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Place and Time at Trypillia Mega-Sites

Towards a New Synthesis of Analyses and Social Theory

ABSTRACT The Trypillia mega-sites ('TMS') form an exceptional aspect of the broader Cucuteni–Trypillia group in the Balkan and East European Neolithic and Chalcolithic. The TMS are currently the largest sites and the earliest urban complexes in Eurasia in the fourth millennium cal. BC. In this article, we chart the trajectories of theoretical and methodological development of TMS research. We build on the social implications of the Visibility Graph Analysis of Nebelivka and Bayesian modelling of three significant TMS. In the key section, we examine TMS in the light of three points made in Graeber and Wengrow's book *The Dawn of Everything*: cultural schismogenesis, the three elementary forms of freedom, and those of domination. The integration of the latest analytical results and political theory provides a new platform for future investigations of TMS.

KEYWORDS Cucuteni–Trypillia group; Ukraine; the Big Other; mega-sites; urbanism; schismogenesis; freedom and domination; Visibility Graph Analysis; AMS dating; Bayesian modelling.

Introduction

The Trypillia mega-sites form an exceptional aspect of the broader Cucuteni–Trypillia (henceforth 'CT') group, which covered an area of over 250,000 km² in the modern states of Romania, Moldova, and Ukraine and lasted two millennia (4800–2800 cal. BC) (Fig. 7.1). The CT group formed an important part of the Neolithic and Chalcolithic of the Balkans and eastern Europe; the group was unusual in maintaining the cultural basis of Balkan lifeways well after it had been abandoned in the rest of central and south-east Europe (Chapman 2020a). One of the themes which we shall explore in this article is the effects of such a great time-depth and spatial size on the dynamics of the group and on the formation of the mega-sites.

The Trypillia mega-sites (henceforth TMS) were found only in the eastern part of the CT distribution and were concentrated in one part of that forest-steppe zone — the Bug–Dnieper interfluve (Diachenko 2016). They were defined as covering an area of at least 100 ha, with the largest (Taljanki) covering an area of up to 320 ha (Rassmann and others 2016a). The TMS are currently recognized

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Table 7.1. Kuhnian stages in the development of research into Trypillia mega-sites.

Date	Stage	Main Characteristics
1890s	Discovery of Trypillia sites	Discovery of eponymous site of Trypillia; development of techniques for excavation of burnt house remains (*ploshchadka*); recognition of Trypillian painted pottery assemblage; dating of Trypillia pottery to Neolithic
1890s–1960s	First phase of 'normal' excavation	Application of techniques of *ploshchadka* excavation to wide variety of Trypillia settlements; large-scale settlement excavations; definition of time-space boundaries of Trypillia group and its main Phases; correlation of Trypillia and Cucuteni Phases
1960s–1970s	First TMS methodological revolution	Identification of TMS on aerial photographs; ground-truthing of these sites to confirm Trypillia date; geophysical investigation of burnt house anomalies; excavation of anomalies, showing Trypillia date
1970s–2000s	Second phase of 'normal' excavation	Definition of main TMS planning principles; characterization of Trypillia domestic architecture and subsistence strategies; development of comprehensive Trypillia ceramic typo-chronology; creation of 'Encyclopaedia of Trypillia Civilization' (Videiko 2004)
2000s–2010s	Second TMS methodological revolution	New, more accurate forms of geophysical investigation, producing complete and partial TMS plans; recognition of new kinds of features (Assembly Houses, unburnt houses, perimeter ditches, kilns, paths) and combinations of features (Neighbourhoods, Quarters, pit clusters); reconstructions of site palaeo-environments; new techniques of *ploshchadka* and pit excavation, with test-pitting to recover samples for AMS dating; intensive AMS dating with Bayesian analysis
2010s–	Third phase of 'normal' excavations	Integrated geophysical, excavation, test-pitting, palaeo-environmental, and AMS dating strategy over a wider size range of sites, from smallest to medium-size, covering a full range of Phases

as the largest sites in Eurasia, if not the world, in the fourth millennium cal. BC. Their urban status makes them the earliest urban sites in Eurasia — several centuries earlier than the Uruk complex. It is imperative to understand the Trypillia mega-sites both within their cultural context and as different in scale from other Trypillia sites (Fig. 7.2). The aim of this article is to develop a political model for the TMS. But before we can do this, we shall summarize two major strands in the history of TMS research: method and theory.

History of the Methodology of TMS Investigations

There are now several accessible accounts of the discovery and investigation of TMS (chapters in Menotti and Korvin-Piotrovskiy 2012; Chapman and others 2014a; 2015; Chapman and Gaydarska 2016; chapters in Müller, Rassmann, and Videiko 2016; Gaydarska 2020a, 8–12) to complement accounts in Russian or Ukrainian (e.g., Videiko 2012; 2013). In terms paralleling those first proposed by Thomas Kuhn (1970), the history of investigations comprises three phases of innovative fieldwork practices (viz. 'scientific revolutions') followed by three periods of 'normal' excavation (viz. 'normal science'), in which progress was dictated by the available finances for summer fieldwork (Table 7.1). The three TMS with the most intensive investigations have been studied in contrasting ways (Table 7.2).

The principal changes in the theoretical underpinnings of TMS studies readily map onto the contrasts between views developed in the first two stages of methodological developments and those of the third stage (late 2000s onwards). A key early intervention was Roland Fletcher's (1995) insight that TMS constituted the only global exception to his predicted Communications-Limit of 100 ha for agrarian settlements. The third stage was marked by what we may term the 'internationalization' of the TMS debate, in which mega-sites became much better known than before to the wider community of urban scholars. Four major international museum exhibitions featuring CT artefacts advanced this process: Thessaloniki, September–December 1997 (Mantu, Dumitroaia, and Tsaravopoulos 1997); Toronto, November 2008–March 2009 (Ciuk 2008); New York and Oxford, November 2009–July 2010 (Anthony and Chi 2010). Although these exhibitions emphasized the artistic achievements of CT communities, the significance of CT pottery was not translated into an awareness of the importance of TMS in the global urban debate.

It was not until the 2010s that the profile of the TMS phenomenon was raised in articles in international, peer-reviewed journals (e.g., Chapman and others 2014a; 2014b). It was also at this time that the Durham team's research built on the collaboration with Roland Fletcher that helped position TMS in the low-density urban debate (Fletcher 2009; 2012). In parallel, direct comparisons were made between early urban centres in the Late Uruk and Ukraine (Wengrow 2015; cf. Müller and Pollock 2016). A new level of TMS research was initiated by two publications emanating from a 2014 session on urban origins: the data-heavy monograph on *Trypillia Mega-Sites*

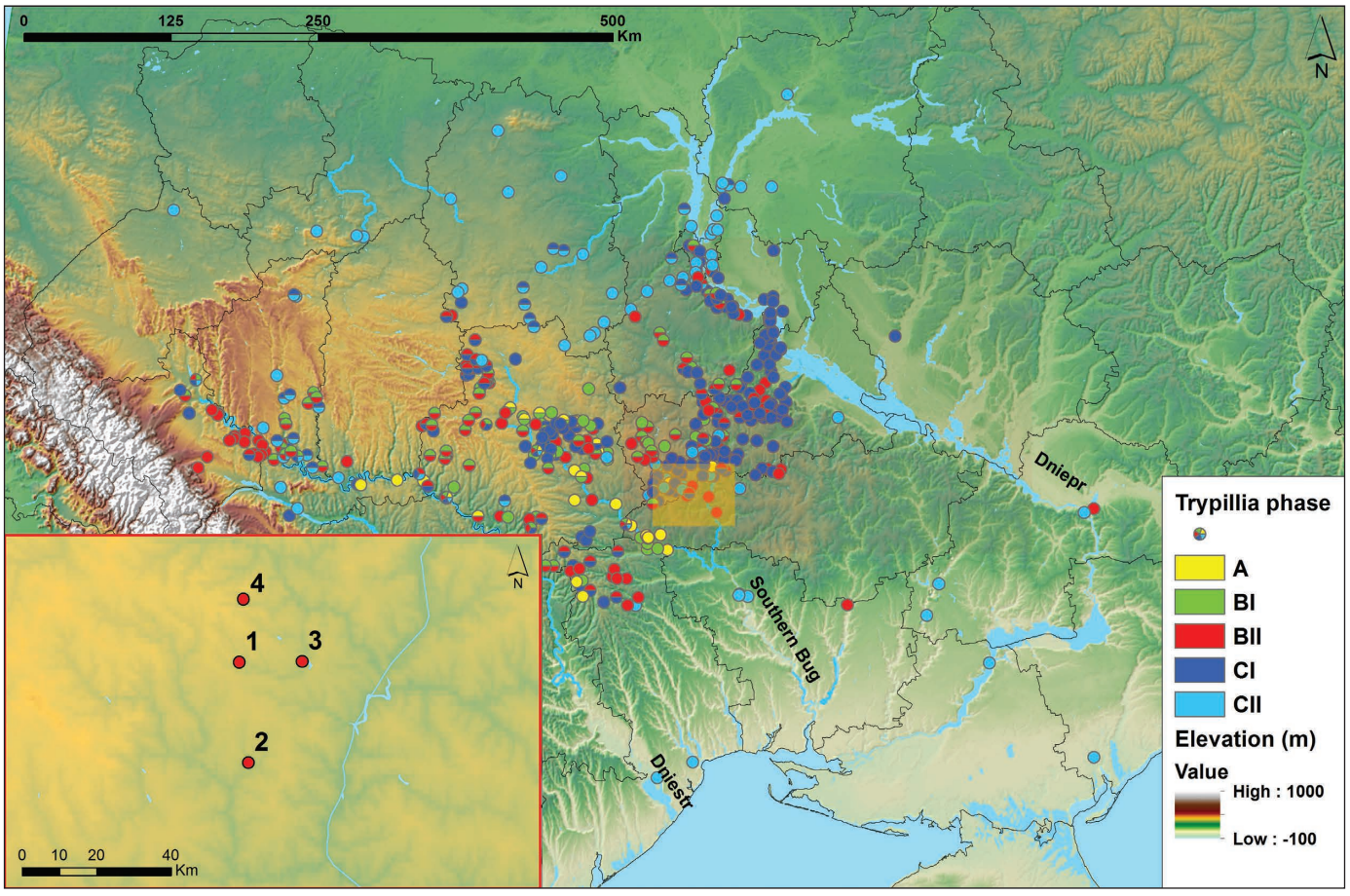

Figure 7.1. Distribution of Trypillia sites by Phase, with selected site locations: **1**) Taljanki; **2**) Nebelivka; **3**) Maidanetske; **4**) Moshuriv I; current approximate cal. BC dates of Phases: Phase A — 4800–4350; Phase BI — 4350–3950; Phase BII — 4150–3850; Phase CI — 3950–3500; Phase CII — 3650–2950 (Harper 2016, 25). Source: Marco Nebbia, adapted by Bisserka Gaydarska.

and European Prehistory (Müller, Rassmann, and Videiko 2016) and a more cerebral collection of essays on early urbanism, including the TMS (Gaydarska 2017). These publications were followed by four monographs presenting the full results of international projects — the Ukrainian-German excavations at Maidanetske (Müller, Czebreszuk, and Kadrow 2017; Ohlrau 2020; review by Gaydarska 2020b), the Ukrainian-British project at Nebelivka (Gaydarska 2020a), and the Ukrainian-German project at Taljanki (Shatilo 2021; review by Chapman 2021). These volumes reached a new level of detailed, context-based publication of three of the most significant TMS in the Sinyukha Basin and will remain cornerstones of the TMS literature well into the future.

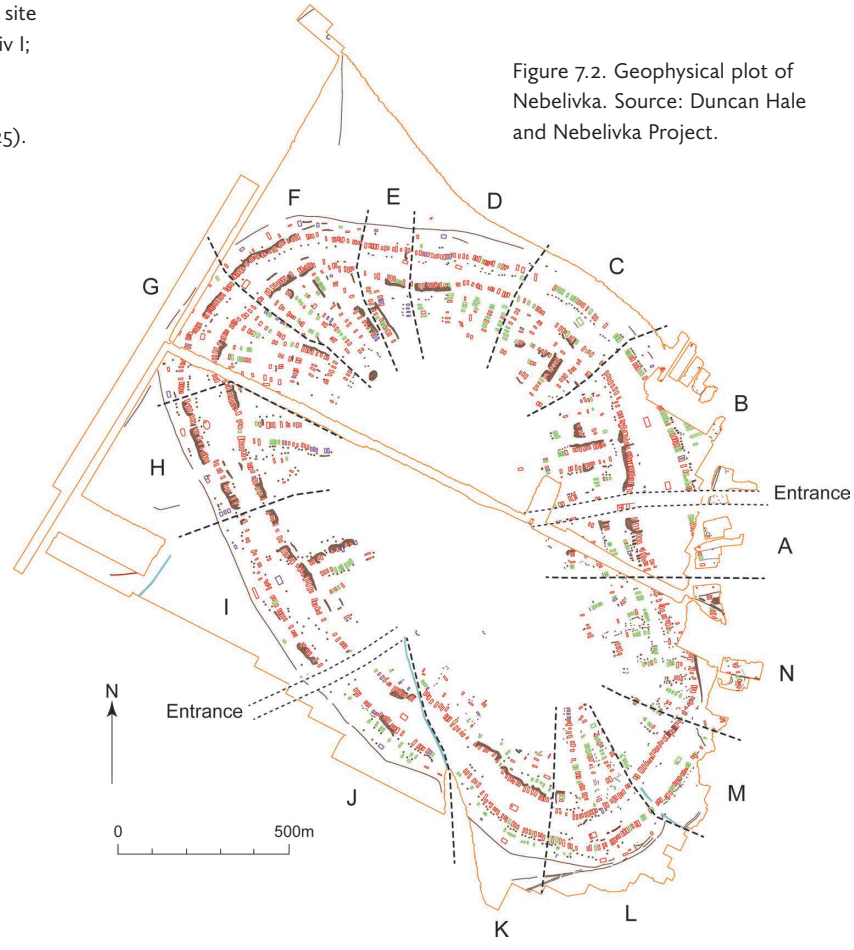

Figure 7.2. Geophysical plot of Nebelivka. Source: Duncan Hale and Nebelivka Project.

Table 7.2. Fieldwork and excavation strategies at three Trypillia mega-sites.

Dates	Site (Ref.)	Fieldwork and Excavation Operations
1979–1989	Maidanetske (Shmaglij and Videiko 2001–2002)	Geophysical prospection; excavation of forty-seven houses, fifteen pits, and two kurgans; fieldwalking near the site
2011–2016	Maidanetske (Müller and Videiko 2016; Müller, Czebreszuk, and Kadrow 2017; Ohlrau 2020)	New geophysical prospection (Fig. 7.3); excavation of two houses, one ring-building, seven pits, and one pottery kiln; test-pitting of nineteen houses, one pit, and two ditches; subsistence investigations (faunal and botanical); palaeo-environmental reconstruction using soils, archaeological pollen, and phytoliths
1980–2010	Taljanki (Kruts and others 2008)	Geophysical prospection; excavation of forty-four houses and several pits; fieldwalking near the site; experimental building and burning of 'Neolithic' houses
2011–present	Taljanki (Shatilo 2021)	New geophysical prospection (Fig. 7.4); excavation of a further seven houses, several pits, and six pottery kilns; subsistence investigations (faunal and botanical)
2009–2015	Nebelivka (Gaydarska 2020a; Albert and others 2020; Chapman and others 2018)	Geophysical prospection (Fig. 7.2); total excavation of one Assembly House, two houses, two pits, and an industrial feature (kiln?); test-pitting of over eighty dwelling houses and Assembly Houses, and two ditches; well-dated pollen core defining TMS human impacts; subsistence studies (faunal and botanical); systematic fieldwalking of hinterland; AMS dating programme (eighty-six dates); experimental building of two 'Neolithic' houses, with burning of one house

Changing Theoretical Approaches to Trypillia Mega-Sites

Early in the 2010s, it became clear that the advances in the second TMS methodological revolution would be vitiated without comparable developments in TMS theory. Theoretical developments can be detected in the shift away from a social evolutionary approach (Sahlins 1958; Service 1962) which combined elements of two of Childe's (1936; 1950) revolutions (the Neolithic and the Urban). Some of the key positions in the ongoing theoretical debate are summarized below (Table 7.3) in a format structured around the opposition between the Maximalists and Minimalists and which highlights some recent German proposals. The heart of the disagreement centres on the key TMS aspect of scale. In addition to the analogy between yachts and aircraft carriers (Gaydarska, Nebbia, and Chapman 2020, 19), we offer a new analogy. A parish church has almost all the important elements of a cathedral (orientation, basic layout, segmented functions), yet the differences in size, the affordances offered by increased scale, and the cumulative meanings of the multiple interactions involved makes it a totally different building. We maintain that the enormous differences in scale between a 238 ha TMS and a 1–2 ha 'normal' settlement would have created such differences in the total diversity and quantity of interactions and practices that it would be impossible to consider one as simply a larger version of the other.

Although Ohlrau (2022) now considers the Maximalist–Minimalist dichotomy *passé*, the Kiel and Ukrainian scholars have hardly retreated from their assumptions of permanent, long-term TMS settlement, despite their reduction in population estimates and their acceptance of the coeval dwelling of half of the houses. In an article entitled 'Neither Urban nor Low-Density', Ohlrau (2022) positions TMS on Fletcher's (1995) global settlement matrix as outside the Low-Density Urban threshold, set at 10 persons/ha, characterizing them as agglomerations rather than cities and claiming that as many as 52 per cent of all houses were in coeval occupation at Maidanetske (Ohlrau 2022, 88). However, methodological failings at each of three stages of the argument produce cumulatively unreliable conclusions. The AMS dating of only fourteen houses out of a total of three thousand structures at Maidanetske leads to a disputable estimate of 52 per cent of coevally occupied houses (Stage 1), which is then extrapolated to other sites with old, and inaccurate geophysical plots to produce even more questionable population estimates (Stage 2). These estimates are then used to position Trypillia sites (small and mega-site) on an outdated version of Fletcher's Interaction–Communication Matrix (Stage 3), with the low-density threshold at 10 persons/ha. This contrasts with Fletcher's (2020, 45 and appendix 3) revision of the threshold to 10–20 persons/ha, which incorporates the majority of sites based on Ohlrau's approach. The interpretation of TMS as 'agglomerations' hardly advances our understanding of these remarkable sites further than the 'giant-settlements' label of the 1980s. More significantly, maintaining a large, permanent population makes it harder to argue for an egalitarian political structure.

The team researching Nebelivka has developed a wide range of theoretical constructs in the last quinquennium to characterize the social order at TMS (e.g., Chapman and Gaydarska 2019; Gaydarska 2019; 2020a; Gaydarska and Chapman 2021; 2022; Nebbia and others 2018). New interpretations have been offered for some of the well-established plan ele-

Table 7.3. Changing theoretical viewpoints about Trypillia mega-sites
(UPPER CASE — general approaches; lower case — models specific to individual mega-sites).

Researcher	Summary	Main Points	Critique
Korvin-Piotrovskiy (2003)	NON-URBAN MAXIMALIST	Early complex societies at chiefdom level; 'settlement-giants' with large, permanent populations all living in TMS; maximalists for population estimates and minimalists for resource usage	The term 'settlement-giants' ignores the question of scale; many lines of evidence contradict large, permanent populations
Videiko (2013)	URBAN MAXIMALIST	Three-tier hierarchical system of 'capitals', dependent towns, and villages; monumentality and craft specialization at capital	No palaces, temples, writing, cult centres, or craft quarters; lack of rural hinterland means no cities
Chapman (2017)	URBAN MINIMALIST	Minimalist views for population estimates and maximalist views for resource usage: tipping point of nine arguments against maximalist population estimates	Problems with calibration curve prevents use of AMS dates for a sound internal site chronology: hence testing of three models
Nebbia and others (2018)	Nebelivka — Assembly Model	Small group of 'Guardians' living permanently and hosting large-scale assembly for one month per annum; tension between 'Nebelivka' identity and multiple local identities	Uncertainty over whether one-month settlement could stimulate so much solid house-construction
Chapman and Gaydarska (2019)	Nebelivka –Pilgrimage Model	Permanent settlement by ritual leaders (Guardians) who organized an eight-month pilgrimage season each year, with pilgrims from smaller settlements staying for one month	Huge effort involved in initial construction of pilgrimage centre in one–three years.
Gaydarska (2021)	Nebelivka — Distributed Governance Model	Permanent settlement with <400 houses organized through regional alliance of ten descent groups, each providing leadership of festivals and contributing resources for one year	Potential for freeloading could undermine system
Müller and others (2019)	HETERARCHIC-AL MODEL	Central role of political decision-making in TMS emergence and abandonment; institutionalized social differences avoided by five decision-making systems	Lack of definition of five decision-making systems, which lack differentiated functions causing overlap
Hofmann and others (2019)	NON-URBAN PERMANENT LARGE-SCALE MODEL (previously 'Maximalist')	Decision-making functions for Assembly Houses at two levels — whole-site and Quarter; absence of Assembly Houses at Taljanki a troubling sign of increased political centralization (perhaps a prelude to TMS collapse)	Overlooks the temporal overlap between the three principal TMS and the non-permanent structure of the smaller Assembly Houses
Shatilo (2021)	NON-URBAN PERMANENT LARGE-SCALE MODEL (previously 'Maximalist')	Social system unified by site layout, economic-political independence and finds assemblages; Peer Polity model with interacting TMS maintaining a 'common symbolic culture'	Overlooks significance of scale at TMS; paucity of AMS dates associated with houses means a weak internal sequence for Taljanki

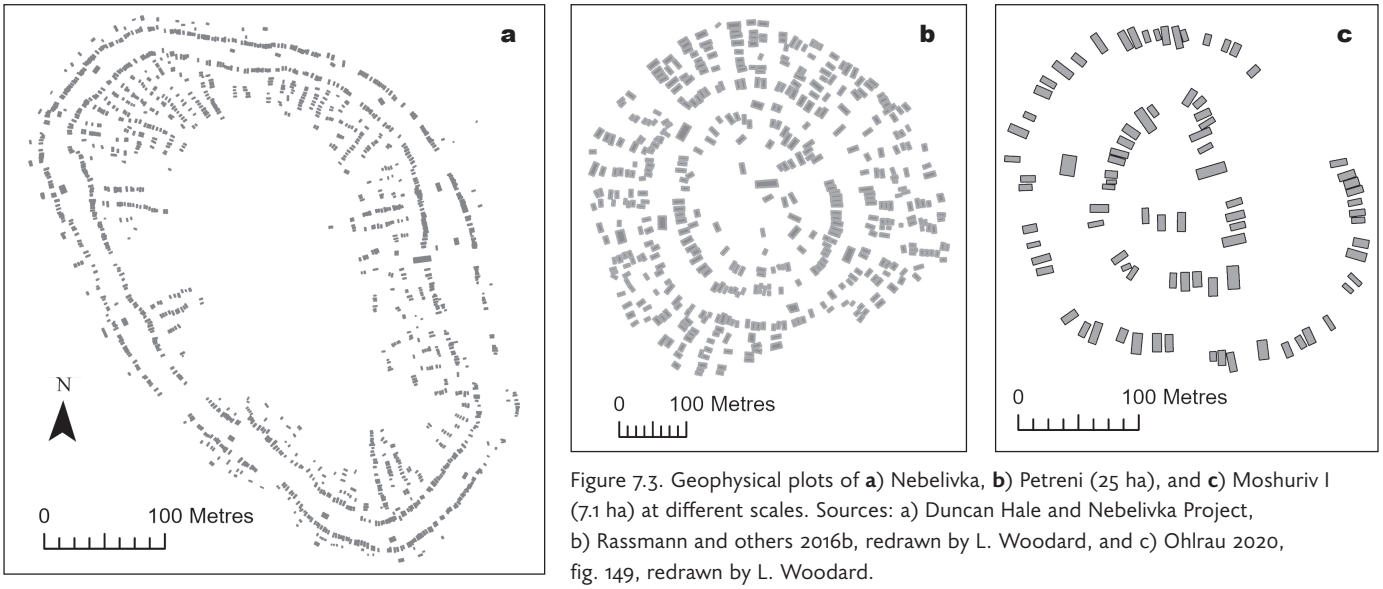

Figure 7.3. Geophysical plots of **a**) Nebelivka, **b**) Petreni (25 ha), and **c**) Moshuriv I (7.1 ha) at different scales. Sources: a) Duncan Hale and Nebelivka Project, b) Rassmann and others 2016b, redrawn by L. Woodard, and c) Ohlrau 2020, fig. 149, redrawn by L. Woodard.

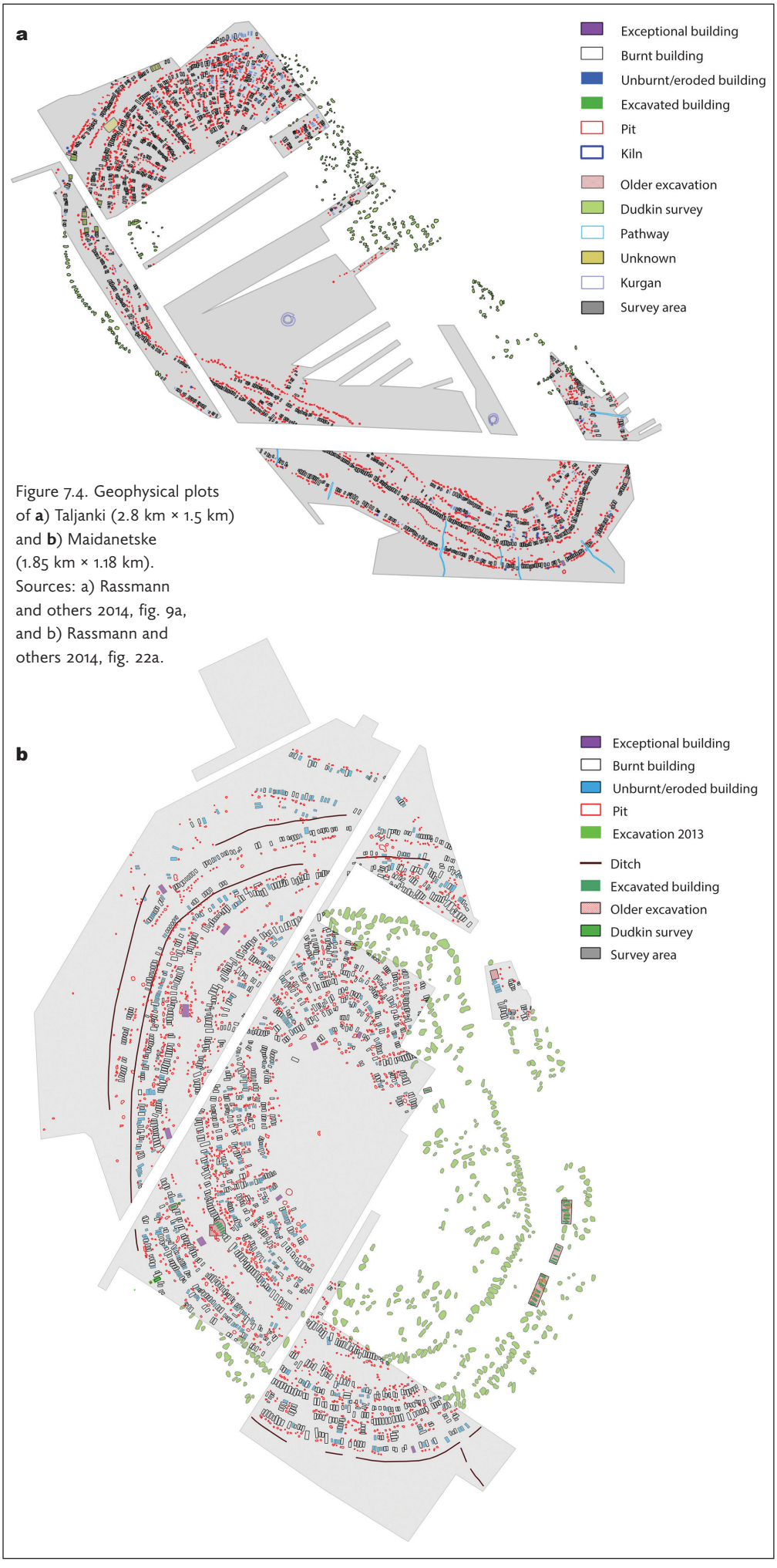

Figure 7.4. Geophysical plots of **a**) Taljanki (2.8 km × 1.5 km) and **b**) Maidanetske (1.85 km × 1.18 km). Sources: a) Rassmann and others 2014, fig. 9a, and b) Rassmann and others 2014, fig. 22a.

ments (Table 7.4 and Figs 7.2, 7.5–7.7), while material depositions have been viewed as ways to build up a relational picture of manageable social differentiation, with graded differences rather than oppositional strategies used to create relational identities. In the same vein, another key notion concerns TMS relational urbanism, by which the comparison between the kinds of parameters found on small sites such as Grebeni or Moshuriv I and TMS indicated the scalar differences in experience and practices between sites of such different sizes (Table 7.5 and Figs 7.2–7.4) (cf. Gaydarska 2020a, table 6.8). This scalar difference underpins another important proposal that TMS were places for congregations, defined as formal meetings at various scales, usually following punctuated temporality (Table 7.6). TMS were particularly large kinds of congregation places, whose diversity was based upon an unusual combination of major dwelling zone and massive, open congregation area. In that sense, TMS exceeded the scope of Neolithic sites summarized aphoristically in Cooney and Grogan's (1999, 232) phrase as 'local worlds linked by exotic elements'.

In the light of the failure to produce a clear-cut AMS-based internal sequence for Nebelivka, we developed three models to account for the development of the TMS Plan, in contradistinction to the traditional model. The Distributed Governance Model (Gaydarska 2021) works on the premise of a permanent but substantially scaled-down contemporary occupation of four hundred houses. Members of ten extended kinship groups (clans) occupied forty houses each at the site, while other members of the same clans were living in smaller sites within the Nebelivka 100 km catchment area. Ten groups meant that there was a ten-year cycle during which each clan was consecutively in power for one year. The group responsible for running the mega-site provided food, water, and fuel, waste management, the organization of feasts and ceremonies, and

conflict resolution. The organizing clan were strongly supported in this enterprise by their counterparts living in the wider catchment area, namely by supplying regular provisions of grain, timber, salt, meat, and milk. The rewards for such responsibilities included the power to make decisions on behalf of the group, to impose policies or sanction freeloaders, as well as contribute to the formation of alliances. But all of the clan members would have benefited from the greater opportunities for interaction, more frequent access to a wider range of traded goods, meeting relatives married to women in a distant village, or just enjoy gossip. Power and responsibilities were not concentrated at one place or vested in one person but shared across a social network based on common descent. The building and burning of seven houses per annum would have produced the footprint of 1450 structures in just over 200 years that fits well with the current palaeo-environmental evidence.

The Assembly Model is based upon a month-long seasonal aggregation of increasing numbers of visitors at a centre maintained through the year by a small number of permanent occupants (Nebbia and others 2018). The interlinked processes of house-building and house-burning were modelled over five thirty-year generations in two iterations — Models A and B — with the latter showing the highest number of houses occupied in the fourth generation and a steep decline in the last generation. The continuous increase of the index showing the proportion of houses occupied over two or more generations underlined the importance of the local 'built heritage' at Nebelivka, while also suggesting that visitors continued to come from the same or related small sites throughout the life of the mega-site. There was a tension between the 'local' identities of visitors from many small sites and the 'central' or 'Nebelivka' identity which was dominant at the time of the assembly, and which sustained

Table 7.4. Elements of the TMS plan, Nebelivka (Hale 2020; Buchanan 2020).

Plan Element	Key Associated Practices
House (Fig. 7.5)	House areas changed from part of the undifferentiated open, public 'space' to a domestic 'place' defined by the house and its associated features to a public space with ancestral connotations (an 'ancestral space' (Fig. 7.7)) after abandonment, sometimes marked by a memory mound; the ancestral spaces materialized both the local identity of the Neighbourhood or Quarter with their links to specific burnt houses and the Nebelivka identity through their citation of the significant, general practice of house-burning (see Fig. 7.13b).
Neighbourhood (Fig. 7.6)	Neighbourhoods offered mutual support for a group of households in a new social environment, perpetuating the co-operative lifeways and organization of several 'home' communities, each of which offered labour for house-building and other public structures.
Quarter (Fig. 7.6)	Quarters were centred on their own Assembly House; the Quarters' scale of dwelling was ten times that of the Neighbourhoods, with a single Quarter bigger than an entire small Trypillia site; according to Visibility Graph Analysis, each Quarter shared a similar structuring of visibility and movement, with Assembly Houses located to provide high visual accessibility to corridors of movement.
Inner Radial Streets (Fig. 7.2)	Often part of a 'messy' interior, forming a transition between the built area and the Inner Open Area; Radial Streets diversified space, introducing the potential for more complex movement and house arrangements (benefits for local neighbourhoods and organizers of processions) but also infringing on the Inner Open Area; Radial Streets more closely related to 'local' decisions taken at the level of the Quarter, while blocking streets were a Neighbourhood response to the expansion of Radial Streets and the loss of the Inner Open Area.
Inner Open Area (Fig. 7.2)	The Inner Open Area materialized the formalization of congregation spaces at the centre of TMS, with cumulative place-value increasing with growing histories of recurrent visits; the Inner Open Area was at the centre of political decision-making and negotiations — the centre of Nebelivka social life.
Whole Site (Fig. 7.2)	TMS embodied an unusual combination of major dwelling zone and massive open, congregation area; each distinct stage of a TMS exemplified a new building project, which provided fresh political opportunities for expanding social power and the transformation of the social order based upon the key element of the site's 'global identity'; the bricolage of plan elements adopted from different home communities made architectural variability more likely, creating TMS citations of home communities in architecture and layout.

Figure 7.5. House A9, Nebelivka. Source: Nebelivka Project.

Table 7.5. Relational traits for the comparison of TMS and smaller settlements. After Gaydarska 2020a, table 6.8.

Trait	Nebelivka	Grebeni
Site territory	Network of 100 km radius	No sense of centrality
Size	238 ha: most distant neighbour = 500–600 m away	4.5 ha: furthest neighbour 200 m away
Population number	2400–5600: density of 10–23 persons/ha (varies by preferred Model)	228–304: density of 51–68 persons/ha
Population heterogeneity	Wide variety of visitors from many home communities (PIL and ASS Models); ten clans (DG Model) as well as long-distance and ritual specialists; high intra-site ceramic variability	Minimal heterogeneity in people and material culture
Concentration of skilled labour and management	Household production with Limited Interest Groups developing specialization in pottery production, woodland management, and house-building	Household production for all objects
Built environment and formalized space	Tension between overall plan and local bottom-up planning of Neighbourhoods and Quarters; centrality of vast Inner Open Area for congregation	Small-scale performances in Neighbourhoods; no sign of a developed Inner Open Area
Scale of subsistence	Local subsistence for the Guardians; for the ASS and PIL Models: animals, salt, and other food brought in for the festival season from wide range of home communities; for the DG Model: food and drink brought from different clan each year	Flocks of two hundred caprines and herds of eighty cattle: two small groups of herders; local crop production (thirty minutes' walk); feasting on lamb/mutton and beef
Centre of exchange network	Centre of 100 km radius settlement network bringing exotica to TMS by 'internal' exchange; exchange as one of key functions of congregation	Receiving exotica through small- and medium-scale exchange networks or visiting TMS
Social organization	Egalitarian system based on CT Big Other and open access to political decision-making, with structural constraints on accumulation of status or power	Egalitarian system based on CT Big Other and little household differentiation

the development of a regional political unit to create and run the seasonal assembly. The Assembly Model created a place of such scale that, in relational terms, dwarfed all other Trypillia settlements, leading to its seasonal functioning as a local city.

The Pilgrimage Model considers a concept hitherto rarely developed in prehistory — the mega-site as a pilgrimage centre (Chapman and Gaydarska 2019). This model is based upon extensive pre-existing social networks linking sites across regions, as well as on the ubiquitous shared symbolic order of the 'Trypillia Big Other'. Following on from the assemblies of the earliest mega-sites (Phase BI), pilgrimage centres were selected for a range of different reasons by ritual leaders who became 'site Guardians'. It was these Guardians who prepared the ground, organized the large-scale woodland management necessary for initial house-building, and negotiated with other settlements for major contributions to the construction of the site. The life of the pilgrimage centre was divided into two stages — an initial stage in which the skeleton of a site structure was constructed in two years, and a later stage, in which house-building and -burning proceeded at a much slower rate, with variable numbers of pilgrims visiting from sites within a 100 km radius for one month within a pilgrimage season of eight months. The pilgrimage centre was controlled by the site Guardians, who were initially Nebelivkans but who may have been gradually replaced by non-locals in later generations. The pilgrimage model claims to be capable of explaining many of the key features of the mega-site plan.

In summary, while we have discussed a multiplicity of theoretical insights into many aspects of TMS, we have yet to produce an overall political model for the TMS. Before we attempt that, we shall summarize the results and social implications of a new Visibility Graph Analysis of the spatial layout of the entire Nebelivka site, as well as the results of Bayesian modelling of recently published AMS dates from Nebelivka and two other TMS — Taljanki (Shatilo 2021) and Maidanetske (Ohlrau 2020). The Bayesian modelling has produced startling implications for the dynamic development of the TMS. We then turn to a discussion of TMS political structure, using as a starting point an important new contribution to the emergence of farming, urban centres, and states (Graeber and Wengrow 2021). We consider the TMS phenomenon in terms of three themes explored in depth by these authors — cultural schismogenesis, the three elementary forms of freedom, and the three elementary forms of domination. Our aim is to create a synthesis of recent time–place analyses and social theory in order to develop a new, political interpretation of the TMS phenomenon.

The Visibility Graph Analysis of Nebelivka [BB]

VGA is a form of spatial analysis that investigates the visual characteristics of the built environment by combining aspects of visibility fields, space syntax theory, and small-world network theory to 'derive a visibility graph of an environment' (Turner and others 2001, 104). Although based on visibility, VGA investigates spaces and places differently from the more well-known GIS-based viewshed analysis in that it concentrates on the connections between grid points in a regularly spaced graphical environment overlaying plans of buildings or areas. It determines the portions of an analysed graph that are the most and least visually integrated as well as the most visually complex through a series of measurements. The measurements use the organizing concepts of space syntax theory, which holds that the spatial features of a built environment have underlying laws or logic and may be seen and connected to culturally identifiable patterns of practice and movement (Hillier and Hanson 1984). The VGA outputs are both colour-shaded imagery and quantitative measurements that can be used to compare the development of visual space within and between different built environments. Although originally used in

Table 7.6. Congregation places. After Gaydarska and Chapman 2021.

Parameter	Description of Related Practices
Scale	Recapitulation of major site/monument classes in TMS; deposition of wide range of exotics at TMS; upscaling with positive effects (number and diversity of interactions, more channels of communication, wider range of skills, and better access to information) and negative effects (scalar stress).
Temporality	Punctuated temporality dominant among complex multiple temporalities sustained by timemarks; different temporalities in dwelling areas and public open areas; varying temporalities according to Model preferred; key overall feature = long-term accumulation of place-value.
Deposition	Wide range of deposition in dwelling houses (often burnt), Assembly Houses, pits, ditches, and on the ground surface; depositional performance was one focus for the tension between collective TMS identity and the local identities of other visiting or resident communities; deposition constituted as cultural memory through timemarks.
Monumentality	Contrasting degree of monumentality (two-storey vs. single-storey houses; the Nebelivka Mega-Structure vs. other portable Assembly Houses); spread of memory mounds and associated ancestral places.
Open spaces	The Inner Open Area as the centre of TMS social life, as the main arena for open, consensual political decision-making; its paradox was the locus of the most varied performances (except house-burning) but very little deposition; additional house circuits impinged on Inner Open Area, leading to some resistance; access to the Inner Open Area contested through the blocking of access routes such as Inner Radial Streets.
Performance	The main link between material deposition and people; four principal types — house-burning, feasting, other depositions, and processions; development of *habitus* of performance as part of the Big Other, regulated through depositional timemarks; intangible everyday performances, such as processing, singing, dancing, chanting, play, and trance.
Social catchment	Within 100 km radius social catchment for TMS visitors, repeated visits led to the densification of the network enhanced by hospitality and inter-site exchange; regular exchange of six classes of objects and raw materials to TMS, first arriving in the catchment (external exchange) and later moving across the catchment (internal exchange), some with long-distance specialists.

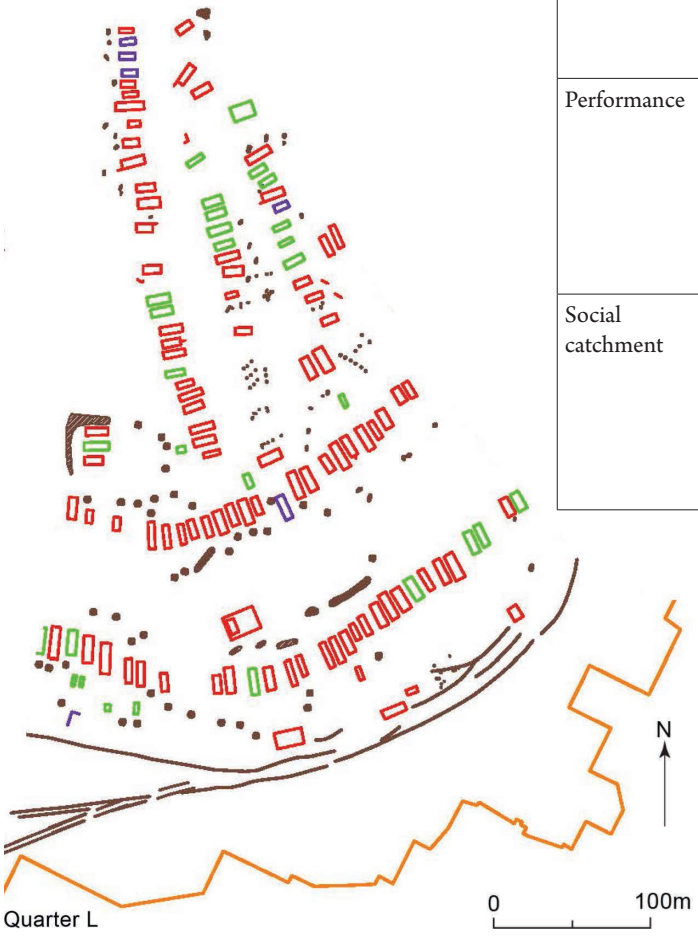

Figure 7.6. Plan of Nebelivka Quarter L, showing Neighbourhoods. Source: Nebelivka Project.

Figure 7.7. Evolution of ancestral spaces through time, Quarter B, Nebelivka. Source: Brian Buchanan.

analysis of interior space (Chatford Clark 2007), VGA has been extended to cover exterior space of archaeological sites (Buchanan 2015).

The diachronic VGA analysis of the four models for the growth of the Nebelivka mega-site — the Distributed Governance, Assembly, Pilgrimage, and Permanent Large-Scale[1] Models — produced a rich and diverse array of results which have extended the initial VGA analysis (Buchanan 2020) and are here compared with the results from the VGA of two small sites — Petreni (25 ha) (plan: Rassmann and others 2016b) and Moshuriv I (7.1 ha) (plan: Ohlrau 2020) (here Fig. 7.8). The results are summarized here (Figs 7.8–7.11) (Buchanan, Gaydarska, and Chapman in preparation).

The centrepiece of the phenomenological approach to TMS concerns the experiences of occupants and visitors at their small, local settlements and at TMS. The VGA shows a very consistent pattern for each small site across the seven analyses, with diametrically opposed structuring principles for the two small sites (Figs 7.8–7.9). While Moshuriv I differs from every Nebelivka model in its relatively minor differentiation across the site from the inner area to the outer zone, graded movement from inside to outside was the key structural element of the Petreni plan. The only close similarities between Petreni and Nebelivka are with the latest stage in the Nebelivka models in some of the analyses. Rather than supporting the idea that scaling up had no effect on how these settlements were used, the VGA demonstrates dramatic differences in the use of space. The separation of the Inner Open Area from the outer zone at Nebelivka, blurred as it was by the expansion of ancestral spaces defining earlier houses and the areas surrounding them, stands in sharp contrast to the Moshuriv I and Petreni layouts. Moreover, the VGA results confirm the significance of scaling-up in TMS for the entire range of spatial practices (for details, see Appendix I).

Turning to Nebelivka, the comparison of the VGA results suggests that, despite their resulting spatial differences, the Pilgrimage and Permanent Large-Scale (PLS) Models were more similar to each other than to the Distributed Governance and Assembly Models (Figs 7.8 and 7.10–7.11; for details, see Appendix II). The overall structured nature of the Pilgrimage and PLS Models resulted from the broadly similar effect across the whole site of major, perhaps more top-down, planning decisions such as the creation of the inner and outer rings of houses and the building of Inner Radial Streets (IRS), Indeed, the huge initial project envisaged in the Pilgrimage Model of the building of the whole house circuit and the digging of the entire perimeter ditch constituted a self-conscious statement of settlement unity. The more organic, perhaps bottom-up growth of the site in the Assembly and Distributed Governance Models was characterized by the earlier development of IRS, with their distinctive spatial and political effects. It was partly the development of separate Quarters that allowed the gradual incorporation of

1 For the purposes of this VGA, we have renamed the 'Maximalist Model' the 'Permanent Large-Scale Model' (or PLS).

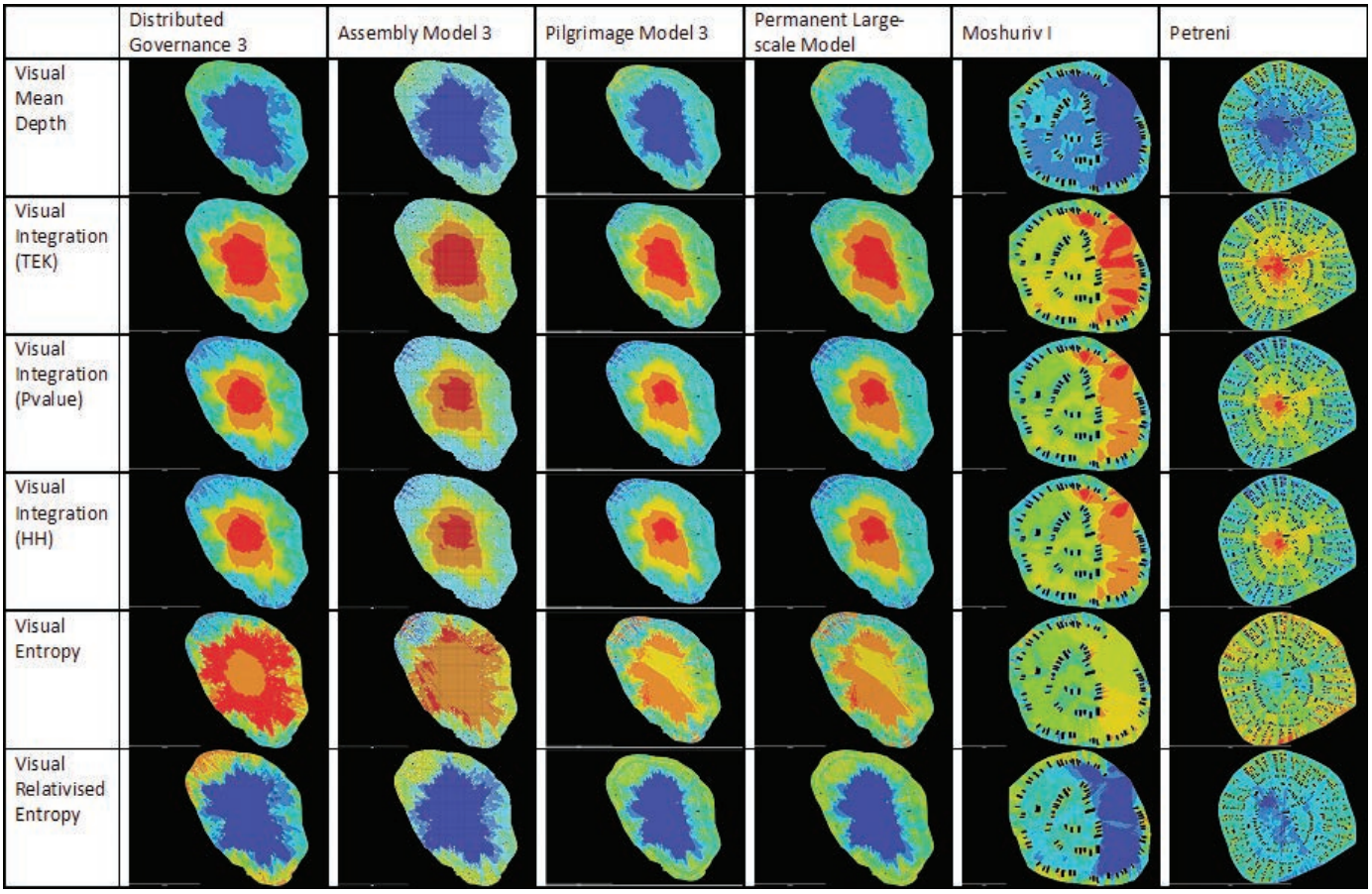

Figure 7.8. VGA parameters for Stage 3 of the three models for Nebelivka, the Permanent Large-Scale Model, and the sites of Petreni and Moshuriv I. *Depthmap* generates the colour-shading of the VGA results. Visual Mean Depth represents how many turns would be needed to progress through a graph of the sites, with red equalling the most and dark blue the least. The Visual Integration measurements demonstrate the most visually integrated portions of the sites as red and the least as dark blue. The Visual Entropy shows the areas in red as the least complex portions of the sites and blue as the most, while the Visual Relativized Entropy shows the most complex areas as dark blue and red as the least. Source: Brian Buchanan.

IRS into the plan. It is clear that there was no single pathway to complexity, since the VGA pairing cross-cuts the contrast in permanent settlement (the PLS and Distributed Governance permanent settlement) with seasonal settlement (the Pilgrimage and Assembly seasonal settlement). This was important insofar as seasonal fluctuations in occupation in the Pilgrimage and Assembly Models constrained the concentration of political power through the decentring of the stable, permanent, political relations more likely in permanent Distributed Governance and PLS settlement (see below, p. xxx). The construction of the IRS — especially important in the Pilgrimage Model — led to a partial replacement of the Inner Open Areas by liminal ancestral space. This caused the first case of convergence between the four models, with the PLS Model resembling the other models.

The most important VGA conclusion was the survival and formalization of the Inner Open Area as a congregation space at the heart of Nebelivka (Figs 7.8 and 7.10–7.11). This space encouraged open-access mega-site political action. While the Inner Open Area existed throughout Nebelivka's lifetime, it became smaller in the final stages, first by new building and then by the expansion of ancestral space. This form of political decision-making stands in contrast to the vision of a fragmented set of five separate decision-making channels (Müller and others 2019). Although there are obvious differences in the VGA measurements of the four Nebelivka models, it is significant that the primacy of the central, open area trumped the differences across the models and their phases. Its very foundation could only have stemmed from major consensual decision-making between many different small communities, producing spaces characterized by 'inbetweenness', flexibility, and interstitial space (Jervis and others 2021). The changing diachronic development of the models suggests that, in addition to structuring the outer built space, the built forms were structuring chang-

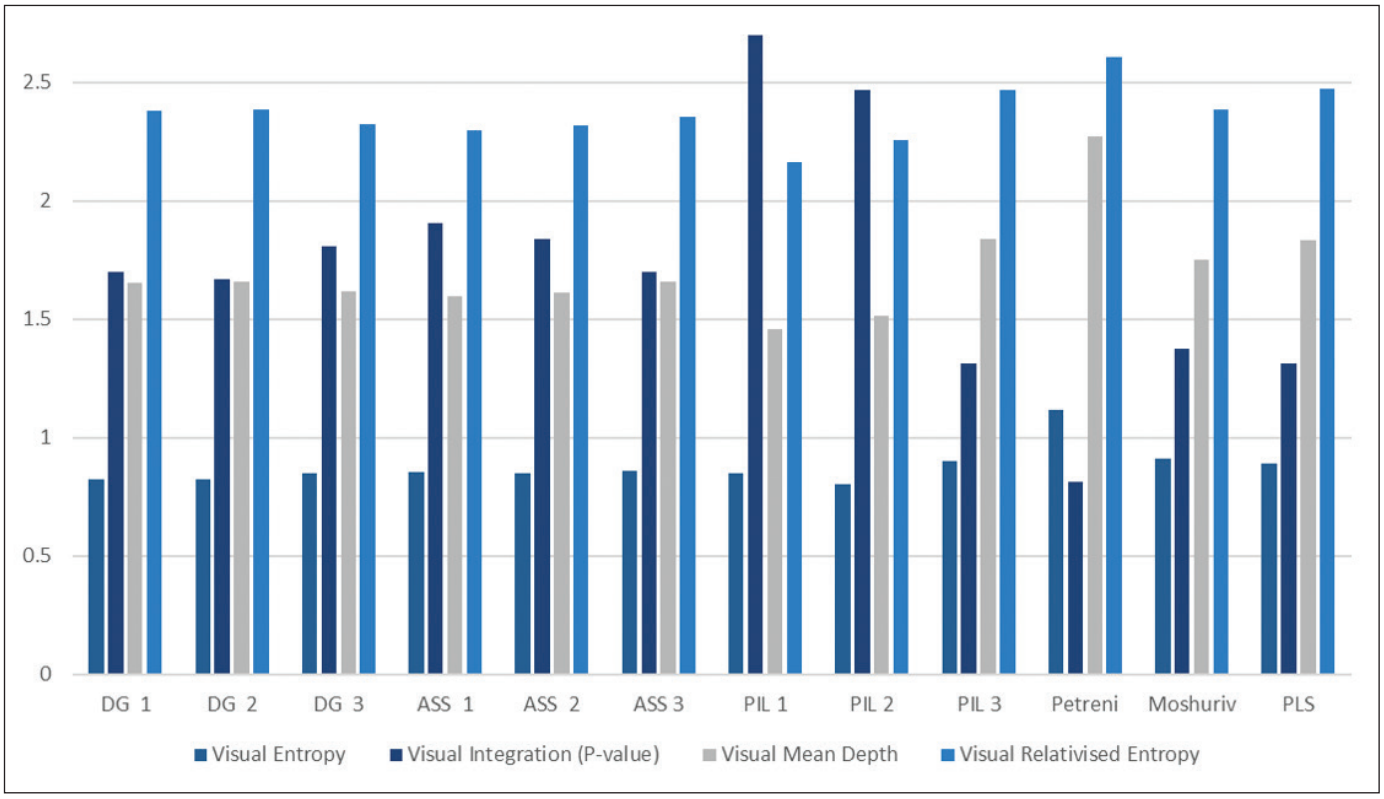

Figure 7.9. VGA scores for all stages of the three models for Nebelivka, the Permanent Large-Scale Model and the sites of Petreni and Moshuriv I. Source: Brian Buchanan.

ing patterns of control and use of the Inner Open Area. But the very continuity of the Inner Open Area recalls Riva's (2020) characterization of the architectural rhetoric of stability and permanence. In the TMS, this rhetoric was underlined by the long-lasting use of community space and illustrated by the VGA result of a shared structuring of space in all of the different Quarters (Buchanan 2020).

With very few exceptions (e.g., Assembly Model Stage 1) (Fig. 7.10), the Nebelivka VGA reinforces the importance of a separation between built space and open space (Figs 7.8 and 7.11). Each area was defined by differing identities in tension with each other — the 'local' identities of different small communities living in the built area and the 'Nebelivka' identity created and recreated in the Inner Open Area. It is important to acknowledge the spatial role of the Neighbourhoods and Quarters in maintaining the conversation about 'local' and 'Nebelivka' identities. In addition, we should not forget the mediating potential of emergent ancestral spaces between built and congregational spaces (Fig. 7.7) (Gaydarska, Buchanan, and Chapman in preparation). The PLS and Pilgrimage Models offer the clearest and most explicit differentiation of the congregation area from the house circuit and the outer zone. However, it is in the outer zone that we find the main overlaps between the four models, with their shared complex spaces and flexible spaces that responded to new structures (Assembly Houses), traditional groups of houses (Neighbourhoods), and the gradually developing ancestral spaces.

The tension between the maintenance of the congregation area and open access to the settlement core can be recognized in different ways in the four Nebelivka models. Because of the early creation of Inner Radial Streets (IRS) in the Distributed Governance Model (Fig. 7.10), elements of dwelling practices were integrated into the space inside the house circuit. This change provided access to the congregation area and offered opportunities to certain groups or households to control that improved access. By contrast, in the early stages of the Pilgrimage and Assembly Models (Fig. 7.10), the absence of IRS meant that there was no obvious architectural means of controlling access to the Inner Open Area.

However, the structuring of multiple access routes to the performance space through the IRS led to overt changes, such as the shrinking of the Inner Open Area, initially through new building (Figs 7.8 and 7.11) and later through the gradual growth of ancestral space (Fig. 7.7). It may also have led to possibly unintended consequences, such as the loss of the ability of pilgrimage groups to choose how to

access their most important social space. An even more serious consequence would have been the threat to open-access political decision-making. Insofar as the open form of the performance space constrained centralized control, limiting open access to that space would have opened up a route towards less communal decision-making. However, the creation of ancestral spaces restored the openness of these areas to residents and visitors. This development makes it less probable that the unanticipated tensions arising out of the construction of multiple IRS at Nebelivka were one of the reasons for the abandonment of the mega-site.

The Bayesian Analysis of Trypillia Mega-Site AMS Dates [AM]

Methods

In a forthcoming paper (Millard, Chapman, and Gaydarska in preparation), we consider whether the three mega-sites of Maidanetske, Nebelivka, and Taljanki were occupied at the same time. We reviewed all the published dates for each site (dates listed in Millard 2020; Shatilo 2021, 316–21, 326–29) for their contextual association and indicators of reliability (such as collagen yield for bones, or per cent carbon for charcoal) and used these to assign prior probabilities of being outliers in a Bayesian model in OxCal (Bronk Ramsey 2009a). A small number of young dates was excluded, viz. uncalibrated dates less than 4500 BP and samples with very low collagen yields (<0.1 per cent). The model used OxCal Boundary commands (Bronk Ramsey 2009b) to estimate start and end dates for each site and to assess the order of the start and end events.

Calculations were performed in OxCal 4.4.4 (Bronk Ramsey 2009b) using the IntCal20 calibration curve (Reimer and others 2020).

Results

Figure 7.12a shows the computed start and end dates for the three sites. Precision of the results is affected by the shape of the calibration curve — in particular, a wiggle spanning the fortieth and thirty-ninth centuries BC — and the number of dates used at each site: Maidanetske (n=74), Nebelivka (n=69), and Taljanki (n=43).

The differences in start dates and in end dates are shown in Figure 7.12b. All sites' end dates occur after all other sites' start dates with 100 per cent probability, except that there is a 1 per cent chance that Nebelivka ended before Taljanki began.

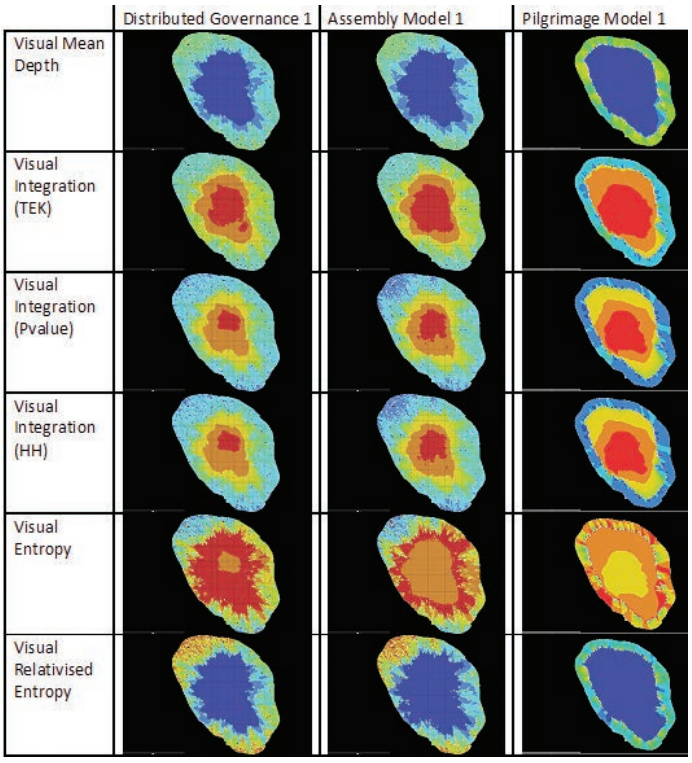

Figure 7.10. VGA parameters for Stage 1 of the three models for Nebelivka. Visual Mean Depth represents how many turns would be needed to progress through a graph of the sites, with red equalling the most and dark blue the least. The Visual Integration measurements demonstrate the most visually integrated portions of the sites as red and the least as dark blue. The Visual Entropy shows the areas in red as the least complex portions of the sites and blue as the most, while the Visual Relativized Entropy shows the most complex areas as dark blue and red as the least. Source: Brian Buchanan.

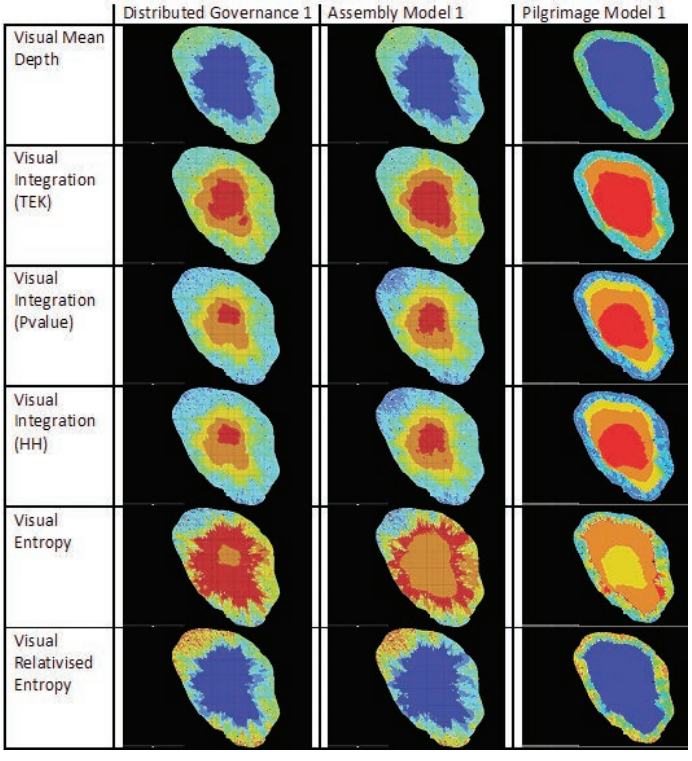

Figure 7.11. VGA parameters for Stage 2 of the three models for Nebelivka. Visual Mean Depth represents how many turns would be needed to progress through a graph of the sites, with red equalling the most and dark blue the least. The Visual Integration measurements demonstrate the most visually integrated portions of the sites as red and the least as dark blue. The Visual Entropy shows the areas in red as the least complex portions of the sites and blue as the most, while the Visual Relativized Entropy shows the most complex areas as dark blue and red as the least.

For start dates:

- Nebelivka started before Maidanetske with 63 per cent probability
- Nebelivka started before Taljanki with 85 per cent probability
- Maidanetske started before Taljanki with 78 per cent probability

For end dates:

- Nebelivka ended before both Maidanetske and Taljanki with 100 per cent probability
- Maidanetske ended before Taljanki with 90 per cent probability

Discussion

The results show that it is almost certain that the three principal sites in the extended Sinyukha Basin (Shatilo 2021, fig. 5) were occupied at the same time, with Nebelivka certainly the first to be abandoned, and Maidanetske most likely the second. The order in which they were founded during the fortieth and thirty-ninth centuries BC is less certain. Although Nebelivka — Maidanetske — Taljanki is the most likely order, all orderings are possible, and the radiocarbon evidence is ambiguous due to the calibration curve wiggle at this point. For that reason, Ohlrau's (2020, 226–29) assertion that Maidanetske was founded one generation before Nebelivka cannot yet be falsified or verified.

The most likely order is not at all the expected result, since, until recently, the consensus order has been Nebelivka — Taljanki — Maidanetske (Diachenko 2016). It was on the basis of the latter order that we had argued that the founders of the Maidanetske mega-site had the benefit of prior knowledge of two alternative models of social organization — the Nebelivka model based upon the presence of many Assembly Houses but the absence of kilns; and the Taljanki model based upon the absence of Assembly Houses but the presence of many kilns, organized by potters' Limited Interest Groups which pooled expert knowledge of clay sources, techniques, and kiln construction skills (Gaydarska and Chapman 2020, 467). Clearly, this conclusion requires revision.

The coeval use of all three sites poses a challenge to the traditional assumption about mega-site populations moving from one site to the next after an estimated period of fifty years on any given site (Shatilo 2021) — an interpretation further undermined by the duration of each site at six to eight generations. The questioning of the traditional typological dating and the duration of these three mega-sites provide an opportunity to reformulate the narrative of the interactions between these three sites. What is the basis for a new narrative?

The combination of the unimodal distribution of start and end dates at both Nebelivka and Taljanki with the median date from the bimodal distribution of start and end dates at Maidanetske (Fig. 7.12b) provides nine plausible chronological conclusions based upon an estimated thirty-year generation:

1. Nebelivka is likely to have started three generations before Maidanetske, whose start probably fell within the middle part of the Nebelivka occupation;
2. Nebelivka is likely to have started five generations before Taljanki, whose start probably fell within the late part of the Nebelivka occupation;
3. Maidanetske is likely to have started two generations before Taljanki;
4. Nebelivka is likely to overlap with Maidanetske over three–four generations, in the middle and late parts of the Nebelivka occupation;
5. Nebelivka is likely to overlap with Taljanki over more than one generation, in only part of the late Nebelivka occupation;
6. Maidanetske is likely to overlap with Taljanki by five–six generations;
7. Maidanetske is likely to continue after the end of Nebelivka for a further four generations;
8. Taljanki is likely to continue after the end of Maidanetske for more than one generation; and
9. the period of overlap of all three sites is likely to be of the order of more than one generation, during part of the late Nebelivka occupation in the late thirty-ninth–early thirty-eighth centuries cal. BC.

If these chronological conclusions are correct, it means that the Nebelivka community had developed its full concentric plan several generations before the start of dwelling at Maidanetske and Taljanki. Moreover, those groups who created the mega-site of Maidanetske would likely have benefited from the experiences of three generations of Nebelivka's growth and development, its successes and problems with a social model based upon the presence of many Assembly Houses but an absence of kilns. The experience of the Nebelivka mega-site must have had a decisive influence on the form and evolution of Maidanetske, especially the middle stages of the Nebelivka plan, whose leaders could draw upon a substantial regional network for continued success. An important feature of the middle stage of building at Nebelivka concerned the development of Inner Radial

Streets, which were blocked by segments of inner circuits in seven Quarters (Hale 2020, 142). However, the new chronological sequence indicates that the Maidanetske founders would probably not have experienced the alternative Taljanki model of social organization based upon the absence of Assembly Houses but the presence of many potters' Limited Interest Groups — only the Nebelivka model.

The next stage of the regional picture featured two coeval mega-sites within 24 km of each other. Ohlrau (2020, 228–29) dates his four-phase sequence of Maidanetske as follows: Phase 1—3990–3935 cal. BC; Phase 2—3935–3800 cal. BC; Phase 3—3800–3700 cal. BC; and Phase 4—3700–3640 cal. BC. Ohlrau concludes that there was no house-building in Phase 1, which, instead, consisted of the communal excavation of part of the inner ditch and the construction of a central kiln, presumably by the founding potters' Limited Interest Group. In Phase 2, the earliest houses were built inside what was to develop in this phase as the main inner concentric ring, but other houses were built outside the main ring, as if to distance those households from the dominant plan (Ohlrau 2020, 228). Thus, the multiplicity of small communities in the extended Sinyukha region covering a 100 km radius from the mega-sites would have been faced with a choice of allegiance to two mega-sites over perhaps two generations.

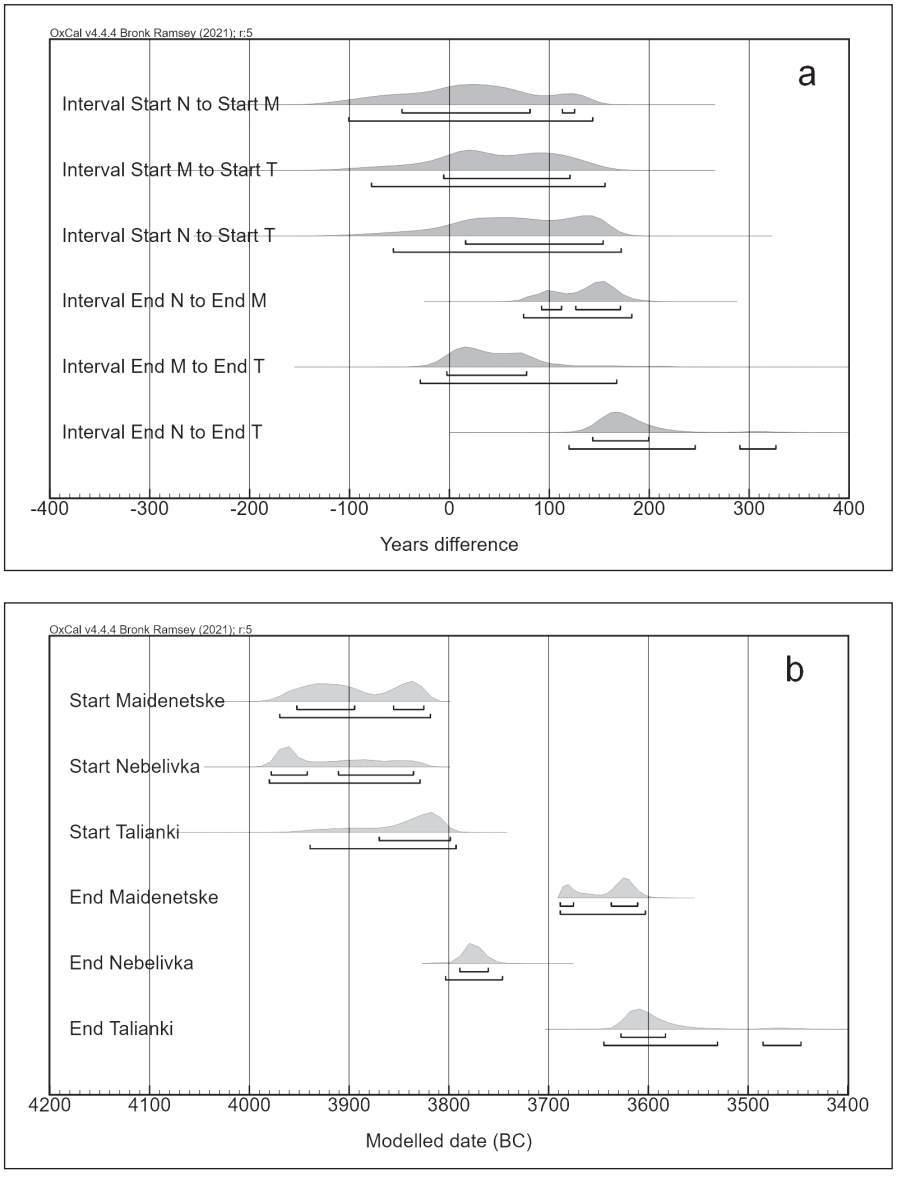

Figure 7.12. **a**) Probability distributions for the interval between the start and end dates for N (Nebelivka), M (Maidanetske), and T (Taljanki). **b**) Probability distributions for modelled start and end dates for Maidanetske, Nebelivka, and Taljanki. Bars under the distributions indicate the 68 per cent and 95 per cent credible intervals. Source: Andrew Millard.

It is in the latter stages of Phase 2 at Maidanetske that the third mega-site of Taljanki was founded — only 20 km from Nebelivka and 18 km from Maidanetske (Fig. 7.1). The founding community at Taljanki would have gained experience in the ways that the other communities organized their mega-sites; while Assembly Houses were prominent features at both mega-sites, the principal difference was the building of pottery kilns serving different Quarters at Maidanetske. The almost complete absence of Assembly Houses at Taljanki was the most striking difference from the other mega-sites, despite similar arrangements into Quarters and similar bottom-up processes leading to architectural and planning variability.

The greatest change in the regional landscape of the Sinyukha Basin occurred a long generation after the foundation of Taljanki, with the abandonment of Nebelivka and the broadly coeval, although possibly later, peak in dwelling during Phase 3 at Maidanetske (Ohlrau 2020, 228). It was during this phase that the complicated building sequence in the northern part of Maidanetske developed in five local stages (Gaydarska and Chapman 2020, 462, 467–68, figs 6.8–6.10). With no antecedent instances at Nebelivka, this complex building sequence comprised seven circuits or segments of circuits, seven routes into the Inner Open Area, and six groups of IRS. We have interpreted this sequence of inter-cutting IRS and house circuits as the expression of tensions between the identities of different building groups. It seems highly probable that such tensions arose during the popu-

lation increase at Maidanetske, showing how different communities with prior knowledge of different mega-site planning principles built their home environment at a new site. The most severe incursion into the Inner Open Area took place in the same phase, with a gradual reduction in size from 114 ha to 78 ha and finally to 26 ha. However, the creation of ancestral spaces from areas with burnt houses meant that more open space was available in the zone within the main inner circuit. Nonetheless, one possible scenario was the switching of community allegiance from Nebelivka as their main congregation site to Maidanetske. The third alternative — changing allegiance to an even larger mega-site which, nonetheless, repeated some of the complexities of the north end of Maidanetske in the northwest end (Shatilo 2021, fig. 44, esp. insets A and B) — was made possible through the founding of Taljanki. The new chronology suggests a period of one long generation during which all three mega-sites were in coeval operation.

The latest stage in the regional development began some two generations after the abandonment of Nebelivka; the two coeval mega-sites operated for four or more generations, albeit in strongly contrasting ways. A major difference lay in the much smaller Inner Open Area at Maidanetske, even if ancestral spaces created from the burning of houses in the three inner circuits were included, and the much larger area at Taljanki (140 ha).

Settlement in the outer zones continued at Maidanetske, with the construction of both Assembly Houses and kilns, while houses were constructed in all concentric rings at Taljanki, accompanied by an estimated total of seventy-four kiln-like anomalies — some likely to have operated as communal cooking areas (Shatilo 2021, fig. 45). A date near the end of the thirty-eighth century cal. BC marks two processes perhaps causally linked: the end of the peak construction period at Maidanetske *and* the start of intensive construction at Taljanki (Ohlrau 2020, 228; Shatilo 2021, 124). Remarkably, the inter-cutting of IRS and circuit segments, indicating inter-Neighbourhood tensions just as found earlier in the peak construction phase at Maidanetske, was also detected at Taljanki at a comparable relative stage in its architectural evolution (Shatilo 2021, fig. 44). The impression of a gradual decline in dwelling at Maidanetske coeval with a late floruit in house construction at Taljanki shows the contrast between the two mega-sites. It is therefore not surprising that settlement at Taljanki continued for one generation after the end of the Maidanetske occupation.

In summary, each of the three mega-sites in the extended Sinyukha Basin showed their own specific variations on the classic mega-site plan based upon a division between the Inner Open Area and the dwelling area. The greatest differences related to the presence of both Assembly Houses and kilns at Maidanetske, with kilns rare at Nebelivka and Assembly Houses virtually absent at Taljanki. The political significance of these differences will be explored later (see below, pp. xxx – xxx). Here, it is important to observe that the new Bayesian modelling of the AMS dates from Nebelivka, Maidanetske, and Taljanki presents a sequence of site start and end dates which contrasts with recent views of their order of construction. Ohlrau (2020, 284) suggests that Nebelivka and Maidanetske began at the same time, followed by Taljanki, while Shatilo (2021, fig. 54) favours an order of Maidanetske — Nebelivka — Taljanki.

In this article, we have begun to explore the implications of the occupation of each mega-site for *c.* two hundred years, with the assumed most likely order of construction with Nebelivka first, Maidanetske second, and Taljanki third. We now turn to a political framework for TMS.

A Political Model for Trypillia Mega-Sites

David Graeber and David Wengrow's (2021) recent book entitled *The Dawn of Everything* is a global review of the emergence of agriculture, cities, and states which challenges the conceptualization of hierarchical, evolutionist social relations through the Native American critique of invading European societies. One section of the chapter on early urbanism focuses on TMS. Building on the insight that 'the mere fact of urban life does not […] imply any particular form of political organisation, and never did', their overall conclusion was that the TMS are proof that 'a highly egalitarian organisation has been possible on an urban scale', without temples, palaces, military fortifications, central administration, and communal storage facilities (Graeber and Wengrow 2021, 289, quotes on 277–78 and 297).

Insofar as TMS showed signs of complexity, it lay in the strategies used to prevent warfare and the rise of social elites (Graeber and Wengrow 2021, 293). Moreover, leaving few signs of authoritarian rule, TMS as some of 'history's first city-dwellers did not always leave a harsh footprint on the environment or on each other' (Graeber and Wengrow 2021, 283). We use these observations as a starting point for a political model for TMS. Here, we wish to consider three recurrent Graeber and Wengrow themes — cultural schismogenesis, the three elementary forms of freedom, and the three elemen-

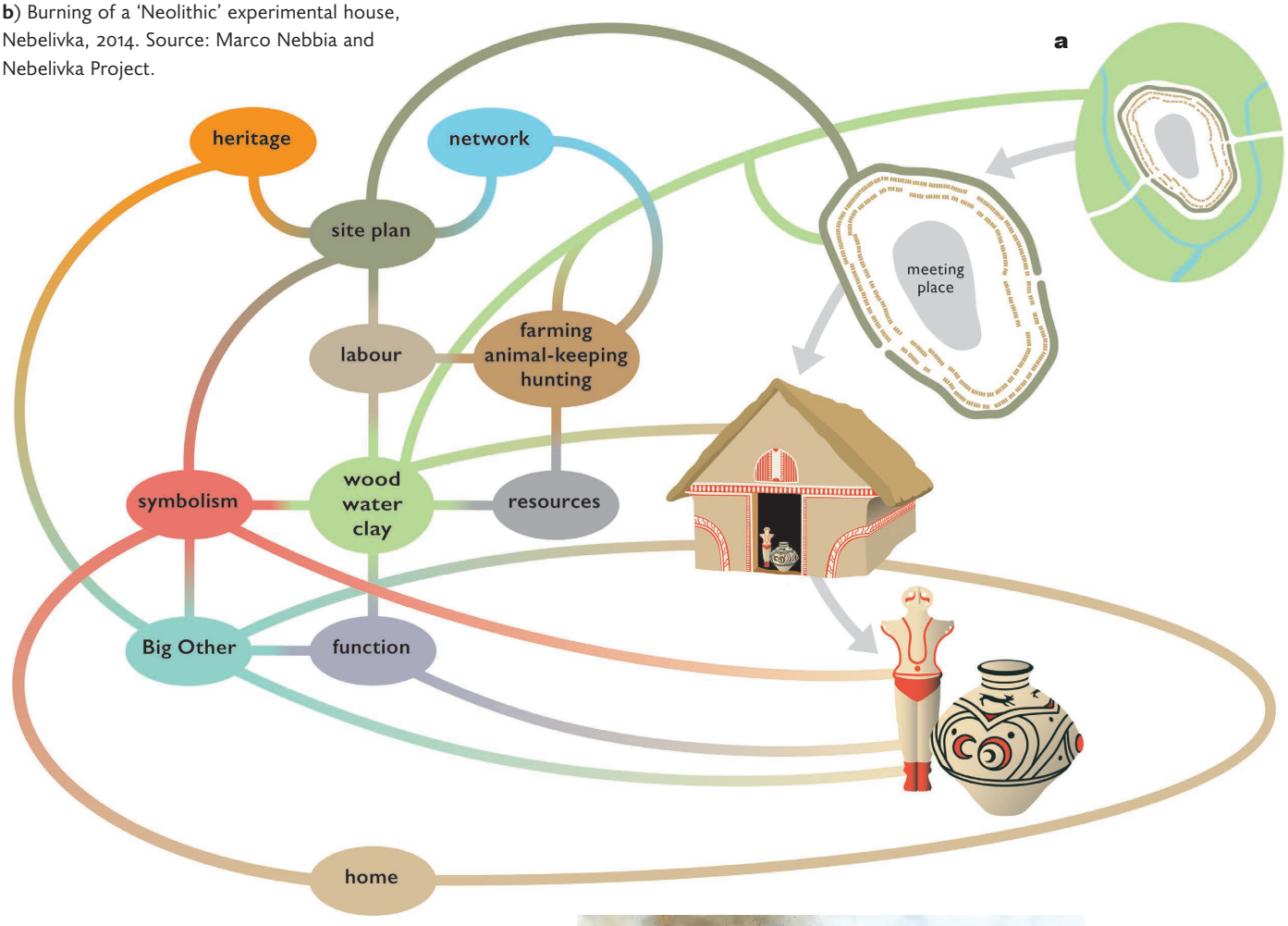

Figure 7.13. **a**) The Cucuteni–Trypillia Big Other. Source: Christina Unwin and Nebelivka Project. **b**) Burning of a 'Neolithic' experimental house, Nebelivka, 2014. Source: Marco Nebbia and Nebelivka Project.

tary forms of domination — in the Trypillia context in order to develop a new, political framework for early TMS urbanism.

Cultural Schismogenesis and the Big Other in the Cucuteni–Trypillia Network

Graeber and Wengrow (2021, 56–58) introduce the term 'schismogenesis', as used by Bateson (1935; 1936) to discuss individual or intra-societal processes. For Bateson, the tendency for people to define themselves versus one another could also be applied at an inter-society level. Graeber and Wengrow (2021) give several examples of this 'cultural' schismogenesis, including the north-west coast complex hunter-gatherer-fishers versus north Californian groups; upland versus lowland early farming societies in the Fertile Crescent; agrarian valley kingdoms versus upland barbarians, heroic societies in the early state period; and upland Teotihuacan versus lowland

Maya polities. The key development occurred once neighbouring groups defined themselves against each other, leading to the tendency to exaggerate intergroup differences. Once identity came to be seen as a value in itself, cultural schismogenesis was set in motion, with cultural refusal as a self-conscious act of political contestation (Graeber and Wengrow 2021, 504).

We propose that the core CT cultural values were enshrined in their Big Other — a concept originally developed by Jacques Lacan (1988) but which Slavoj Žižek extended to mean something which is sufficiently general and significant to attract the support of most members of society but, at the same time, sufficiently ambiguous to allow the kinds of localized alternative interpretations that avoid constant *schismatic* behaviour (Žižek 2007; 2012; our emphasis). For Žižek, the Big Other works pragmatically as a symbolic order if sufficient people believe in it.[2] We have suggested that the CT Big Other (Fig. 7.13a) was materialized in three classes of clay objects — houses, pottery, and figurines (Chapman and Gaydarska 2018; Gaydarska 2020a, 42–44). The Big Other is a classic example of a product of what Maurice Bloch (2008) has called 'the transcendental social' — the products of human imagination which were unique to *Homo sapiens sapiens* and functioned in parallel with the transactional social of everyday life.

While many specialists have noted the massive size of the CT 'culture area' and its great time-depth of two millennia, no one has yet provided a reason for these dimensions, let alone related it to the emergence of TMS. While settlements on/near the borders of the CT distribution were exposed to cultural difference, especially in pottery styles, metalwork, and polished stone objects, there were thousands of CT settlements which could never have been exposed to anything other than the CT Big Other for the whole of their existence. Moreover, since the CT Big Other was maintained for over one hundred generations, it was almost impossible for members of that group to conceive of an alternative Big Other from the past. These powerful limits on cultural schismogenesis led to an overarching, long-term cultural stability within which the tendency for people to define themselves versus each other was limited to acceptable regional stylistic variability in pottery, figurines, and houses. Their lower-level material diversification never transgressed the CT Big Other, within which there was considerable potential for ambiguity and variability, allowing the formation of more than fifty regional or local ceramic-based groups used recently for the construction of relative chronologies by Trypillia specialists such as Sergei Ryzhov (2012a; 2012b).

The pattern of deposition in TMS came close to avoidance of key status materials valued elsewhere, such as gold, copper, and shell ornaments or copper and stone tools and weapons. Even after extensive excavations at TMS such as Maidanetske, Taljanki, and Nebelivka, a remarkably small number of such finds has been made,[3] as on other smaller sites. While this was related to continued working of increasingly small copper items (Greeves 1975), a more important factor was Taylor's (1999) notion of lateral recycling by which damaged copper items were melted down and refashioned rather than being deposited in special places. There is a sense in which the opposition between clay objects and buildings, on the one hand, and metals, rocks, and shells, on the other, was a material form of cultural schismogenesis, further emphasized in the hitherto unexplained paucity of two forms of social practice widespread in other Copper Age groups: burial (Popovici 2010) and hoarding (Chapman and Gaydarska 2020).

While the Balkan and Carpathian Copper Age was characterized by elaborate mortuary performances at sites such as the Varna cemetery (Chapman 2020a), relatively few CT burials are known until the very end of the period. One alternative to CT burial was the house-burning performance (Fig. 7.13b) in which often large quantities of pottery and other objects were collected before the deliberate conflagration which acted as the focal point for community-wide ritual. While hoards of metalwork and ornaments were known from the Cucuteni area (Monah 2003), hoards became relatively rare further east after initial extravagant depositions such as the Carbuna hoard (Dergachev 1998). In south-east and central Europe, mortuary and hoarding practices were the two principal means of displaying status through material accumulation (Chapman and Gaydarska 2020). The strong Trypillia resistance to social differentiation through accumulation formed a key element of their Big Other, influencing the egalitarian nature of large Trypillia sites and, eventually, TMS. Indeed, we maintain that the creation of TMS would have been inconceivable without the constraints on material accumulation that was a central feature of the CT Big Other.

2 Cf. Korning 2012 for the first archaeological application of the Big Other. For discussions of forager and early farming Big Others, see Chapman in press. For the Vinča Big Other, see Chapman 2020b.

3 The small number of copper objects deposited on Phase BII and CI mega-sites included one axe at Maidanetske (Ryndina 1998, fig. 66/6), one awl at Taljanki (Ryndina 1998, Ris. 66/12), and no copper finds at all at Nebelivka.

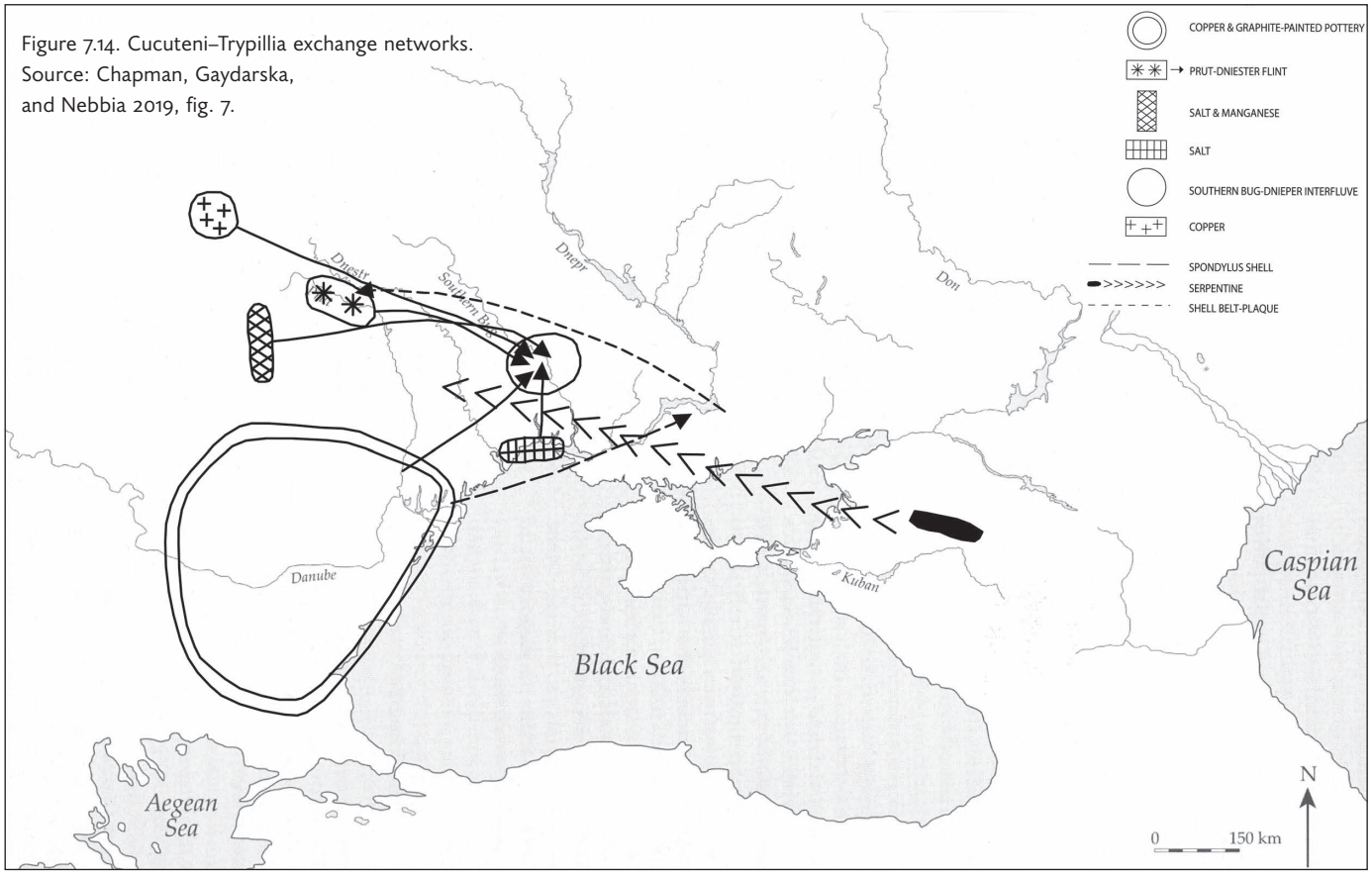

Figure 7.14. Cucuteni–Trypillia exchange networks. Source: Chapman, Gaydarska, and Nebbia 2019, fig. 7.

These comments would appear to downplay the significance of exchange networks, which we know connected the CT distribution to different societies to the east and the west, bringing not only objects from remote places but also presenting those distant places and the persons who lived there (Chapman 2022). In this context, we can distinguish internal from external exchange.

Internal exchange connected people within the CT distribution for the movement of many types of 'local' flint as well as the high-quality Prut-Dniester flint, as well as axe rocks, manganese pigments, and possibly salt moving east from the east Carpathian piedmont zone (Chapman 2002; 2020a; Buzgar and others 2010; Cotoi 2000; Mircea and Alexianu 2007) (Fig. 7.14). By contrast, external exchange brought materials across 'cultural boundaries', such as the border between CT groups and steppe communities to the south and east of the border between the CT zone and other Copper Age groups in the east Balkans. 'Imports' of steppe pottery into the CT zone matched 'exports' of CT fine wares to steppe communities such as the Sredni Stog group (Chapman 2002), with ceramic exchange more readily accepted within the CT Big Other than copper from either Transylvania in the earlier Trypillia phases and from the Caucasus in the later phases (Ryndina 1998) or indeed highly prestigious jadeite axes ultimately from the French Alps, which travelled as far east as Ukraine in the early Trypillia phase (Pétrequin, Gauthier, and Pétrequin 2017). It is important to note that, once objects from remote communities, governed by different Big Others, had been accepted (or 'domesticated') (Chapman 2002) by borderlands CT communities, the objects became part of local 'internal' exchange networks subject to CT Big Other constraints.

In summary, the CT Big Other enshrined significant cultural values and identity, creating a vast and stable zone with enormous time-depth in contrast to steppe populations to the south and east and other Chalcolithic groups to the west. CT size and time-depth reduced internal cultural schismogenesis to relatively minor regional variations in the style of houses, pottery, and figurines. Through the general exclusion of metal, shell, and polished stone objects despite exchange networks and the constraints on two key practices of material accumulation (burials and hoards), the Big Other emphasized key egalitar-

ian political values, without which the TMS would probably not have arisen.

The Three Elementary Freedoms and Mauss's Concept of 'Civilization'

A major achievement is Graeber and Wengrow's (2021, 503) back-projection of the three elementary political freedoms on which social life depended into deep prehistory. These are the freedoms to (1) move away or relocate from one's surroundings; (2) ignore or disobey commands issued by others in authority; and (3) shape entirely new social realities or shift back and forth between different realities. Graeber and Wengrow (2021, 503) maintain that, as long as the first and second freedoms were taken for granted, permanent authority, kingship, or a hierarchical system of governance were not possible. Insofar as a seasonal or cyclical settlement structure was important, it also reduced these possibilities because of the decentring of stable, permanent power relations. What we wish to do here is to relate the CT network to the possibilities of these three elementary freedoms.

The CT network was a classic example of Graeber and Wengrow's (2021, 517) observation that what preceded cities were intricate, well-connected networks often based on seasonally small demographic units organized into loose coalitions or confederacies. This could hardly be a better characterization of the CT Big Other. The importance of these loose coalitions rested on the condition of the first freedom, viz., moving away was possible because someone would take care of you in some distant place. This is why Mauss ([1925] 2016) spoke of 'civilizations' in terms of great hospitality zones. Instead of the standard definition of 'civilization' as a social order held together by authoritarian government, violence, and the subjugation of women (Graeber and Wengrow 2021, 432), Mauss painted a different picture of networks of mutual aid, social cooperation, civic activism, hospitality, and caring for others, as shown by 'culture areas' or 'interaction spheres' (Graeber and Wengrow 2021, 432–33). If the basis of civilization was an 'extended moral community' with females at its core (Graeber and Wengrow 2021, 433), we can extend the meaning of the CT Big Other to providing the moral justification for a widespread zone of hospitality with asylum, civility, and shelter as the norms of hospitality (Graeber and Wengrow 2021, 520). In other words, mutual aid was necessary for individual autonomy and freedom of movement (2021, 130–32). By contrast, the formation of ever-smaller 'culture areas' led to smaller networks of care, in which Steiner has argued that the loss of the first freedom paved the way for loss of the second freedom (Graeber and Wengrow 2021, 519–21).

The second freedom — to disobey commands — implies an alternative, non-authoritarian form of decision-making for TMS communities. If there was no compulsion to obey, there is a case to be made that social coherence was brought about by reasoned debate, persuasive arguments, and the establishment of social consensus (e.g., the Native American Wendat nation) (Graeber and Wengrow 2021, 40–43). Graeber and Wengrow (2021, 45) emphasize that the openness in which Wendat public affairs was conducted was especially important. Here, we should like to emphasize the significance of the Inner Open Area in the plans not only of TMS but also in many of the smaller Trypillia sites (Gaydarska and Chapman 2021, 225–28). The Inner Open Areas could have been used for seasonal communal gatherings and consensus-based decision-making, much like at the Great Court at Uruk or the Pnyx in Athens (for 6000–12,000 people) (Graeber and Wengrow 2021, 305–09). While the TMS inner areas were far larger than such public meeting-places, the Inner Open Areas at 'normal' Trypillia settlements were far smaller and hence comparable in size to the Pnyx or the Uruk Great Court (e.g., Glybochok: 100 ha; Moshuriv I: 7 ha; Talne 3: 1.2 ha; Rohy: 5.3 ha) (Ohlrau 2020, figs 150–53). The key point is that concentric-based Trypillia settlements were planned from the Inner Open Area outwards, implying that public decision-making lay at the heart of the foundation and development of the sites. We recognize the presence of the Inner Open Area at smaller sites but re-emphasize the significance of the change of scale in TMS Inner Open Areas. The results of the Visibility Graph Analyses for the Nebelivka plan (see above, pp. 123–27 and Figs 7.8–7.11) support the significance of the Inner Open Area to the entire building scheme.

Graeber and Wengrow (2021, 398) maintain that the third freedom — the transformation of social realities — is the hardest to investigate, as is the question of how these new forms of social reality emerged in the first place in tandem with the supporting physical infrastructure. The existence of intricate, well-connected networks organized into loose coalitions or confederacies was a necessary but insufficient condition for the emergence of TMS, insofar as the CT Big Other was far more extensive than the region where TMS actually emerged (the Sinyukha Basin) (Chapman, Gaydarska, and Nebbia 2019). There is an inescapable regional aspect to TMS origins.

But there was an even more spatially localized factor at play here. It is clear that TMS represented

a totally novel form of social reality of scale even more than lifeways, whether as 'imagined communities' (Anderson 1991; Gaydarska 2020a, 36) or 'cities [… (that) …] begin in the mind' (Canetti 1962). The essential transition was the formation of a new identity overlaid on a traditional identity — people's traditional commitment to the CT Big Other and 'people [who] often think and act as people who belong to the city' (Graeber and Wengrow 2021, 281–82). While overall tensions between the two identities continued to exist, the latter could hardly have emerged without a specific physical locale in a process of becoming.

Reflections on new social realities could also be generated by the seasonal fluctuation between nucleated interactions and dispersed dwelling which was arguably present in the pre-TMS period (Chapman, Gaydarska, and Nebbia 2019). If the dispersion phase enabled the social apparatus of authority to melt away, effectively ceasing to exist, it was the nucleation phase in which temporary but significant forms of authority were put in place to energize a huge congregation of people (Gaydarska and Chapman 2022). This temporal version of the TMS identity tension — between a commitment to central actors in a central place in the nucleation phase and the home identities of local actors in the dispersion phase — was also a long-term spatial tension whose materialization has been recognized at Nebelivka in both the variability arising out of bottom-up planning and the household and neighbourhood variations in the pottery deposited.

A further factor arises from the process of amalgamating diverse plan elements to form a single, overarching TMS plan. We have discussed the process of bricolage (Gaydarska 2020a, 453) without teasing out its social and political inferences. Bricolage was important for the emergence of TMS since there was no earlier site with all of the TMS site-plan elements in the fifth millennium cal. BC. This allowed the freedom to develop considerable plan variability. But not only were plan elements, such as an Inner Open Area, concentric rings of houses, and Inner Radial Streets, integrated into an overall plan but it was the residents on sites with individual plan elements ready for contributing to the TMS plan who came together as well. These groups combined the diversity of a range of different communities as well as developing the political skills in negotiating the form of a TMS plan in an open and consensual way. In other words, there was a vision — of something bigger, something different — shared between a number of smaller Trypillia communities which resulted in a TMS plan. Although there were other events and potentially charismatic leaders influencing the choice of early TMS such as Nebelivka (Chapman, Gaydarska, and Nebbia 2019), our speculation is that the place where such negotiations took place was chosen for the materialization of the plan. In this way, the multi-community contribution and open consensual decision-making of TMS were present from the very beginning of the process, as crucial building blocks for an egalitarian experiment on a massive scale. This idealized model was materialized in the development of the site plan through a series of Quarters (Figs 7.2 and 7.6), each with access to an Assembly House for political meetings, legal proceedings, and/or seasonal festivities, and which provided the opportunities for local architectural and artefactual variation based on the cultural practices of home communities. Most significantly, the bottom-up growth through local decision-making implies that each household, or its neighbourhood representatives, shared the conceptual framework for the entire settlement (Graeber and Wengrow 2021, 295).

To summarize, mobility, resistance to orders, and new social realities were all central to the emergence of TMS. One additional function of the CT Big Other was, in Mauss's terms, a 'great hospitality zone' — an 'extended moral community' which provided care and shelter for people from afar and which underpinned all of our three Nebelivka models. This community gave an outlet for those who resisted orders from potential authoritarian figures, but the absence of compulsion meant the maintenance of social coherence through consensus decision-making and the open conduct of public affairs, as materialized in the Inner Open Areas of TMS plans. TMS plans were developed from the inside out; the Inner Open Area was the centre of the site in every sense. TMS were self-evidently the result of the conceptualization of new social realities — a massive experiment in egalitarian living materialized in the site plan and in which the bottom-up approach meant each household shared a conceptual framework for the entire settlement. We hazard that the location of early TMS were the places where early consensual decision-making took place.

The Three Elementary Forms of Domination and the Modelling of TMS Polities

Matching their elaboration of the three elementary forms of freedom, Graeber and Wengrow (2021, 367) have also developed a framework for the growth of political power in terms of three elementary forms of domination and control over violence, specialist/esoteric knowledge, and charismatic politics. Each

Table 7.7. Alternatives to hierarchy.

Variable	Attendant Social Practices
Big Other (Žižek 2007)	An important force for social integration while enabling local choice and identity-formation at household, Neighbourhood, and Quarter levels; driven by a rhetoric of stability and permanence, whether in shared planning and architectural use of space or the production of material assemblages rooted in ancestral practices; central trait was an egalitarian resistance to the accumulation of status and power.
Habitus (Bourdieu 1977)	Household lifeways based on the social reproduction of home communities in Neighbourhoods and Quarters, as a focus for local identities in contrast to the global TMS identity; also a focus for resistance to a group or an individual seeking to extend, e.g., ritual primacy to more general domination.
Limited Interest Groups (Gaydarska 2020a, 31)	Skill-based groups formed in two possible social contexts: groups developing specialist production (e.g., builders, potters) and groups working primarily within the communal or household mode of production (e.g., flint-knappers, bone tool-makers); the first major break with household production came at Maidanetske, with multiple pottery kilns outside household control.
Low-density urbanism (Fletcher 2020)	The alternative to classic high-density urbanism, low-density urbanism reduced the dense distributions of people across a site, with the resultant reduction in information and communications overload, achieved through the reduction of the intensity of interactions (a negative gain) and hence scalar stress (a positive gain).
Heterarchy (Crumley and Marquardt 1987)	The creation of a diversity of political decision-making avenues, with a nested rather than a hierarchical development of households, Neighbourhoods, Quarters, and the entire site; all of the other parameters feed into this political diversity, which acts to decentralize and disperse decision-making.

of these elementary forms has its own history; what Graeber and Wengrow (2021, 367) term 'first-order states' based their power on one of the three forms to the relative neglect of the other two (e.g., esoteric knowledge in Chavin; charismatic politics in the Olmec). Moreover, each form could crystallize into its own institutional form (violence into sovereignty; knowledge into administration; and charismatic power into heroic politics). But what happened in this process of crystallization was that two forms usually supported each other as the basis for government in the so-called 'second-order states', as at Cahokia and the Classic Maya, where violence was combined with charismatic politics (Graeber and Wengrow 2021, 413).

We can find no example of a specialist who has claimed that the TMS were examples of not only urban settlements but also of early states! We are no different, but it will be helpful to consider the three aspects of domination at TMS.

If Videiko (2007, 274–75) was correct in his assertion that Trypillia chiefdoms were 'in a state of perpetual internecine warfare', then control of violence would have been very important for TMS. However, the direct evidence for this claim is limited to a single archery attack on the small Moldovan BI site of Drutsi I (Ryndina and Engovatova 1990), while there is a notable decline in the ratio of fortified to non-fortified CT sites in Trypillia Phases BII and CI in comparison with Phase BI (Dergachev 2002, 106). While high dispute levels would be expected as an aspect of scalar stress on TMS, local settlement units such as Neighbourhoods and Quarters would have dampened any possible expansion to wider hostilities, as would the centripetal effect of a shared Big Other. The notions of the CT Big Other as an extended moral community and CT internecine warfare cannot easily be reconciled.

The Big Other also played an important role in the widespread dispersal of ritual knowledge, such that there were many local ritual specialists with no monopoly on esoteric knowledge.[4] The first breakdown on household production came with the emergence of communal pottery kilns at Maidanetske and Taljanki (Figs 7.3–7.4) but the dispersal of large numbers of kilns across both sites reveals no attempt at centralized control of production. The paucity of evidence for copper objects on TMS may even support Ryndina's (1998) interpretation of itinerant copper-smiths — as dispersed a form of esoteric knowledge as one could expect to find.

Finally, the cyclical or seasonal settlement patterns of our three models for TMS indicates the mechanism for the dispersal of political power, limiting the opportunities for charismatic individuals to consolidate their power relations into anything more long-term.

In summary, there was little sign of authoritarian control of violence, esoteric knowledge, or charismatic politics in the TMS (Table 7.7). Instead, each Nebelivka Model demonstrates ways in which the long-term potential for centralized domination was constrained, whether through annual replacement of leaders in the Distributed Governance Model, through seasonal restructuring of power relations in the Assembly and Pilgrimage Models, or through the maintenance of open, consensual decision-making in the Inner Open Area, which was kept as the core of the TMS throughout its development at

4 e.g., the widespread distribution of painted ritual signs on pottery: Tkachuk 2005.

Nebelivka. Moreover, the emergence and expansion of a liminal ancestral space, scattered through the dwelling areas but also on the margins of the Inner Open Area, added a new dispersed zone for the negotiation of both local and TMS identities.

We now turn to the final section, in which we seek a new synthesis of political development with the three models developed for the TMS and then examine the possibility of differing functions in the chronological sequence of the three principal mega-sites in the extended Sinyukha Basin.

Towards a New Synthesis of Trypillia Mega-Sites in the Sinyukha Basin

We have maintained that the widely accepted primacy of the Inner Open Area in TMS plans arose as the materialization of the emphasis on egalitarian political values — themselves part of the CT Big Other. But how were the consensus-building congregations performed in the Inner Open Area in each of the three models proposed for Nebelivka — the Distributed Governance Model, the Assembly Model, and the Pilgrimage Model.[5] At the very least, we expect striking differences in the *modus operandi*, purpose, and significance of decision-making in permanent and seasonal dwelling, and between seasonal models with visits ranging from one month to up to eight months. An important facet of this political process is the tension between decisions taken in the small home communities relating to 'local identities' — what Bloch (2008) termed 'transactional' matters — and those taken in the congregational centre relating to 'mega-site identities' — what Bloch called 'transcendental' issues. We examine the way that internal tensions developed in each model in turn.

The core of the Distributed Governance Model (Gaydarska 2021) was the annual replacement of the dominant lineage and the transfer of decision-making and organizational responsibilities to a new lineage for the next year. This regular transition constrained the ability of any lineage to establish permanent control over decision-making on behalf of the regional population and must have been a major factor in the longevity of this model. The transition would have been marked by the major political congregation of the year, with associated house-building, deposition, and feasting, mostly but not only in the dominant lineage's dwelling zone of the mega-site. Other seasonal meetings to reinforce the egalitarian values of the Big Other and the significance of mega-site identity complemented the transitional ceremony and would have included consensual agreement of the new lineage taking over the leading role in the following year. But all of the other lineages would have focused their decision-making on issues of local identity in their own settlements for most of the year, including the commitment to the CT Big Other. The permanent dwelling of the dominant lineage ensured the continuity of political decision-making over transcendental, Big Other issues in the Inner Open Area, with negotiations over transactional and local issues in the settlement network.

The Assembly Model (Nebbia and others 2018) emphasized more strongly than the other two models the seasonality at the heart of TMS lifeways. For eleven months of the year, local decision-making took place in the settlement network, dispersed from the TMS congregational centre(s). Although the consolidation of the CT Big Other played an important role in the small communities over the year, the limitations of the regional congregation to a single month placed much emphasis on the maximalization of the performance in the Inner Open Area, so as to create experiences which would make people return year after year. There was a significant tension between practices of the dwelling area, such as house-building, house-burning, deposition, and feasting in the Quarters and Neighbourhoods, and the principal congregation events in the Inner Open Area, which left few depositional traces but were focused on the most important political decision-making processes. One of the most serious threats to consensual decision-making was the permanent presence of the Nebelivka Guardians, who were in a strong position to exploit their centrality for the entire year. One way of countering that threat was the regular changing of members of the Guardian group in a major annual congregation event. The existence of several 'squares' on the margins of the Nebelivka Inner Open Area is a possible indication of the relocation of the dwelling area of the Guardians on a regular basis.

The model which raises the most problematic issues for political decision-making is the Pilgrimage Model (Chapman and Gaydarska 2019), with its eight-month-long pilgrimage season and its ever-changing constellation of pilgrim groups over this period. The very flexibility of these arrangements made it difficult to validate any major political decision made at a congregational event in, say month three, when 90 per cent of the regional community was absent from this event. Moreover, there was no period in the year when the majority of a small community would not

5 The large, permanent population still characterizing the Permanent Large-Scale Model complicates the possible development of an egalitarian political function of the Inner Open Area.

have remained in their home base. There were two potential mitigations to these issues — a transcendental approach and an administrative approach. The former focused on the importance of grounding decision-making in the Inner Open Area in the precepts of the CT Big Other, reinforcing political decisions in transcendental principles which could be sustained even in the absence of many of the potential decision makers. Such congregational events were what attracted pilgrims to TMS in the first place. The latter extended the political influence of the Nebelivka Guardians in steering the congregational debates towards issues over which they had greater expertise, including the preparation and form of Nebelivka pilgrimage ritual events. This tension between the centralization of decision-making and the open, consensual process of congregational assemblies was a potential problem for the Pilgrimage Model. A sign of greater central control was the construction of the Inner Radial Streets in the later part of the Nebelivka occupation, offering greater control over the routes used by pilgrims to access the Inner Open Area. One way to address this structural problem was to integrate a method to effect regular change of the membership of the Guardian group.

In summary, we can theorize the way that open, consensual political decision-making was possible in each of the models, although there were significant challenges in each model — perhaps the most obvious found in the Pilgrimage Model. But the duration of each of the three principal mega-sites in the Sinyukha Basin at *c.* two hundred years, or six to seven generations, shows that mitigating practices were developed for each 'internal' case. However, none of the three mega-sites operated in a vacuum. We now turn to the implications of the three mega-sites' new chronological sequence for the evolution of the Inner Open Areas and the surrounding dwelling areas alike. We can no longer make the assumption that the same form of Inner Open Area implies the same kind of congregational practices.

The narrative starts with Nebelivka in the early fourth millennium cal. BC. We propose that Nebelivka started as a temporary, seasonal congregation place with a limited settlement alliance. At an early stage of the site's biography, Nebelivka turned into a formalized, permanent congregation centre — a low-density egalitarian city — based on the clan alliance structure of the Distributed Governance Model, with the Inner Open Area as 'built exterior' (Jervis and others 2021, 232) with transformative potential and a principal role in political decision-making. This stage of the site lasted for several generations, with an emphasis on open, consensual decision-making through congregational events in the Inner Open Area. The development of Inner Radial Streets meant limited incursions into the Inner Open Area, and, in a few cases, these streets were blocked with very short cross-streets, usually comprising only two houses. These developments indicated minor attempts to control access to the Inner Open Area but, since the Distributed Governance Model was based on permanent settlement, these developments did not seem likely to produce obvious political problems. The Nebelivka clan alliance continued until the start of Maidanetske some three generations later.

We propose that Maidanetske started life as a temporary congregation place, with an initial perimeter ditch, involving a big communal labour project, and a central pottery kiln, indicating the founding potters' Limited Interest Group. Given the three or four generations of overlap between Nebelivka and Maidanetske, it became increasingly important for the two centres to differentiate themselves one from another. For this reason, we propose that Maidanetske developed as a seasonal place of pilgrimage, with the major foundational construction being the main inner house circuit, built well inside the already existing perimeter ditch. The one hundred small sites already committed to the Nebelivka clan alliance would also have sent visiting delegations to the Maidanetske pilgrimage centre — not necessarily every year but sufficiently frequently to produce an overlap between their renewed commitment to the clan alliance and the attractions of the new pilgrimage model. This led to increased tension between these two commitments, with preferences increasingly based on the lower labour input for the Pilgrimage Model. Slowly, more and more people from the Nebelivka clan alliance changed their allegiance to Maidanetske. In a geographical sense, the location of Maidanetske to the north of Nebelivka meant better access to sites in the northern part of the Nebelivka 100 km radius territory. Another component of the Maidanetske pilgrimage network consisted of people further to the north or north-west from outside the Nebelivka 100 km radius territory. This combination of trends meant the strengthening of the Maidanetske pilgrimage network, at least partly at the expense of the Nebelivka clan alliance. The Maidanetske pattern lies midway between an organization with an important role for Assembly Houses (e.g., Nebelivka) and one more reliant on pottery Limited Interest Groups (e.g., Taljanki).

The new dating scheme shows that it is likely that occupation at Taljanki started before the abandonment of Nebelivka. In an extension to the pro-

cess of mega-site differentiation from Nebelivka and Maidanetske, we propose that Taljanki started life as a seasonal assembly centre. Major building changes at Maidanetske occurred at broadly the same time as the emergence of Taljanki. The chronology is not yet clear on the following point but, perhaps at the same time as the construction of Maidanetske's main outer circuit or possibly slightly later, the building of circuits inside the main inner circuit commenced, with the creation of at least three new inner circuits. These two major developments created many new processional routes, whether between the two main circuits, between the main outer circuit and the perimeter ditch, or between the inner circuits. Another significant development was the creation of 'pathways' leading from the house circuits into the Inner Open Area, which differed from the Inner Radial Streets in the variable contribution of houses — on both sides of the pathway, on one side, or not at all.

The building of at least three inner circuits meant an initial incursion into the Inner Open Area. But house-burning transformed part of these areas into ancestral spaces, often at the interface of the dwelling area and the congregational area. Thus the layout of the Maidanetske inner circuits proved to be only a temporary incursion into the Inner Open Area, with a gradual expansion of open ancestral spaces. The extensive development of ancestral space was most pronounced at Maidanetske because of the intensive building and burning of inner house circuits, although it did occur to a lesser degree at Nebelivka and Taljanki.

We propose that, after the abandonment of Nebelivka, Taljanki developed a more formalized congregational role as an assembly centre. This was possible because the only regional clan alliance, based at Nebelivka, had ended, hence providing more communities with the possibility to enter into an alliance with Taljanki. At the same time, the expansion of building continued at Maidanetske but this time from the main outer circuit outwards. This second-stage development defined Maidanetske, suggesting the broadening of the pilgrimage base to include a wider range of different home communities. It is noticeable that the layout of the outer circuits included more pathways enabling processions to the ancestral spaces, leaving Inner Open Areas still available for major pilgrimage ceremonies.

The current paucity of detailed chronological evidence for the building and burning of houses at all three sites hinders modelling of the location and extent of ancestral spaces. This in turn makes it difficult to estimate the size of the open areas available for major congregational gatherings. But we can safely diagnose two issues which would have threatened the survival of the pilgrimage structure at Maidanetske (Fig. 7.3). The first was the smaller open areas available for gatherings — whatever the balance of ancestral space and Inner Open Area. The contraction of social space equally reduced the stores of potential in such areas on which political performance was based (Jervis and others 2021, 223). The second was the complexity of access to the open areas, given the potential need to cross between four and eight house circuits. This complexity of movement offered multiple opportunities to control access, placing power in the hands of 'local' neighbourhoods and threatening access to the public, open, and consensual decision-making processes which lay at the heart of the classic mega-site. We propose that the failure to address these two dangers caused the gradual abandonment of Maidanetske.

It is clear from the Taljanki plan (Fig. 7.4) that, for the most part, its community managed to avoid the pitfalls of the complex Maidanetske layout. The inter-cutting of inner radial streets and cross-streets at the northern end of Taljanki indicated tension between the identities of the members of the clan alliance but there was no sustained effort to create additional house circuits. The long stretch of a third, inner house circuit occurred only at the southern end but was integrated with only a few short Inner Radial Streets. In this way, the Taljanki building expansion continued to maintain multiple access points from the dwelling area to the Inner Open Area, with the provision of ancestral spaces adding to the size of the open area. These developments maintained the centrality of open, consensual decision-making in the Taljanki open area at the time of the annual assembly.

Without the attractions of the two abandoned mega-sites, opportunities arose for the expansion of the clan alliance at Taljanki, fuelling its building expansion. Hofmann and others (2019) argue that the phasing-out of Assembly Houses at Taljanki signalled an attempt by the clan alliance to centralize control and that the resistance to such political change was responsible for the abandonment of the site. For whatever reason, one long generation after the demise of Maidanetske, Taljanki suffered the fate of abandonment of the last, and largest, mega-site in the Sinyukha Basin.

Conclusions

In our summary of changing theoretical and methodological approaches to Trypillia mega-sites (TMS) over the last four decades, we detect the growing pace of developments over the last fifteen years, recognizing that divergent approaches find their roots in earlier debates. We find it appropriate to transcend the major differences still existing in interpretations of the duration of TMS, their population size, and the degree of settlement permanence (summarized in Table 7.3) in order to propose a new, political framework for the future understanding of TMS. We have integrated our political insights, drawing largely on Graeber and Wengrow (2021), with the results of our latest Visibility Graph Analyses (VGA) and the implications of a Bayesian reassessment of the AMS dates from the three TMS of Nebelivka, Maidanetske, and Taljanki.

Starting with the comparative VGA of the four Nebelivka models with two smaller sites (Petreni and Moshuriv I), dramatic differences were found in the use of space between the TMS and the two small sites. Ohlrau's (2022) claim that scaling-up had no effect on how settlements were used has been comprehensively falsified. Almost all of the analyses underlined the importance of the separation between the built-up areas and open areas through the recognition of the survival and formalization of the Inner Open Area as a congregational space at the heart of TMS political action. There was an ongoing tension between maintenance of the Inner Open Area and open access to it. Control of access was recognized as a potential route to more centralized political decision-making, which could be mitigated by the expansion of a newly recognized space — the ancestral space.

Bayesian modelling of AMS dates showed that it was almost certain that all three major TMS were partially coeval, with the most probable order of settlement (and abandonment) as Nebelivka — Maidanetske — Taljanki. This result contrasts with the order proposed in two recent TMS monographs (Ohlrau 2020, 284; Shatilo 2021, fig. 54). These results undermine two other traditional views: the pottery typo-chronology and the view of a fifty-year duration of TMS, whose populations moved on to a new TMS after abandonment. We have drawn nine detailed chronological conclusions from this new order, with many significant ramifications for TMS interrelations.

The principal political conclusion was the vindication of Graeber and Wengrow's (2021) assertion of a fundamentally egalitarian organization on a low-density urban scale at TMS. The CT group managed to avoid the widespread threat of cultural schismogenesis because of its vast time–space distribution, which meant that all CT communities except those on the cultural margins were never exposed to anything other than the CT Big Other in time (e.g., the ancestors) or space (e.g., neighbouring communities) as their dominant framework for living. This situation led to an overarching, long-term cultural stability, with variability confined to regional differences in pottery, figurines, and houses. One key element of the Big Other was a strong resistance to the achievement of status through material accumulation, which led to a paucity of hoards and burials. Once exotic materials were 'domesticated' in borderland communities, they were distributed in 'internal' exchange across the huge CT area. In summary, the CT Big Other emphasized egalitarian political values, without which TMS could hardly have developed.

In the TMS, the three freedoms to relocate, to disobey commands, and to imagine new social realities (Graeber and Wengrow 2021) were underpinned by the characteristic cyclical or seasonal settlement modes in the three Nebelivka models. These modes decentred and dispersed stable, permanent power relations, undermining the imposition of absolute instructions and commands. Moreover, the importance of the Inner Open Area for open and consensual political decision-making was present on both small settlements and on mega-sites, although with a massive difference in scale. The CT Big Other was close to Mauss's definition of civilization as an 'extended moral community' enabling secure personal and community mobility over a wide area. We have previously argued that the creation of TMS followed the imagination of such communities (Gaydarska 2020a), in which the growth of an urban/Nebelivka identity was gradually overlain on a plethora of local community identities. The bottom-up growth of TMS plans through Neighbourhoods and Quarters implies that all households, or their representatives, shared the same conceptual framework for the entire settlement.

The range of state-level controls over violence, esoteric/specialist knowledge, and charismatic politics was inevitably greatly reduced in the TMS, which were far from state-level organizations. There is very little evidence for intercommunity violence in the CT area, while Neighbourhoods and Quarters could have provided mitigation of rising dispute levels on individual TMS. The three principal forms of powerful knowledge were all widely dispersed, whether throughout the CT Big Other (esoteric rituals and specialist metallurgical knowledge) or across indi-

vidual TMS (the dispersed distribution of pottery kilns). The opportunities for charismatic political figures existed at all scales of TMS performances but fluctuating settlement modes limited their consolidation into more permanent power bases. In these ways, TMS managed to control the threats to egalitarian political organization, and, without this control, they would hardly have lasted for a cumulative total of over six hundred years.

In the final section, we seek to explain the reasons for the creation and abandonment of the three major TMS in terms of different primary functions. The distinctive function of each TMS formed the basis for competitive allegiance for small communities in the surrounding landscape, eventually causing the abandonment of one TMS and the preference for another. In this initial formulation, we propose that Nebelivka began life as a centre for distributed governance, while Maidanetske evolved into a pilgrimage centre and Taljanki formed the centre for a seasonal assembly.

In this paper, we seek to move the TMS debate on to a new level of synthesis and interpretation by foregrounding the political roots of the phenomenon and identifying the ways in which TMS communities managed to achieve early low-density urban status while maintaining an egalitarian social form. This remarkable achievement was rarely found in other early urban communities and even less so in early states. It remains a hallmark of Trypillia mega-sites.

Supplementary Material

The supplementary materials are two appendices that contain in-depth discussions of the results of VGA conducted on the plan maps of Nebelivka, Moshuriv I, and Petreni. Appendix I provides analysis of the results of VGA at Moshuriv I and Petreni, while Appendix II compares and contrasts the interpretation of the VGA results conducted across the entirety of Nebelivka using the phases and models of its development. These are available online via the following link: https://doi.org/10.1484/A.21674087.

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