult to retrodict events, chains of causation are generally established by inserting occurrences within a sequence of succeeding moments and processes (Gell 1992). Based on the analysis of the historical trajectory leading up to the moment of its realisation, the transformative effects of the occurrence are deduced by examining what came next. However, by carefully comparing two singular occurrences, whose transformative qualities are supposedly identified in terms of linear chronology, we find that the process might, in fact, be reversed. While events can, indeed, be taken

to constitute 'sequences of occurrences that result in transformations of structures' (Sewell 2005: 227), the result might be that they release time from the linearity of progressive chronology. It would even seem, we argue, that certain types of events unsettle progressive chronology to the extent of establishing *intervals*, which recursively draw a series of processes and occurrences towards themselves as if repeating the circular logic that is being established by the interval. As unstable 'islands of time', these events twist free from the hold of linearity by repeatedly (re)actualising their own conditions of existence. By thus 'looping' (linear) time around themselves (see Figure 1 below), they disjunctively connect otherwise disparate processes and occurrences, whose qualities increasingly become inseparable from those of the circular repetitions. In so doing, an intervallic temporal state is created, which momentarily disrupts progressive linearity, at once compressing time around itself (cf. Olshansky *et al.* 2012) and opening windows of opportunity for social (organisational, institutional and political) change (cf. Birkmann *et al.* 2010).

In the following, we explore the temporal qualities of two historically distant extreme environmental events and their societal contexts, and we do so with particular focus on the architectural instantiation of certain intervallic components. As succinctly argued by Bataille, catastrophes are the 'most profound of revolutions – it is time unhinged' (1988: 74), and we thus consider extreme environmental events and their societal consequences as apt phenomena for exploring the unsettling of linear chronology.[2] Note that the memory of such events and the moments of crisis they precipitate can last many generations, itself codified in stories where natural occurrences are enmeshed with morality (e.g. Blong 1982; Nordvig and Riede 2018). We begin by examining the 'island of time' that is gradually emerging from the El Niño-related flooding, which affected southern Mozambique early in 2000 CE. By charting the intricate procedure of defining the physical borders of the resettlement zone selected by the Maputo Municipality as shelter for the city's flood victims, we show how this extreme event

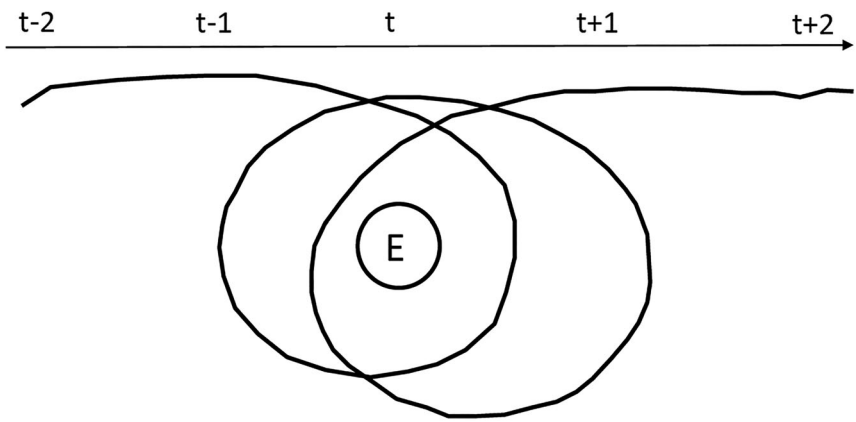

Figure 1. The intervallic state of temporal solidity that might be established when linear time 'loops' around an event.

created an interval during which the politico-administrative structures that were imagined as already guiding the process was recursively or retrospectively created through the residents' manipulation of a state-like architectural aesthetics. In this sense, a momentary temporal 'looping effect' emerged from the extreme socio-ecological circumstances, which came to recursively orient a series of overlapping and often contradictory social practices. As we shall soon show, even though the natural hazard transformed the spatial layout and revamped the administrative structure of the resettlement zone, the new socio-political landscape was read as if it had always existed. It is in this sense that the El Niño-related flooding recursively came to structure social life for a large number of residents living on the outskirts of Maputo, Mozambique (for more on recursivity, see Holbraad 2012). To a degree, our argument mirrors Blommaert's (2015) temporally multiscalar notion of a chronotope – a historically specific linguistic configuration that enables plot structure, characters, identities and meaning to be constructed – but we draw particular attention to the material and specifically the built dimensions of social life. Similar but different to language, the built environment structures, enables and forecloses interaction; it, too, has semiotic value. Importantly, however the built environment provides an alternative avenue into the conditions of social life that is analytically accessible also in deep history beyond spoken words and texts.

Using the El Niño flooding of 2000 CE as a 'trans-temporal hinge' (Pedersen and Nielsen 2013: 122) for connecting otherwise disparate temporal occurrences, we then proceed to explore the effects of the Thera eruption on Crete around 1600 BCE. We explore the societal structures of east Crete during the period pre-dating the Thera eruption and discuss the structural changes in the wake of the eruption. These changes are read in the archaeological record and indicate a central dominance or at least a strong influence radiating from Knossos: Sanctuaries were placed in nature – e.g. on mountain tops (peaks), in caves and at springs and the regional administration on the Hierarpetra Isthmus was placed in the small unfortified palace at Gournia (Soles 1991; Watrous and Schultz 2012) on preeruption Crete. Architectural defensive systems, monumentalised palatial structures with increased religious content and centralisation of craft production in the towns of east Crete suggest a possibly closer-knit post-eruption society controlled by Knossos, which had mainly functioned as a cultic centre prior to the eruption. As Knossos gradually increased its political power, it became manifest in the physicality of the area, e.g. by architecturally transforming palaces in alignment with the aesthetics of the new power hub. We thus venture to suggest that the 'political architecture' of east Crete recursively came to appear as being born from Knossos. Although retrospectively, Knossos was figured as the condition of possibility for having established the societal structures of east Crete in the first place.

We build our comparative analysis on the work by Pedersen and Nielsen on what they term 'trans-temporal hinges' (2013: 122). A trans-temporal hinge constitutes 'any configuration of social life that is imbued with the capacity for bringing together phenomena that are otherwise distributed across disparate moments in time' (ibid., 123–124).[3] So, for instance, in Nancy Munn's classic study of the spatiotemporal

construction of regional worlds in Papua New Guinea (1990), the illness of a local resident activates a series of historical connections between occurrences in the past and in an anticipated future. As Munn tells us, the illness gives a certain 'cultural structure' to the process of 'forming the spacetime of event relations in experience' (op.cit.: 13). Analogue to the social and cultural significance of illness in Munn's study, a transtemporal hinge is a particular scaling of social phenomena, which connects different temporalities based on their unique empirical qualities (Pedersen and Nielsen 2013: 129). But whereas, in Munn's case, the temporal qualities of the phenomenon (the resident's illness) derives from its significance within a local socio-cultural universe, the transtemporal hinge is operationalised as a suite of comparative analytical heuristics. In their analysis of fraught Sino-Mozambican relationships at construction sites in Maputo, Pedersen and Nielsen use the envelope that is conventionally used by employers for handing out monthly salaries to employees as the empirical basis for developing their notion of the transtemporal hinge. Crucially, the Chinese superiors refused to conceal the wads of cash in envelopes, which, to the Mozambican employees, demonstrated the former's blatant arrogance and lack of humanity. Without the envelope, it was consequently no longer possible for the Mozambican employees to make stable prospective assumptions regarding interactions with their Asian superiors. While the envelope could not fully stabilise the interaction with an inherently unknown stranger, it would 'compartmentalize … the dangers always lurking at the construction site' (op.cit.: 128). The authors then use the 'economy of social distances' associated with the envelope to analyse a different case from the Zambezi valley where an alleged future invasion of 10,000 Chinese farmers threatened to fundamentally disrupt local agricultural farming. Similar to the fraught Sino-Mozambican relationships at construction sites in Maputo, the situation in the Zambezi valley 'reflected an 'economy of distance' privileging the need for reciprocal encounters with capricious others to be balanced, for example, by socio-temporal media such as the envelope' (op.cit.: 130). Hence, as the authors emphasise, the ethnographic case in the Zambezi valley was 'opened up' by scaling social life with and through the empirical qualities associated with the envelope.

A trans-temporal hinge should therefore be understood as an empirical phenomenon, whose temporal qualities allow for a historical comparison to be made by reading other and seemingly disparate events using the qualities of the empirical phenomenon as analytical lens. In his recent lucid examination of comparison in anthropology, Candea (2018) distinguishes between frontal and lateral comparison. In the former, a presumed 'us' is contrasted with an ethnographic 'other' while, in the latter, empirical cases are presented side by side without including the researcher in the analysis. A radical version of frontal comparison can be found in Viveiros de Castro's (2004) method of 'controlled equivocation', where translation is a question of communication through differences rather than based on an assumed notion of univocality. 'An equivocation is not just a 'failure to understand' (O.E.D.)', Viveiros de Castro explains 'but a failure to understand that understandings are necessarily not the same, and that they are not related to imaginary ways of 'seeing the world' but to the real worlds which are being seen' (op.cit.: 4). In a lateral comparison, such as

that introduced by Boyer and Howe (2015), concepts are extracted from the ethnographic material and travel sideways across different cases without an analytical hierarchy being posited between these and the ethnographic concept. According to Boyer and Howe,

> Anthropological theory … is not so much a certain body of texts and concepts but rather the process of striving to wrest away from a case study the cluster of insights that are worth mobilizing … The stakes, we believe, are about how to allow anthropological fieldsites and field-knowledges to communicate more effectively with one another. (op.cit.: 18)

In the following discussion of two historically distant environmental events, we operationalise the notion of trans-temporal hinge as a double 'motile middle point' (Pedersen and Nielsen 2013: 129) in a comparison that is neither fully frontal nor merely lateral. Our comparison reaches across space and culture but also across linear time. Staying with the notion of directional comparison and situating it with the coterie of works reviewed above, our analytical approach may be termed oblique. First, following Pedersen and Nielsen, the trans-temporal hinge holds together occurrences that are otherwise distributed across time. But it also serves as a heuristic middle point between a frontal and a lateral comparison. We 'wrest away' (*pace* Boyer and Howe) from one case study a cluster of concepts, which travel laterally across more than three centuries in order to establish an analytical dialogue with a radically different set of empirical insights. Following Candea, we will argue that this kind of lateral comparison subverts the contrast between description and generalisation by providing a third, 'transparticular' (or, in our case, trans-temporal) 'way of doing more than a case study and less than a generalisation' (2018: 140). But the ambition here is not simply to make an ethnographic concept travel laterally between two different cases in order to destabilise our understanding of both. By mobilising an ethnographic concept from one case study in relation to another, we want to keep both internal and external differences alive, as it were (cf. Viveiros de Castro 2004). Crucially, we make no assertions of the 'A is like B'-sort, which would suggest an analogical relationship between the two cases that our historical data cannot support. If anything, we hope to develop an oblique 'heterological' approach (Buchanan 1996 in Candea 2018), which elicits both differences and similarities in order to establish a broader analytical argument about the repetitive temporality of certain historical occurrences.

Considered as a 'trans-temporal hinge' that operates as a motile middle point between frontal and lateral comparison, then, the El Niño flooding of 2000 CE epitomises certain key temporal qualities of the calamity. By mobilising these temporal qualities in relation to a singular event occurring more than 3600 years earlier, a lateral connection is made that suggests how linear chronology might be unsettled. The heuristic overlaying of the two occurrences thereby experimentally allow for an analytical homology to be established between processes whose internal chronologies are radically different (one spans two the other 50–100 years), it appears that both 'islands of time' distinguish themselves by twisting free of temporal linearity and progressively folding time inwards around themselves.

The El Ninõ Flooding in 2000 CE (Mozambique)

On 12 December 2002 CE, a meeting was held in Mulwene, a peri-urban neighbourhood on the northern outskirts of Maputo, Mozambique. The agenda for the meeting was clear: In order for Mulwene to be officially recognised as an administrative unit within the municipal hierarchy, its area and boundary lines had to be determined and registered by a municipal notary. Several key stakeholders were present at the meeting: Community chiefs from Mulwene and adjacent neighbourhoods, municipality officials and a group of elders, locally known as 'natives' (*nativos*). Before long, an agreement had been reached regarding the neighbourhood's size and the location of the boundary lines that would separate Mulwene from adjacent neighbourhoods.

What is puzzling about this process, however, is not the meeting's alleged administrative efficiency but the means by which the spatial layout of the area was determined as well as its politico-administrative reverberations, which are still discernible today. Indeed, we will argue that the meeting was constitutive not only of the neighbourhood's physical boundaries but, more importantly, of the political authority that was allegedly being enforced when first initiating the process. In a nutshell, the meeting recursively actualised its own premise. In order to fully unpack this argument, we need to briefly outline the genealogy of the neighbourhood.

During the first three months of the year 2000 CE, the recurrent weather phenomenon known as 'El Niño' hit the southern part of Africa causing major deluges across the region. As amply documented by contemporary news media, Mozambique was severely affected by intense flooding and attendant population displacements (Christie and Hanlon 2001; cf. Nielsen, 2010b). In Maputo, the municipal government decided to resettle all flooding victims in Mulwene, which, at the time was sparsely populated by less than 100 families of small-scale farmers.(3) With financial support from international NGOs, the overall conditions were rapidly improved, which soon made Mulwene attractive also to many land-seeking urbanites that could not afford to buy land closer to the city centre. It has been illegal to sell or buy land since Independence in 1975 but given the overall fragility of the administrative system, potential buyers have always managed to access land through informal transactions with resident land owners or local-level officials (Negrão 2004). In Mulwene, the majority of newcomers accessed land through informal transactions with former landowners having hitherto cultivated huge fields (*machambas*) that were never formally parcelled-out. With the rapid influx of people to the area, however, local landowners soon realised the lucrative possibilities of parcelling-out and selling off small plots of their *machambas* to needy newcomers. Either individually or in collaboration with members from the neighbourhood administration and local-level officials, landowners thus sold off considerable sections of land in this then explosively expanding neighbourhood. From a pre-flooding population of less than 2000, the neighbourhood reached its temporary peak in 2005 when it counted 30,813 registered inhabitants.

During the first couple of years after the flooding, all land-related issues were debated and resolved by members of the neighbourhood administration and a group of selected 'natives' (*nativos*). From analysing municipal archives, it is quite clear that the *nativos*

were central in pragmatically resolving conflicts given their assumed deep historical knowledge of the genealogies of individual plots and *machambas*. Both the members of the administration as well as many residents in Mulwene considered the *nativo* as the proper 'owner of the land' as he or she essentially 'owned' the history of the different plots and *machambas* and consequently had the final mandate to determine proper use of land. Considering the huge importance ascribed to the *nativo* figure, it is therefore somewhat surprising that the majority of the 'native' residents arrived relatively late in Mulwene. Whereas former village chiefs had passed away long before the flooding in 2000 CE, many of those who are now considered as *nativos* acquired land in the area as late as the mid-1980s or even later.

At the time of the flooding, Mulwene was effectively an urban area (as it was within the city limits) but lacking formal neighbourhood status. The neighbourhood leader and his administrative staff were selected by the Mayor from among the many flooding victims arriving in Mulwene during the first three months of 2000 CE. From the moment they assumed the daunting role of administering the rapidly growing area and until the crucial meeting in December 2002 CE, they essentially operated in an administrative vacuum without formal juridical mandate while *de facto* governing a neighbourhood that was not yet defined as such. As nobody really knew where the boundary lines were, numerous disputes ensued between the neighbourhood leader in Mulwene and those of adjacent areas regarding jurisdiction and land allocation. According to the chief of the adjacent Zimpeto neighbourhood, the Mulwene strategy was clearly to become the largest neighbourhood in the northern part of Maputo in order to be 'seen' by the Mayor and thereby secure financial resources and technical support that were inaccessible to smaller and therefore also less 'visible' neighbourhoods. Furthermore, in order for residents living in Mulwene to apply for formal rights of occupancy, it was required that their residency was within a formally recognised neighbourhood. Hence, without a formal mandate to govern an increasingly diverse group of newcomers, the neighbourhood administration needed the *nativo* to buttress the imagery of a deep-seated attachment to the land and to pragmatically legitimize their governing authority within the municipal administrative system. It was less important whether or not they were, in fact, natives from the area.

At the meeting on 12 December 2002, the neighbourhood chief in Mulwene welcomed all invited participants before describing the task at hand: Although, as he said, 'we all know that Mulwene is a neighbourhood with clearly defined boundaries, our father (*pai*) at the municipality needs to see this in writing … Let us therefore ask the owners of the land (i.e. the *nativos*) to explain to our fellow compatriots from the municipality where the boundary lines are'. While carefully examining a map of the area brought to the meeting by the official notary, the two invited *nativos* from Mulwene then explained where the boundary lines were. Several times, the neighbourhood leader from Zimpeto intervened, arguing that the *nativos* did not know what they were doing and that the Mulwene chief was attempting to annex land in Zimpeto. In an irritated tone, a municipal land surveyor lectured the Zimpeto chief not to question the 'true owners of the land'. 'Yeah, they believed everything we said', one of the

nativos later told Nielsen. 'Without us, there would be no Mulwene'. Nielsen then asked the *nativo* if he was sure that the boundary lines were now correctly defined: 'Correctly … ? You see, Morten, nobody really knows where the boundary lines are. But we told them! We told them good'.

The El Niño Flooding as Trans-temporal Hinge

If we were to examine the El Niño flooding and its socio-political aftermath in terms of the conventional partitioned time of linear chronology, chances are that we would relate the occurrences to their immediate historical context and thereby explore the lines of causation that gave rise to the Mulwene neighbourhood. By so doing, we would undoubtedly reflect on the politics of an independent nation-state in post-colonial sub-Saharan Africa and craft an account of the relationship between an extreme environmental event, aggravated perhaps even by Anthropocene warming, and the unstable political and economic structures that it impacted. While the advantages of such a tried-and-tested approach are numerous, we claim that it fails to capture the particular and peculiar temporal qualities of the phenomenon and, in particular, of the ways in which certain events, such as those emerging in the wake of natural calamities, twist free from the hold of linearity and come to create 'islands of time', which progressively (re)actualise their own conditions of existence.

In order to evaluate this hypothesis, we operationalise the El Niño flooding and its socio-political aftermath as a 'trans-temporal hinge'. Considered as such, the El Niño flooding operates as a lateral analytical lever by which certain key qualities are dislocated from their empirical context in order to be mobilised in a social context from which it is separated by 3600 years. Crucially, by operationalising the event as a trans-temporal hinge, we also 'unhinge' the flooding from its immediate socio-historical context. It is thus by 'unhinging' the flooding as empirical phenomenon from its immediate socio-historical context and allowing it to connect with otherwise disparate historical occurrences that it comes to analytically operate as a trans-temporal hinge. In relation to its immediate Mozambican context, certain key qualities of the flooding can be discerned. These pertain in particular to the revamping of a territorial administrative system, which is subsequently read by local stakeholders as having been already in place. At this analytical stage, it is therefore possible to establish an initial assessment of its temporal qualities, which suggest a certain repetitive or recursive dynamic. If we are to determine its wider applicability as analytical heuristic, however, we need to experimentally objectify these societal dynamics and mobilise them for analytical use elsewhere (Boyer and Howe 2015). In a nutshell, it could be argued that the flooding serves a dual analytical purpose: The flooding elicits the qualities of an 'island of time', which repeatedly (re)actualise its own conditions of existence. As certain qualities of the flooding are then experimentally objectified and moved laterally – or in our case obliquely – across different historical contexts, it operates as trans-temporal hinge insofar as new temporal connections can be established between otherwise disparate historical occurrences. Whereas Pedersen and Nielsen operationalise the notion of trans-temporal hinge in relation to contemporary and future occurrences, we explore

here the concept's wider applicability in relation to deep history and thereby as analytical heuristic for experimentally charting non-linear temporal modalities.

The question we ask ourselves, then, is what particular socio-political processes and occurrences become analytically visible, as it were, by looking at them 'through' the El Niño flooding of 2000 CE. What historical occurrences offer themselves to a historical comparison by being overlaid with the temporal qualities of this extreme environmental event and its socio-political aftermath? Here, we propose to explore in particular the effects of the Thera eruption on Crete occurring some 3600 years previously. After first introducing the event and its societal aftermath, we proceed to explore the intervallic or 'island-like' temporal qualities that stand out precisely by operationalising the El Niño flooding as a heuristic trans-temporal hinge.

The Thera-eruption in 1600 BCE (Crete)

The Bronze Age in Greece roughly spans the period 3000-1100 BCE and is conventionally divided into a linear progression of Early, Middle and Late. The following will deal specifically with the island of Crete during the middle of the second millennium BCE. Here, the local so-called Minoan culture is traditionally partitioned into an earlier Late Minoan (LM) phase (IA) and the subsequent phase (IB) recognised by particular stylistic changes.

Minoan culture thrived from trade and craftsmanship and from the first half of the second millennium BCE onwards the Minoans began to build monumental palatial structures adorned with colourful frescoes. Written evidence, seals and sealings, pottery and architecture attest to close interconnections between towns and hinterland. While the exact administrative structures of Minoan society elude us, it is generally assumed that a combined secular and religious power was gradually centralised.

Gournia was a Minoan town on the north coast of east Crete, which flourished in the mid-second millennium BCE (Figure 2) and went from village to regional centre during the Bronze Age (Buell and McEnroe 2018). Although it has never been fully excavated, Gournia covered an area of 4–5 ha and is estimated to have had around 2000–3000 inhabitants (Müller 2013). The town was strategically positioned on a small hill at the Hierapetra Isthmus overlooking a small natural harbour in the Mirabello Bay. A small hill-top palace and public court in turn overlooked Gournia. The streets were paved with stones and – prior to the Thera eruption – the town houses were built of unworked stones and mudbrick (cf. Figure 3B).

For the flourishing period preceding the Thera eruption, the LMIA, the hierarchical structure of the town can be read from settlement patterns of the Mirabello and Hierapetra regions. The surveys and excavations of the Vrokastro and Gournia areas may exemplify the east Cretan situation in the centuries around the Thera eruption (Hayden 2004). According to Watrous and Schultz (2012), Gournia held a strong regional power in the period leading up to the Thera eruption. This assumption is based on the depopulation of Gournian hinterland and the parallel growth of the town as well as the establishment of its palace. Soles (1991), too, saw the role of Knossos as a common religious centre in Crete rather than a political power.

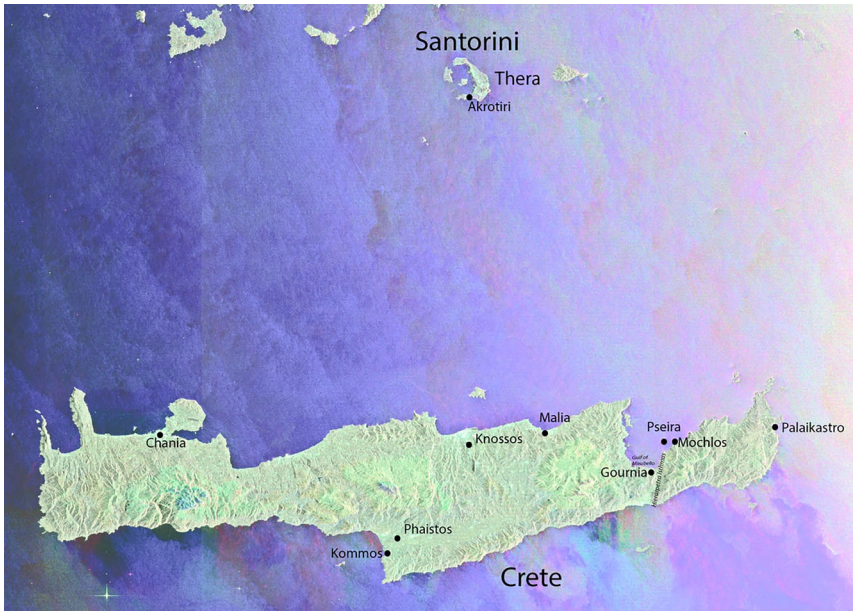

Figure 2. Crete and Santorini where the Thera eruption occurred.

Around 1600 BCE, the large Thera volcano at the centre of the ring-shaped island of Santorini 150 km north of Crete erupted (Friedrich *et al.* 2006). Volcanic ash was carried south and east and tsunamis hit the north-eastern coast of Crete destroying hamlets and villages, harbours and ships. Ash fallout from the eruption was spread widely across the Mediterranean (Zanchetta *et al.* 2011) and not only Crete may have been affected by this eruption (Driessen and Macdonald 1997), but also communities further to the east (Knappett *et al.* 2011) as well as potentially (and via complex cultural and geopolitical networks) areas north of the Alps (Vandkilde 2014; Risch and Meller 2015). Based on the marked changes in iconography, the period following the eruption has been labelled LMIB (Brogan 2012; Sørensen 2015). It has been established that the LMIB lasted more than a generation (Brogan and Hallager 2012) and according to radiocarbon dates it lasted around a century (Manning 2009).

During the period immediately following the destructions and the ash fallout, the Minoans began to rebuild and to restructure houses and towns throughout the island. The town of Mochlos was added an artisans' quarter (Soles 2002) and, in general, craft production seems to become centred on the palaces (Driessen and Macdonald 1997). At Gournia, in 23 of the houses, objects relating to production activities have been found dating to the LMIB period (Watrous and Schultz 2012). Ashlar masonry can be detected in buildings from the immediate post-eruption phase. Adding also the impressive cyclopean façades, buildings from this period were thus much larger and more imposing than the remaining rubble and mudbrick houses of

the town (Soles 1991, 2002; Watrous and Schultz 2012; Buell and McEnroe 2018). Entrances were changed to restrict passage to larger buildings on the island and new defensive architectural systems have probably been added from this point onwards (Driessen and Macdonald 1997; Watrous 2008).

According to Soles (2002), the inspiration to build with ashlars and to monumentalise and alter the architecture came from Knossos – the largest palace on the island. Crucially, the palace of Gournia was enlarged by one third and cultic rooms took up part of this space. This increase in the cultic activities within the palaces may help to explain the post-eruption transferral of the peak sanctuaries into the town houses and palace spaces (Soles 1991; Driessen and Macdonald 1997; Watrous and Schultz 2012). The increased monumentality of the palace in Gournia has been seen as a sign of the reinforcement of central administrative powers of the palace including economy, trade, redistribution and very importantly an intensified cultic importance. In this regard, the distribution of sealings with the representations of bull-leaping have been employed to argue that Knossos became the major centre of power during the LMIB period. Bulls and bull-leaping have been interpreted as the Knossian symbol of power and is present in several wall-paintings from Knossos. The distribution of the motif on sealings throughout the island has been argued to underline that the great and unrivalled palatial power came to be situated at Knossos (Hallager and Hallager 1995). The palace at Gournia thus transformed its appearance to fit the model and centre of power at Knossos.

Making Islands of Time

We began this article by suggesting that linear conceptions of time and hence causality can, in certain instances, be in the way of a nuanced understanding of social processes. As we have described, in Maputo, individual residents recursively mimic state agency and thereby create the imagery of an already existing formal authority (cf. Nielsen 2010a). We then proceeded to experimentally wedge this insight into a deep historical case study from Bronze Age Crete where individuals and communities reconfigured their lives following the Thera eruption. Hence, by 'unhinging' the El Niño flooding from the concreteness of its empirical context, certain temporal qualities stand out that acutely challenge conventional linearity. Although occurring over a relatively short period of time (24 months), the process of defining the neighbourhood borders was oriented by a recursive drive towards establishing Mulwene as an already existing administrative unit within a municipal structure that was desperately trying to maintain internal cohesion. It could therefore be argued that when the neighbourhood leader in Zimpeto repeatedly criticised the Mulwene administration for illegally annexing land in adjacent areas in order to become politically 'visible', he was essentially exposing – albeit unsuccessfully – the mechanics of (re)actualising the neighbourhood's conditions of existence, namely the concerted efforts to make certain parts of Zimpeto appear as if already being part of Mulwene. Although orchestrated as a seemingly strategic political manoeuvre, the question we thus asked ourselves is whether this brief occurrence might unsettle other historical processes across human cultural history, which will bring out with clarity those temporal 'qualities and resources' (pace Sewell 2005: 131ff.), which sit

awkwardly with conventional linearity in the case-study from Mozambique. In a sense, we experimentally objectified an empirical phenomenon in the recent past, which was then used to laterally scan human cultural history in search of other occurrences, which might be opened for further scrutiny through the mobilisation of the former. And, in this regard, we claim that the effects of the Thera eruption in Crete allow for particularly illuminating connections to be established with the El Niño flooding. For while the latter suggests (hesitantly!) the strategic orchestration of a recursive reproduction of a socio-political structure, the former charts the material effects of integrating a social space within an already existing political topology over the longer term. Indeed, by wedging the monumental architectural and cultic aesthetics of Knossos into Gournia, the city's political integration is (recursively) reproduced (Figure 3).

From a perspective that perches between history and sociology, Sewell (1996a, 1996b, 2005) argues for a punctuated rhythm of societal change, brought into effect by many small happenings and actions, but amplified into lasting change by economic, ecological, political and emotional modulations. For Sewell, significant events that lead to lasting transformations are associated with insecurity and anxiety; subjective sensibilities that are also associated with the kind of natural calamities we treat here. Needless to say, the social changes observed are not caused in any meaningful sense by these natural calamities. Rather, they reflect causal path-dependence on prior social structures and actions. Sewell himself opens up for 'radical contingency' (Sewell 1996b: 263) and temporal heterogeneity that characterise periods of punctuated social change.

Surely, the kinds of transformations that he describes would, in contemporary terminology, most likely be labelled 'tipping points' – occurrences of irreversible state

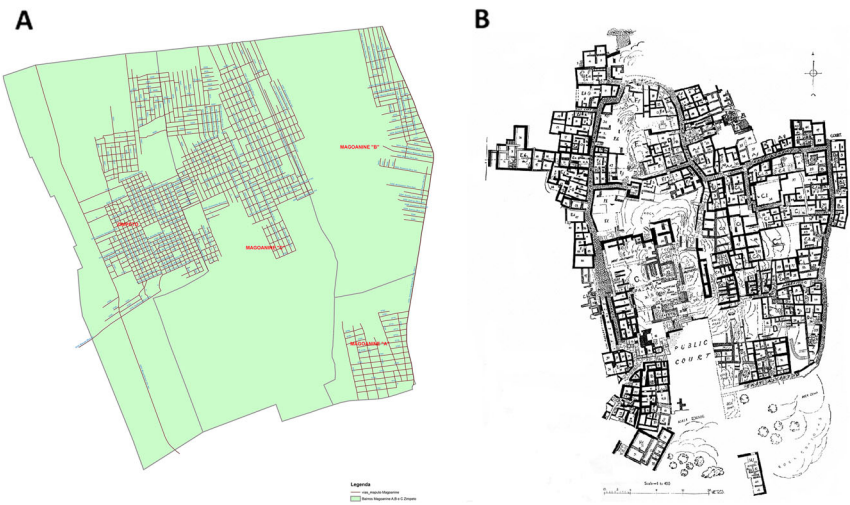

Figure 3. Map of Mulwene and adjacent Zimpeto neighbourhoods (A) and map of Gournia (B) modified from Hawes (1908). In both instances, the architectural aesthetics recursively elicit the traits of a central power that is assumed to be its condition of possibility.

changes that may be the result of incremental small-scale changes, but whose cumulative effects are transformative. This is a term borrowed from the natural sciences and specifically from the debate surrounding climate change and the notion of the Anthropocene (Steffen *et al.* 2007). Although viewed with reservation by ethnographers (Nuttall 2012), the historical and archaeological records are replete with examples of such changes. Yet, our ability to recognise these is critically linked to the temporal perspective available and the analytical scale of our observations: the effects of such threshold changes only become apparent over longer temporal and often over larger spatial scales. While we see tipping points, events, punctuations – in short: rapid societal changes – as real, the question is what their temporality might be, and how different temporalities can be harnessed for describing, analysing and understanding causal relations within and across such episodes of change. In order to further explore how we may be able to reconcile the different temporal scales in question we now return to both Crete and Maputo.

The Collapse of Events in Crete and Mozambique

The LMIB period brought many structural and societal changes to Minoan society; some of these might even have begun during the mature LMIA period (Driessen and Macdonald 1997). But at the end of LMIB period almost all Cretan centres of power and production were destroyed by fire and only Knossos was left standing. During the following period many mainland Greek objects as well as hitherto foreign architectural designs and a new script, Mycenaean Greek, came to Crete. The strong Mycenaean influence was caused either by a direct seizure of power or at the very least from a markedly increased presence due to their overall stronghold in the Aegean during the period following the fire destructions at the end of LMIB. The destruction of Thera in the contemporaneous trade network hit Minoan economy very hard owing to complex network effects, e.g. regarding increased transport costs (Knappett *et al.* 2011). Internal uproar and war, invasion or a combination thereof brought the collapse into effect and Mycenaean dominance into play (Niemeier 2013).

Driessen and Langohr (2007) discuss evident structural shifts and note that the palace of Knossos was transformed from a cultic to an administrative centre and became inhabited by a ruler with religious as well as secular powers at the end of the LMIB period. This structural and administrative shift on Crete is generally seen as reflecting mainland Greek dominance from the end of LMIB and until the end of the Bronze Age.

It is striking that the recursive configuration of Knossos as the political and religious administrative centre on Crete was followed by a period where the exchanges with other Mediterranean societies were being restructured with lasting effects on the island, e.g. in terms of architecture and technology. This process of rebuilding actual architectures cannot be divorced from attempts at reconfiguring political architectures, including their failures. It thus seems that the 'looping' of the event caused the Cretan political administration to intensify internal power and open further up to Egypt and the southern Levant. The intensification of trade with Egypt and the southern Levant

during the LMIB is likewise a reflection of the rise of the powerful New Kingdom in Egypt (Sørensen 2009). These mechanisms observed on Crete were perhaps prompted by certain 'logics of hybridity', as it were, where seemingly incompatible spaces were juxtaposed and subjected to the same overall political cosmology (cf. Scott 2005). If so, the recursive integration of Gournia as part of the Knossian administration might have altered (or intensified) the integrative dynamics of Knossos in relation to its surroundings. Could this intensification of a logic of hybridity even partly account for the eventual fall of Knossos?

While a response to this crucial question will be tentative at best, it does resonate with the Mozambican case in particularly illuminating ways. As an effect of the flooding in 2000 CE, Mulwene has been integrated in the Maputo Municipality as a legitimate administrative unit. Still, without the existence of a formal urban plan, most residents having accessed their plots through informal transactions with former land owners or local-level officials therefore *de facto* continue to occupy land illegally. In order to avoid eviction, however, many residents in Mulwene build houses that imitate the aesthetics of formally state-sanctioned housing regarding, for instance, construction materials and location of the house within individual land plots. As documented elsewhere by Nielsen (2011), by imitating the aesthetics of the state, the likelihood of being evicted with force is considerably reduced. Still, with an increasing number of residents constructing cement houses, it is becoming ever more difficult to distinguish a shared building aesthetics. According to a municipal land surveyor working in the area, the consequence is that they will eventually have to subject the individual construction projects to a more rigorous examination and probably fine residents without legitimate building permits. Hence, while particular 'logics of hybridity' do seem to operate among house-builders in Mulwene, these might also turn out to have, over longer periods of (linear) time, a certain due date where their associated rules and resources reach a 'tipping point' beyond which the looping of the event can no longer maintain its hold on social life.

Conclusion: Relaxing the Linearity of Time

As argued by Johansen, 'when an event has happened, it never returns; but this is exactly what happens' (ibid., 11). For a limited period in time (24 months in Mozambique and 50–100 years in Crete), history seems to have folded around certain key events. In '*Historical Metaphors and Mythical Realities*', Sahlins (1981) analyses the killing of Captain Cook at Ka'awaloa beach in Hawai'i on February 14, 1779. According to Sahlins, Captain Cook was by Hawaiian conceptions a manifestation of the god Lono. Although Hawaiians did not premeditate the killing, neither was it an accident. 'It was the Makahiki (a prolonged rite of four lunar months) in a historical form … The incidents of Cook's life and death in Hawai'i were in many respects historical metaphors of a mythical reality' (op.cit.: 11). Crucially, by killing Captain Cook, the Hawaiian kings reproduced and strengthened their source of legitimacy. Not only was the truth of a mythic reality confirmed, the kings also managed to appropriate the godly powers of the English sailors. While the Hawaiians eventually realised that the English sailors

were not gods, 'the goods and capacities they possessed embodied a *mana* superior to things Hawaiian' (op.cit.: 55). In other words, through the killing of Captain Cook, the *mana* of the Hawaiian kingship became British.

Whereas Hawai'ian time was structured around the recursive realisation of a mythic rite, the two incidents that are 'hinged' by the El Niño flooding folded around devastating natural calamities. In so doing, local political hierarchies are recursively reproduced by appropriated what was other to them: Mulwene became more 'Maputo-like', Gournia became more 'Knossos-like'. Similar to the mythic Hawai'ian time analysed by Sahlins, however, it is the temporal capacity of both natural calamities to recursively actualise their own conditions of existence, which also allow for their trans-temporal mobilisation. By looping around themselves, we argue, the two events articulate a temporal dynamic, which is sufficiently robust to allow for the kind of cultural historical comparison that we have carried out here.

The present text is the result of serendipitous conversations between anthropologists and archaeologists experimentally exploring salient commonalities: an attention to extreme environmental events, their societal consequences and analytical affordances, and the built environment as manifest social interaction. The aim of our transdisciplinary experiment was not to simply critique the – from an ethnographic perspective – often socially 'flattened' interpretations of societal changes in archaeological deep time, limited as they are by the absent informants. Instead, we turned the tables: If we return to Maputo sometime in the future, environmental and archaeological data will most likely document, over the medium- and long-term, a clear temporal correlation between certain modes of town planning and their architectural footprint with particular power structures, which in turn would correlate with climatic and environmental changes and their extremes. This insight, in turn, stresses the fragility of our 'islands in time' and the interlocking of recursive and linear temporalities. Ultimately, as our islands in time are washed over by the rising sea-levels of linear time, there may not be an opposition between recursivity and linearity; indeed, recursivity may only be discoverable within linearity.

Processes of social change can and must be addressed at different scales and here, the notion of 'trans-temporal hinges' that swing both ways can provide important analytical girthing for an iterative and innovative questioning of both shallow-time ethnographic and deep-time archaeological case studies. Whilst inherently handicapped by its fragmentary nature, the archaeological record offers the advantage of allowing us to carefully select case studies for oblique comparison and by offering a temporal framework that covers both the time before *and* after the event in question. From this artificial quasi-ethnographic present, we may be able to see how individual islands of time form archipelagos but also how they e- and submerge in the general flow of long-term linear temporality. Islands of recursive time and causality fade out of focus when the vagaries of deep time make it impossible to confidently discriminate between linearity and its important alternatives. Here, only ethnography can provide methodological lighthouses for how we can plot our empirical investigations: Case studies such as the discussed here from Maputo serve as important reminders that, whilst time might ultimately flow in a linear fashion, causality might not. Collaborative efforts between archaeologists and anthropologists can potentially unlock further details of such non-linear causalities if

we learn to ask the right questions of each other and of our materials. Ultimately, the most convincing scenarios emerge in an intimate interplay between the methodological hinge and the empirical rooms to which they offer access.

Notes

1. As James Williams (2008: 1) argues, it is "a change in waves' resonating through the environment that causes series of elements to interact in novel ways".
2. In this regard, our analysis stands on the shoulders of those who have considered natural hazards as, at the same time, catalysts and revealers of social structures, tensions, and changes (Oliver-Smith 1996; García-Acosta 2002; Nielsen, 2010b).
3. At the end of 2000, a census made by the Maputo Municipality documented that 2,040 families from eight different urban neighbourhoods had been resettled in Mulwene.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

Bailey, G. N. 2007. Time Perspectives, Palimpsests and the Archaeology of Time. *Journal of Anthropological Archaeology*, 26:198–223.
Bataille, G. 1988. *Inner Experience*. Albany: State University of New York Press.
Birkmann, J., *et al.* 2010. Extreme Events and Disasters: A Window of Opportunity for Change? Analysis of Organizational, Institutional and Political Changes, Formal and Informal Responses After Mega-Disasters. *Natural Hazards*, 55:637–655.
Blommaert, J. 2015. Chronotopes, Scales, and Complexity in the Study of Language in Society. *Annual Reveiew of Anthropology*, 44:105–116.
Blong, R. J. 1982. *The Time of Darkness. Local Legends and Volcanic Reality in Papua New Guinea*. Washington: University of Washington Press.
Boyer, D. & C. Howe. 2015. Portable Analytics and Lateral Theory. In *Theory Can be More than it Used to be*, edited by D. Boyer, J. D. Faubion and G. E. Marcus, 15–38. Cornell: Cornell University Press.
Brogan, T. 2012. Introduction. In *LM IB Pottery: Relative Chronology and Regional Differences*, edited by T. Brogan & E. Hallager, Monographs of the Danish Institute at Athens 11, 139–53. Aarhus: Aarhus University Press.
Brogan, T. & E. Hallager (eds). 2012. *LM IB Pottery: Relative Chronology and Regional Differences*. Monograph of the Danish institute at Athens 11, 1. Aarhus: Aarhus University Press.
Buchanan, I. 1996. What is Heterology? *New Blackfriars*, 77:483–493.
Buell, D. M. & J. McEnroe. 2018. 'Gournia: A Case Study of Population Mobility in the Bronze Age Town and the Mirabello Region', proceedings of the 12th International Congress of Cretan Studies, Heraklion, 1–19.
Candea, M. 2018. *Comparison in Anthropology: The Impossible Method*. Cambridge: Cambridge University Press.
Chakrabarty, D. 2009. The Climate of History: Four Theses. *Critical Inquiry*, 35:197–222.

Christie, F. & J. Hanlon. 2001. *Mozambique & the Great Flood of 2000*. Oxford: The International African Institute in assocation with James Currey and Indiana University Press.
Cronon, W. 1992. A Place for Stories: Nature, History, and Narrative. *Journal of American History*, 78:1347–1376.
Deetz, J. 1988. History and Archaeological Theory: Walter Taylor Revisited. *American Antiquity*, 53:13–22.
Deleuze, G. 1997. Immanence: A Life … *Theory, Culture and Society*, 14(2):3–7.
———. 2004. *Difference and Repetition*. London: Continuum.
Driessen, J. & C. Langohr. 2007. Rallying Around a Minoan Past: The Legitimation of Power at Knossos During the Late Bronze Age. In *Rethinking Mycenaean Palaces II*, edited by M.L. Galaty & W.A. Parkinson, 178–189. Los Angeles: Cotsen Institute of Archaeology, University of California.
Driessen, J. & C. Macdonald. 1997. *The Troubled Island: Minoan Crete before and after the Santorini Eruption*. Liège: Université de Liège.
Foley, S. F., D. Gronenborn, M. O. Andreae, J. W. Kadereit, J. Esper, D. Scholz, U. Pöschlet al. 2013. The Palaeoanthropocene – The Beginnings of Anthropogenic Environmental Change. *Anthropocene* 3:83–88. doi:10.1016/j.ancene.2013.11.002.
Friedrich, W. L., B. Kromer, M. Friedrich, J. Heinemeier, T. Pfeiffer & S. Talamo. 2006. Santorini Eruption Radiocarbon Dated to 1627-1600 B.C. *Science*, 312:548.
García-Acosta, V. 2002. Historical Disaster Research. In *Catastrophe & Culture: The Anthropology of Disaster*, edited by S.M. Hoffman & A. Oliver-Smith, 49–66. Santa Fe, NM: School of American Research Press.
Gell, A. 1992. *The Anthropology of Time: Cultural Constructions of Temporal Maps and Images*. Oxford: Berg.
Hallager, B. P. & E. Hallager. 1995. The Knossian Bull. Political Propaganda in Neo-palatial Crete. In *Politeia. Society and State in the Aegean Bronze Age*, edited by R. Laffineur & W.D. Niemeier, 547–554. Liège: Université de Liège.
Hayden, B. J. 2004. *Reports on the Vrokastro Area, Eastern Crete, Volume 2: The Settlement History of the Vrokastro Area and Related Studies*. Philadelphia: University of Pennsylvania.
Hodges, M. 2008. Rethinking Time's Arrow: Bergson, Deleuze and the Anthropology of Time. *Anthropological Theory*, 8(4):399–429.
Holbraad, M. 2012. *Truth in Motion. The Recursive Anthropology of Cuban Divination*. Chicago: The University of Chicago Press.
Hull, K. L. 2005. Process, Perception, and Practice: Time Perspectivism in Yosemite Native Demography. *Journal of Anthropological Archaeology*, 24(4):354–377.
Knappett, C., R. Rivers & T. Evans. 2011. The Theran Eruption and Minoan Palatial Collapse: New Interpretations Gained from Modelling the Maritime Network. *Antiquity*, 85(329):1008–1023.
Lewis, S. L. & M. A. Maslin. 2015. Defining the Anthropocene. *Nature*, 519(7542):171–180.
Lucas, G. 2005. *The Archaeology of Time*. London: Routledge.
Malm, A. & A. Hornborg. 2014. The Geology of Mankind? A Critique of the Anthropocene Narrative. *The Anthropocene Review*, 1:62–69.
Manning, S. 2009. Beyond the Santorini Eruption: Some Notes on Dating the Late Minoan IB Period on Crete, and Implications for Cretan-egyptian Relations in the 15th Century BC (and Especially LMII). In *Time's Up! Dating the Minoan Eruption of Santorini*, edited by D.A. Warburton, Monographs of the Danish Institute at Athens 10207–226. Aarhus and Athens: Aarhus University Press.
McGlade, J. 1995. Archaeology and the Ecodynamics of Human-Modified Landscapes. *Antiquity*, 69:113–132.
Müller, K. 2013. *Gournia: Ein urbanes Zentrum der Spätbronzezeit*. Berlin: Logos Verlag.
Munn, N. 1990. Constructing Regional Worlds in Experience. Kula Exchange, Witchcraft and Gawan Local Events. *Man*, 25(1):1–17.
Negrão, J. 2004. *Mercado de terras urbanas em Mocambique*. Maputo: Cruzeiro do Sul.
Nielsen, M. 2010a. Mimesis of the State: From Natural Disaster to Urban Citizenship on the Outskirts of Maputo, Mozambique. *Social Analysis*, 54(3):153–173.

———. 2010b. Mimesis of the State. From Natural Disaster to Urban Citizenship on the Outskirts of Maputo, Mozambique. *Social Analysis*, 54(3):153–173.
———. 2011. Inverse Governmentality: The Paradoxical Production of Peri-Urban Planning in Maputo, Mozambique. *Critique of Anthropology* 31(4):329–358.
———. 2014. A Wedge of Time: Futures in the Present and Presents Without Futures in Maputo, Mozambique. *Journal of the Royal Anthropological Institute*, 20(S1):166–182.
Niemeier, W. D. 2013. Die Auswirkung der Thera-Eruption im ägäischen Raum. In *1600 – Kultureller Umbruch im Schatten des Thera-Ausbruchs?*, edited by H. Meller, F. Bertemes, H.-R. Bork & R. Risch, 177–185. Halle-Saale: Landesamt fur Denkmalpflege und Archäologie Sachsen-Anhalt.
Nordvig, M. V. & F. Riede. 2018. Are There Echoes of the AD 536 Event in the Viking Ragnarok Myth? A Critical Appraisal. *Environment and History*, 24:303–324.
Nuttall, M. 2012. Tipping Points and the Human World: Living with Change and Thinking about the Future. *AMBIO*, 41(1):96–105.
Oliver-Smith, A. 1996. Anthropological Research on Hazards and Disasters. *Annual Review of Anthropology*, 25:303–328.
Olshansky, R., L. Hopkins & L. Johnson. 2012. Disaster and Recovery: Processes Compressed in Time. *Natural Hazards Review*, 13:173–178.
Pauketat, T. R. 2001. Practice and History in Archaeology. *Anthropological Theory*, 1:73–98.
Pedersen, M. A. & M. Nielsen. 2013. Trans-temporal Hinges: Reflections on an Ethnographic Study of Chinese Infrastructural Projects in Mozambique and Mongolia. *Social Analysis*, 57(1):122–142.
Risch, R. & H. Meller. 2015. Change and Continuity in Europe and the Mediterranean Around 1600 BC. *Proceedings of the Prehistoric Society*, 81:239–264.
Sahlins, M. 1981. *Historical Metaphors and Mythical Realities: Structure in the Early History of the Sandwich Island Kingdom*. Ann Arbor, MI: University of Michigan Press.
Scott, M. W. 2005. Hybridity, Vacuity, and Blockage: Visions of Chaos from Anthropological Theory, Island Melanesia, and Central Africa. *Comparative Studies in Society and History* 47(1):190–216.
Sewell, W. H., Jr. 1996a. Historical Events as Transformations of Structures: Inventing Revolution at the Bastille. *Theory and Society*, 25(6):841–881.
Sewell, W. H.Jr.. 1996b. Three Temporalities: Toward an Eventful Sociology. In *The Historic Turn in the Human Sciences*, edited by T. J. McDonald, 245–280. Ann Arbor, MI: The University of Michigan Press.
———. 2005. *The Logics of History: Social Theory and Social Transformation*. Chicago, IL: University of Chicago Press.
Shryock, A., D. L. Smail & T. K. Earle. 2011. *Deep History: The Architecture of Past and Present*. Berkeley, CA: University of Chicago Press.
Soles, J. S. 1991. The Gournia Palace. *American Journal of Archaeology*, 95(1):17–78.
———. 2002. A Central Court at Gournia? In *Monuments of Minos. Rethinking the Minoan Palaces*, edited by J. Driessen, I. Schoep & R. Laffineur, Aegaeum: Annales d'archéologie égéenne de l'Université de Liège 23123–132. Liège: Peeters Publishers & Booksellers.
Sørensen, A. H. 2009. Approaching Levantine Shores: Aspects of Cretan Contacts with Western Asia during the MM-LMI Periods. In *Proceedings of the Danish Institute at Athens, Vol. VI.*, edited by E. Hallager & S. Rissager, 9–55. Aarhus and Athens: Aarhus University Press.
———. 2015. *The Boneless One'* and his Home. The Sea and its Inhabitants in Religious Beliefs on Crete and Thera Around 1600 BC. In *Past Vulnerability. Volcanic Eruptions and Human Vulnerability in Traditional Societies Past and Present*, edited by F. Riede, 179–190. Aarhus: Aarhus University Press.
Steffen, W., P. J. Crutzen & J. R. McNeill. 2007. The Anthropocene: Are Humans Now Overwhelming the Great Forces of Nature? *AMBIO*, 36(8):614–621.
Szerszynski, B. 2012. The End of the End of Nature: The Anthropocene and the Fate of the Human. *Oxford Literary Review* 34:165–184. doi:10.3366/olr.2012.0040.
Vandkilde, H. 2014. Breakthrough of the Nordic Bronze Age: Transcultural Warriorhood and a Carpathian Crossroad in the Sixteenth Century BC. *European Journal of Archaeology*, 17(4):602–633.

Viveiros de Castro, E. 2004. Perspectival Anthropology and the Method of Controlled Equivocation. *Tipití*, 2(1):3–22.
Watrous, L. V. 2008. Gournia survey, https://chronique.efa.gr/?kroute=report&id=766.
Watrous, L. V. & M. Schultz. 2012. Middle Minoan III-Late Minoan I Periods: The Rise of a Regional State. In *An Archaeological Survey of the Gournia Landscape: A Regional History of the Mirabello Bay, Crete, in Antiquity*, edited by L. V. Watrous, D. Haggis, K. Nowicki, N Vogeikoff-Brogan & M Schultz, 51–63. Pennsylvania: INSTAP Academic Press.
Williams, J. 2008. *Gilles Deleuze's Logic of Sense. A Critical Introduction and Guide*. Edinburgh: Edinburgh University Press.
Zanchetta, G., *et al.* 2011. Tephrostratigraphy, Chronology and Climatic Events of the Mediterranean Basin During the Holocene: An Overview. *The Holocene*, 21:33–52.