Thirty years ago, that unregenerate radiocarbon-hater, János Makkay, summarised the problem with scientific dating: ‘14C dates tell me that the Middle Neolithic is younger than the Early Neolithic (but I already know this!); but 14C dates don't tell me whether this site is coeval with that site (which I want to know).’ Until very recently – indeed, until the third radiocarbon revolution of Bayesian modelling – this remained the case for coeval occupations. In this book, Alasdair Whittle goes much further than demonstrations of contemporaneity – he seeks to provide accurate chronologies at the lifetime or generational scale so as to detach the ‘pre’ from prehistory. Expanding the scope of the research from British Neolithic long barrows and causewayed camps to the whole of Europe, Whittle's twin goals in the ‘Times of the Their Lives’ (or TOTL) Project are the provision of more accurate sequences across Neolithic Europe and the investigation of the consequences of finer-resolution narratives for understanding the lives of past people. He claims that this will allow us to move from creating chronicles to constructing interpretative narratives. If successful, the author would crown an already distinguished academic career with an irrefutable case for spending vast sums of money to provide the chronological framework for writing a new kind of archaeology. Is this desirable and, if so, is it feasible?

In essence, the case for desirability is made in a section on megaliths and barrows in Northern Europe (pp113−120), where the discussion of areas with few dates and no formal Bayesian modelling provides the standard chronological imprecision at the centennial or worse level, whereas formal modelling shows the 11 phases of the Flintbek barrow confined to the 36th century cal BC. Which prehistorian would not welcome such precision for her site/area/region? The excavation requirements are technically straightforward if demanding: a long series of appropriate samples (short-lived species, if possible articulated bones) from stratigraphically unambiguous contexts and transfer of all prior archaeological information, preferably including a correspondence analysis of the pottery, to the Bayesian modeller for the production of a decadal site chronology. But (how) can archaeologists write history like the historians?
Whittle suggests three strands in writing history: a mutual interest in writing narrative, the shared challenge of facing incomplete sources and a concern for particularising over generalising accounts of the past. While conceding that these narratives will be different from those of the historians, Whittle prioritises multi-scalar accounts, with his examples focusing on house biographies, site biographies, regional sequences and the big picture of the European Neolithic. Whittle admits that even the best Bayesian modelling cannot equal the dendro-dated houses of the Swiss Neolithic, where the 17 houses of Pfyn-Breitinloo have been shown to date to five years (3708−3703 BC). But the best case-studies for house biographies, as at the Vinča-Belo Brdo tell (near Beograd, Serbia), show houses in use for as little as 15 years or as long as 50 years.

There are several excellent examples of site biographies, including the tell of Ulivar (Romanian Banat), with 182 dates modelled to show an occupation from the 52nd to the 47th century BC for the 4 m-thick layers and 11 building phases. Here the digging of multiple ditches and the juxtaposition of layers of unburnt and burnt houses produces a dramatic sequence, with claims for three violent attacks and the need for additional defensive works as well as a period of peace and stability. However, Whittle fails to take the deliberate burning of Neolithic houses seriously, despite the evidence from the Ukrainian experiment at the megasite of Nebelivka, which shows that 5–10 times the quantity of timber was needed to burn a house as build it (Johnston, ADS). Whatever the social interpretation of burnt houses at Ulivar, it is certain that the chronological basis of this tell is greatly improved.

Another key site which appears in several chapters is the Lengyel settlement and burial site of Alsónyék, in Transdanubia, Hungary. Here, dating of over 250 samples provided a timeline of almost one and a half millennia (5730–4300 BC), with a Starčevo occupation of 200 years, an LBK phase of 300 years, a Sopot dwelling of 200 to 300 years and a Lengyel settlement and massive scale of burial from the 48th to the 44th or 43rd centuries BC. Bayesian modelling showed that the Lengyel occupation began with burials, before settlement leading to a huge peak of 2000 people in a very short time-span within the 48th century BC and then a long, slow population decline. As Whittle comments elsewhere, without Bayesian modelling, we should be extremely likely to get the wrong answer for the Alsónyék sequence!

Other smaller Bayesian exercises show equally surprising results. as at Versend in Southern Hungary, where the settlement lasted a generation or two in the late 53rd century BC, with houses in use for 10–20 years, while the burials continued for 300 years, from the 53rd to the 50th century BC. At the Iberian megasite of Valencina de la Conceptión, despite the failure of many dates owing to poor collagen preservation, a new sequence has emerged, with an early phase of burial in artificial caves starting in the 32nd century BC, before a short burst of tholos
construction limited to the 29th–28th centuries BC, including small mounds as well as the most
dramatic monuments, such as Montelirio, with its exceptionally rich grave goods betokening
exchange networks to the Levant and Africa as well as all over Iberia. It is this recognition of the
pace of change in site biographies that best exemplifies the TOTL programme's results.
Nonetheless, the complete sequence at the 450-ha Valencina complex is not yet understood,
meaning that future programmes of AMS dating are still required.

To what extent has TOTL delivered on the next spatial scale up, the regional sequence? There
is a tension here between particularising histories and regional narratives which the author
generally handles well. One of his favourite case-studies – returned to in four chapters – is the
Neolithic sequence in East Alsace, where Bayesian modelling of 150 AMS dates allows a high-
precision generational chronology from 5300–4000 BC. This sequence shows a rapid spread of
the LBK Phase I – at one point an overall movement of 1000 km in 20 years is hazarded – with
rises and falls in regional site numbers until the unexpected conclusion of a 250-year hiatus
between LBK Phase V and the next dwelling of the Hinkelstein group. The interesting point is
that, in other LBK regions, the hiatus lasted 40 years, in still others 175 years – until, in each
case, and within a generation, Hinkelstein-style pottery was adopted. Here as elsewhere, the
general pattern of chronological variability in change is established but the particularities are not
explained.

The greatest tension between specific histories and the Grand Narrative comes in Chapter 6,
where Whittle tackles the European Neolithic in general. The author accepts the aDNA
evidence for incoming communities from Anatolia into Europe, suggesting that the key research
question for the start of the Neolithic is now the effects of those incoming communities. He
effectively identifies a key chronological weakness in the narrative of Neolithic movement – viz.,
the poor dating of South Balkan Neolithic origins. But Whittle overlooks the evidence for multiple
cases of lithic exchange between hunter-gatherers and those incoming farmers on the edge of
the migrating wave of advance. There is a more nuanced picture to be painted yet (Chapman in
prep.). Whittle is wisely more sceptical about the alleged population replacement of Final
Neolithic/Copper Age populations by invading warlike bands of Yamnaya/Corded Ware
pastoralists. Noting that the transition to the Corded Ware shows considerable regional
variability, including strong elements of continuity in lifeways in different parts of Switzerland,
Whittle calls for a much tighter chronology for Corded Ware sequences in Central Europe. He
also hints at sampling problems for the aDNA evidence allegedly supporting the Yamnaya
population replacement. Whittle also looks for patterns of big change in the middle of the
Neolithic but fails to find such evidence in the 4th millennium BC. The way that he seeks to
resolve the tension between fine-resolution narrative and big stories is by defining key centuries
of Neolithic change – the 54th, the 47th – 46th centuries, the 37th, the 28th and the 25th
centuries BC. Such an approach is reminiscent of rapid climatic change (RCC) research, in which it is said that every century has at least one and sometimes several RCC events documented in some part of Europe or another. TOTL has indeed challenged the slow, gradualist model of Neolithic change but what is in its place? One of the most important TOTL insights is that there were short bursts of social differentiation which were unsustainable, after which the community returned to long-term situations of greater stability (examples such as Varna, Alsónyék, Late Neolithic Orkney and Valencina spring to mind). But the author does not link these episodes to wider patterns of, in particular, massive expansions in exchange networks. Just as there was a network linking Brittany to the Volga Basin at the time of Varna, so the Valencina network extended to the Levant and Africa, while the Grooved Ware network covered the whole of the UK. In all these instances, major mortuary deposits involving finely-crafted exotic objects foregrounded the capacity of leading individuals to capture specialist labour and tap into the widest exchange networks of a century − perhaps a millennium.

This brings us to the first of the two characteristics of Alasdair Whittle's approach to European prehistory − the resolute denial of key individuals playing hierarchical leadership roles. In this book, Whittle creates a false dichotomy of an individual powerful leader and the dominant lineage − not accepting that lineage leaders were not only powerful in the lineage context but that power gave them potential for aggrandizing practices in a wider sense. The key TOTL insight that these episodes were of short duration has not changed the author's view that these were communally-based rather than linking lineages to personal leadership.

The second characteristic of the book is a more serious theoretical divergence between the author and those supporting the ontological turn − in particular, the attribution of agency to non-humans, including objects, animals, trees and waterfalls. For Whittle, the key problem is that the connections between humans and non-humans have been expressed in a huge diversity of ways in both space and time, making it impossible for archaeologists to figure the connections in a specific context and thus giving rise to a generalising narrative rather than specific history. One response to this position is that the agency of a painted vessel in no way precludes the agency of the human who made and painted it, meaning that the challenge for historically-aware ontologists is to create narratives which specify connections between all agents within a sound AMS framework. This reviewer does not see a conflict between the two aspects of the problem, which remains a task for the future.

It is to the future that Whittle turns in his provocative final chapter, which underlines that this book is a part of a manifesto for future action. It is not sufficient to be aware of the possibilities of high-resolution site and regional chronologies − the point is to create them. Indeed, this book has opened a Pandora's Chronological Box to reveal the vast number of inadequately-dated
sites and regions awaiting Bayesian modelling. Whittle mentions them from time to time – none of those Late LBK sites with episodes of violence yet have a formally modelled chronology; seven key South Iberian 3rd millennium BC central places which share the same lack, and so on ... If we complacently thought that the European Neolithic had a secure chronological framework, we obviously cannot accept such a view any longer. But the scale of the challenge is immense.

It is not only the paucity of formally-modelled site or regional chronologies that hinders a good chronology. It is also the nature of AMS dating and the issues of the calibration curve. In two recent research projects, our teams assembled a large number of AMS dates but could do little with them. At the Varna cemetery, the problems of the short duration of the cemetery (<200 years) compared with the 2-sigma values of the 70 AMS dates and the lack of stratigraphic information meant that it was impossible to gain more precise phasing than an ‘Early’ or ‘Late’ division (Higham et al. 2018). At the Nebelivka megasite, 71 out of the 83 AMS dates were statistically indistinguishable one from another because of a wiggle on the calibration curve, precluding any meaningful internal sequencing of the 1445 houses built at the site (Millard ADS).

These are not problems simply for Alasdair Whittle or his principal Bayesian specialist, Alex Bayliss; they affect all of us striving to provide a historical chronology for the European Neolithic. So, to return to the original questions posed above, is this goal both desirable and feasible? Clearly this goal is desirable. What the TOTL Project has done is to show how high-resolution site and regional chronologies are indeed feasible. But the problems revealed by the opening of Pandora's Box are truly massive. There are rumours afoot of a revision of the current calibration curve, which would help reduce dating ambiguities. But, standing back from these issues, we acknowledge the achievements of this beautifully written, superbly illustrated book, which are far greater than the theoretical deficiencies which colleagues will continue to argue about. The question for each prehistorian who reads this volume is what they will do about its central challenge.

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