Inequality before the Bronze Age: the case of Chalcolithic Cyprus

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INEQUALITY BEFORE THE BRONZE AGE: THE CASE OF CHALCOLITHIC CYPRUS

Summary. *The emergence and nature of social inequality has been the topic of a substantial amount of research in recent years, with one group of scholars concluding that social inequality increased significantly with the rise of urbanism on the basis of the application of Gini measures, and another group arguing that social inequalities existed long before urbanism and that not all urban societies were class societies. Here, we present the case of Chalcolithic Cyprus, a decidedly pre-urban period for which we have quantifiable evidence that might indicate social inequality. On the basis of this dataset we will re-evaluate recent postulates on the emergence and nature of social inequality.*

INTRODUCTION

The rise of social inequality has long been one of the key topics in archaeology. The subject has gained new relevance in recent decades due to substantial increases in persistent social inequalities that have demonstrably undermined democratic institutions, social solidarity and economic productivity (Stiglitz 2012; Piketty 2014; van Bavel 2016). Various historians and archaeologists have traced the origins of persistent social inequalities back to the Neolithic (Fukuyama 2011; Mattison *et al*. 2016; Scheidel 2017). The underlying premise is usually that these intergenerational differences in economic, social and cultural power are universally present once sufficient (agricultural) resources could be monopolized (Mattison *et al*. 2016; Haynie *et al*. 2021).

Archaeologists working on early farming societies in Western Asia, that is in the Neolithic and Chalcolithic periods, have shown that there are no convincing data, however, to support the existence of persistent social inequalities in agricultural societies before the emergence of urban societies (Price and Bar-Yosef 2010; Hodder 2014, 5; Bogaard *et al*. 2018, 202).

In recent years archaeologists have started to use quantitative methods to map past social inequalities by using the Gini coefficient, a measure developed by economists to study modern inequalities in income. The Gini coefficient expresses the measure of inequality as compared to a perfectly equal distribution (Haughton and Khandker 2009). The value is often illustrated as a Lorenz curve, a cumulative diagram in which a perfectly equal distribution (a population in which everyone has the same income) results in a straight diagonal line, while unequal distributions (in which a small proportion has a much higher income than others) result in a sloping curve. The Gini

coefficient ranges in value from 0 for a fully equal distribution to a value of 1, meaning maximal inequality.

In the absence of historical data on household income for our archaeological case studies, house size is usually used as proxy for relative household wealth. House construction involves significant labour and resource investment, and reflects household status and wealth (Wilk 1983; Borgerhoff Mulder *et al*. 2009; Kohler *et al*. 2017).

The Gini coefficient has been successfully used to analyse differences in inequality in (pre) historic societies by applying it to the distribution of house sizes (Price and Bar-Yosef 2010; Kohler *et al*. 2017; Peterson and Drennan 2018; Basri and Lawrence 2020). These analyses seem to suggest that in Western Asia social inequality increased significantly with the rise of urbanism. Various studies of large aggregate datasets arrived at similar conclusions, with Gini values generally well below 0.3 in the Neolithic and Chalcolithic, and closer to 0.4 in the Bronze Age (Bogaard *et al*. 2018, 212; Stone 2018; Basri and Lawrence 2020, 698). This same pattern has also been observed more broadly for Eurasia (Kohler *et al*. 2017, 621). Interestingly, this increase in the Gini values was linked to the emergence of plough agriculture – which facilitated the production of more substantial surpluses – rather than urbanism per se (Kohler *et al*. 2017, 620; Bogaard *et al*. 2018, 222). Thus, in this model, the capacity to produce substantial agricultural surpluses in Western Asia and adjacent regions only emerged with the development of the plough that facilitated largescale production of cereals. In a similar vein, a study of historical and modern populations of small-scale societies indicates that the presence of heritable material wealth in society is prerequisite for the existence of increased inequality (Borgerhoff Mulder *et al*. 2009).

By contrast, Wengrow and Graeber have suggested that societies shifted between egalitarianism and (seasonal forms of) social inequality from the Palaeolithic onwards, and got 'stuck' in social inequality at some point in history (Wengrow and Graeber 2015; Graeber and Wengrow 2021, 112). Although they are not really clear about when, how and why this process occurred, this argument seems to rephrase rather than challenge the view that a decisive shift towards greater social inequality occurred in Bronze Age Western Asia (Hulin *et al*. 2018; Stone 2018; Leppard 2019; Basri and Lawrence 2020). Their point, however, that social inequalities might have existed in early farming societies, and have developed dynamically throughout history, is one that merits serious investigation.

We argue that an assessment of (changes in) social inequality but also shifts in how societies structure the constraints with which such inequalities can be articulated, perpetuated, or consolidated, needs to combine qualitative and quantitative analyses. Thus, Gini values cannot be taken at face value for a number of reasons. First, archaeological datasets are not necessarily representative of past wealth differences. Our data are impacted by factors such as preservation, research and looting. Looting, for example, has destroyed many rich grave assemblages completely. Moreover, our evidence is heavily determined by past cultural practices, such as whether or not valuables were deposited in hoards or were kept in circulation, and whether ostentatious burial was culturally important (Wengrow 2011; Fontijn 2019). For these reasons, the distribution of wealth in archaeological data needs to be investigated with considerable scrutiny. Second, a key problem with quantitative approaches such as the Gini coefficient is that they do not consider the mechanisms through which inequalities in access to resources and wealth were achieved, what purposes they served, nor how stable they were over time. For example, a building with a large concentration of consumables could be the property of an elite group, a communal storage facility, or related to feasting or ritual events (Fochesato *et al*. 2019, 855). All these scenarios would look very similar when using tools such as the Gini coefficient, while they are in fact very different in

social terms. Quantitative studies can therefore measure differences in wealth, but these cannot be directly translated into levels of social inequality (Peterson and Drennan 2018, 45). Therefore, we need to augment qualitative assessments with a consideration of how wealth and resources were used in culturally specific practices.

THE CASE OF CHALCOLITHIC CYPRUS

The Cypriot Chalcolithic can be sub-divided into Early (4000–3500 BCE), Middle (3500–2900 BCE) and Late (2900–2400 BCE) phases. Its societies can be characterized as small scale, with settlement populations probably no higher than about 1000 people (Peltenburg 1998, 255). These village societies engaged in subsistence horticulture, animal husbandry of pigs, sheep and goat, hunting of deer, and gathering of wild plant resources. House forms and Cypriot Chalcolithic assemblages are divergent from what was happening outside the island. On this basis it has been suggested that we are dealing with a literally insular cultural tradition with little social differentiation that is out of touch with the rest of the Eastern Mediterranean (Broodbank 2013). The traditional consensus is that this cultural insularity of Cyprus ends abruptly in the subsequent Philia phase (2400–2200 BCE), when a clear Anatolian influence is apparent in Cypriot pottery assemblages, farming practices, textile production technologies and metallurgical knowhow. The Philia phase is often interpreted as a migration from Anatolia, possibly to exploit Cypriot copper ores (Frankel 2000; Webb and Frankel 2013).

Chalcolithic societies on Cyprus clearly fall outside the range of societies in which one might expect increased levels of Gini values as they have been established. It is clearly a pre-urban society and the introduction of the plough and draft animals only occurred in the subsequent Philia phase and Early Bronze Age (Frankel 2000; Manning 2019).

Yet, at the same time there are clear indications of social differentiation in Chalcolithic Cyprus. These occur in a range of forms, including marked differences in the sizes of houses, elaborate feasting, the use of craft objects made of valuable and exotic materials to mark social distinctions, increased evidence of supra-regional exchange networks within and beyond Cyprus, possibly including the increased movement of people, and the differentiation of people in death (Bolger 2013; Peltenburg 2018; Düring *et al*. 2021). However, there is no evidence at present that such social distinctions were consolidated into persistent (intergenerational) social inequalities, and the development of such inequalities appears to have been resisted by Chalcolithic societies (Peltenburg 1993; 2014; Bolger *et al*. 2019, 330–3). Thus, houses were abandoned (and sometimes deliberately burned) long before the end of their use life, there are no qualitatively different forms of elite houses, burials, or artefacts, and there is no evidence for the spatial disassociation of elites or the suppression of the less powerful.

Chalcolithic burials occur mainly in two forms (Lunt *et al*. 1998; Crewe 2019). Within settlements predominantly children, adolescents, and in some cases young women are found principally in single graves, and with few grave goods. At Souskiou, various cemeteries of rock-cut collective graves were found dating to the Middle Chalcolithic, in which sequential burial, presumably of kin, occurred, of adults of both sexes and some children. In these collective graves more elaborate objects were found, including picrolite figurines, necklaces that included some imported faience beads, and ceramic vessel types that are rare in settlements. At the site of Kissonerga-*Mosphilia* in Late Chalcolithic Period 4 a similar but less elaborate tradition of collective chamber graves with multiple adult burials and richer grave inventories has also been

documented. These graves are thus either relatively modest, or take on the form of collective chamber tombs, and as such did not serve to produce status differences at the level of specific people being buried. From what we know, people were buried in accordance with their age profile and there is no evidence of some people (or groups of people) receiving a significantly more elaborate burial than others. An exception to this is a large square rock-cut tomb (n. 73) at Souskiou-*Vathyrkakas* (Peltenburg 2006, 161–2), which is much larger than any other tomb, and this might mirror the uneven size distribution in the buildings that are the focus of this paper.

In order to assess the nature of social differentiation in Chalcolithic in a quantifiable manner, we have undertaken a quantitative and qualitative assessments of building differentiation in Chalcolithic Cyprus, to which we now turn.

CHALCOLITHIC HOUSES LARGE AND SMALL

Decades of research in western Cyprus since 1976 by the Lemba Archaeological Project have produced a uniquely rich dataset from the excavations at the settlement and cemetery sites of Lemba-*Lakkous*, Kissonerga-*Mosphilia*, Kissonerga-*Mylouthkia*, Souskiou-*Vathyrkakas*, and Souskiou-*Laona* (Peltenburg 1985; 1991; 2003; 2006; Peltenburg *et al*. 1998; 2019; Knapp 2013) (Fig. 1), which can now be augmented with results from the ongoing excavations at

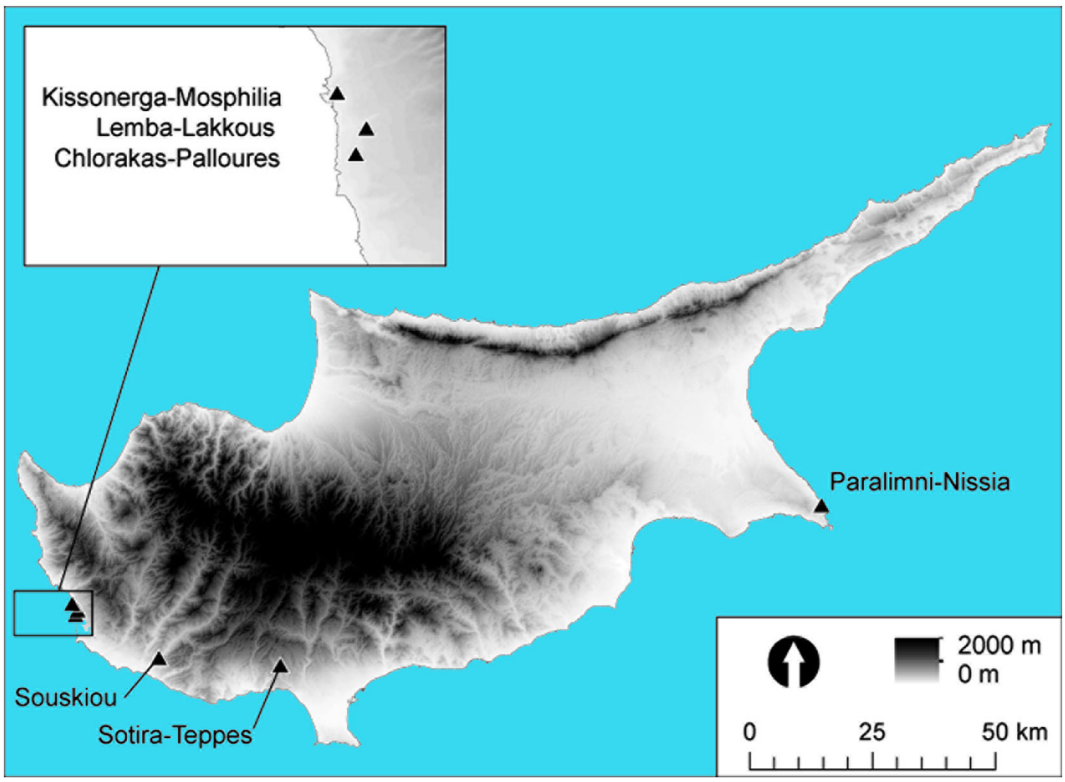

FIGURE 1
Map of the discussed sites in Cyprus.

Chlorakas-*Palloures*, (Düring *et al*. 2018a; 2018b; 2021). This rich dataset has not been the subject of much interpretive and synthetic research.

In these excavations Middle and Late Chalcolithic settlements of roundhouses were exposed. These roundhouses vary considerably in size and how they were utilized throughout their use life. A systematic analysis of house size and house biographies is therefore essential to understand how prestige was socially articulated. Peltenburg (2007; 2014, 260–1) has argued for the emergence of social inequalities on the basis of differentiation in the size and construction of houses, with elites exercising a form of ritual control during the Middle Chalcolithic and shifting to economic centralisation in the subsequent Late Chalcolithic. These interpretations rely heavily on two rich archaeological contexts (the ceremonial area and the pithos building at Kissonerga-*Mosphilia*), however, and have not been systematically investigated for the broader corpus of buildings. The marked differentiation of houses does indeed suggest increasing – if as yet poorly understood – social competition in the Middle and the Late Chalcolithic.

MEASURING GINI VALUES FOR LATE NEOLITHIC AND CHALCOLITHIC HOUSES ON CYPRUS

We selected six Cypriote pre-Bronze Age sites for the calculation of Gini values (Fig. 1). Four selected sites date to the Chalcolithic: Chlorakas-*Palloures* (Düring *et al*. 2018a; in press), Souskiou-*Laona* (Peltenburg *et al*. 2019), Kissonerga-*Mosphilia* (Peltenburg *et al*. 1998), and Lemba-*Lakkous* (Peltenburg 1985). Two Ceramic Neolithic sites were selected for comparison: Sotira-*Teppes* (Dikaios 1961), and Paralimni-*Nissia* (Flourentzos 2008). The sites were chosen because they were exposed over substantial areas, with a substantial number of houses of which the floor surface could be reconstructed, and they covered the chronological span of both periods adequately.

The walls and floors were digitized in ArcMap. When a building was not completely preserved the floor area was reconstructed by extrapolating from other known buildings. For Chalcolithic buildings, which are more or less circular, we projected the missing part of the wall arc as a circle. To estimate their original diameter, we drew circles of varying size as guides, until a best fit was visually determined. At the Neolithic sites of Sotira-*Teppes* and Paralimni-*Nissia*, floor plans were circular or symmetrical rectangles with rounded corners. If half of a building was preserved, the floor area was reconstructed in direct symmetry (Fig. 2).

At the selected sites, there is no evidence that any of the buildings had an upper storey, although it is likely that the roof might have been used seasonally for storage, outdoor activities or for resting, as is common in ethnographic studies of loam (i.e. mud-brick or pisé) buildings (Friedl and Löffler 1994, 33). If this was the case, the size of the roof space would have been proportional to building sizes under consideration here, and would not affect our calculations. The issue of possible auxiliary structures is more difficult to take into account. At Sotira-*Teppes*, twelve buildings were interpreted as an auxiliary complex, subsidiary to a 'main' building (Dikaios 1961, 155). For this site, we calculated Gini values for both a scenario in which each building was considered separate, as well as one in which buildings had annexes, and the floor spaces of both were combined. This was also undertaken for Lemba-*Lakkous*.

For each site, the floor area of each building was measured in square metres in the GIS, by drawing polygons inside the walls, and excluding the entrance surface. The Gini values were calculated in Rstudio using the 'Ineq' package (see supplementary material).

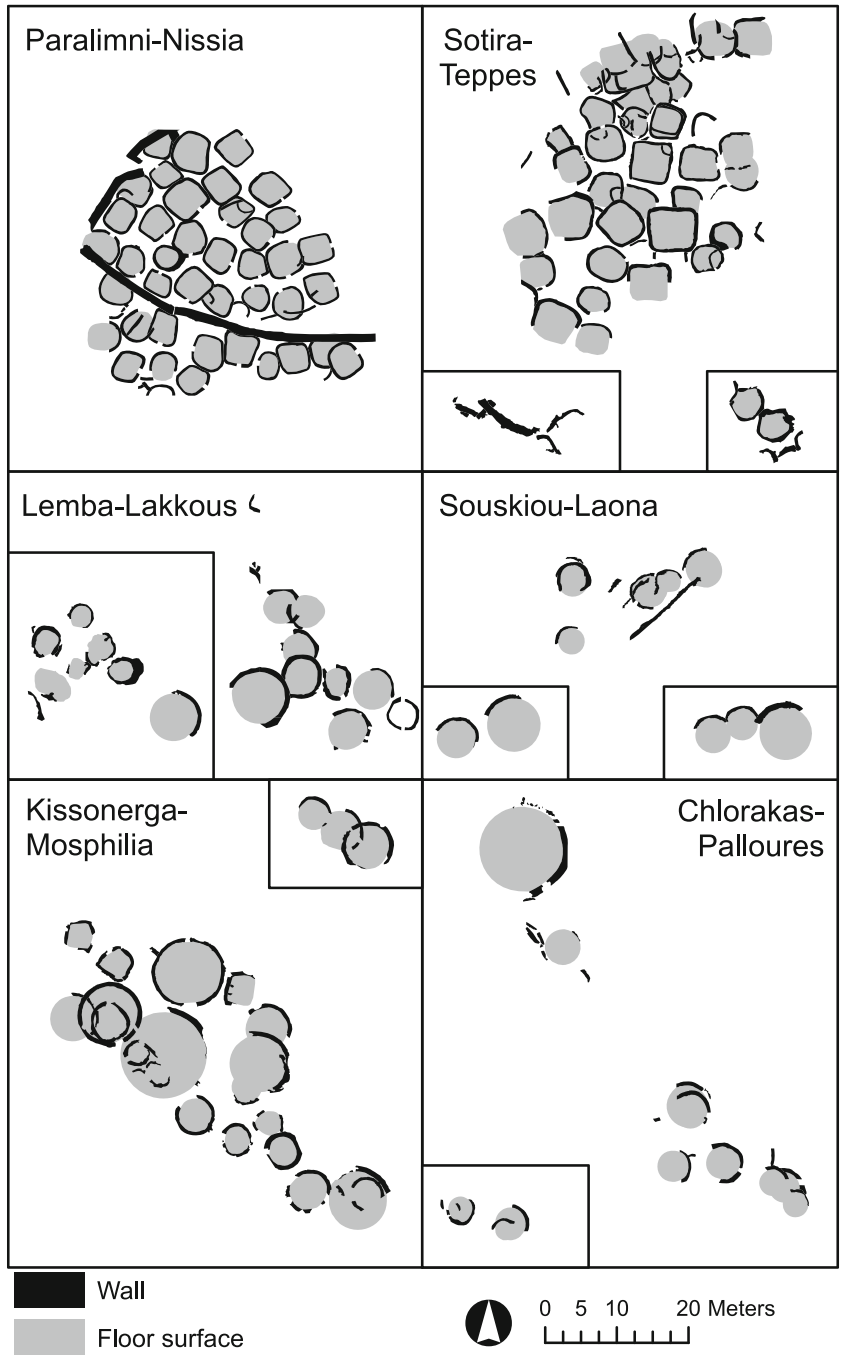

FIGURE 2
Overview of digitized house plans at the selected sites. Insets show excavated buildings which are at a distance from main excavation areas. All plans are the same scale and cardinal orientation.

RESULTS

The Neolithic site of Paralimni-*Nissia* yielded the lowest Gini value of 0.134 (Fig. 3), which reflects a restricted size range of the buildings excavated at the site (n=40). The floor surfaces range from ten to thirty square metres. Upon visual inspection, it appears that the larger buildings are often rectangular in shape, but the distribution between rectangular and circular buildings is equal in the smaller classes. Building shape and size are therefore not correlated, nor are functional differences reflected in either shape or size.

At Sotira-*Teppes* building sizes range from six to forty square metres floor area. Due to a lack of exceptionally large buildings, the Gini value of this settlement is low at 0.238 when all separate constructions are considered to be individual dwellings. Following the interpretations of the excavators, some smaller buildings were considered as kitchen annexes to other buildings. If these annexes are added to the main buildings the Gini value for Sotira-*Teppes* rises to 0.308.

Similar values were calculated for the buildings at the Chalcolithic sites of Lemba-*Lakkous* (0.310) and Souskiou-*Laona* (0.275). These settlements are characterized by building sizes similar to the Neolithic sites, ranging between six and to just over forty square metres. As far as preservation allows us to determine, all buildings at Souskiou-*Laona* conform to the Chalcolithic model of a roundhouse with a single entrance and a central hearth. At Lemba-*Lakkous* two small structures lacked the internal arrangement typical for domestic dwellings from this period and could be interpreted as annexes (Peltenburg 1985, 29, 121). A recalculation of floor surfaces in which these are added to other buildings as annexes yields a slightly lower Gini value of 0.253. The dataset from Lemba-*Lakkous* is too small to meaningfully differentiate between the size ranges of Middle and Late Chalcolithic buildings.

At Kissonerga-*Mosphilia*, the Gini value was calculated per building, as no clear annexes could be identified. Three buildings were considered by the excavators to differ from the typical roundhouses, although their exact function is unclear (Peltenburg *et al*. 1998, 30). Although these

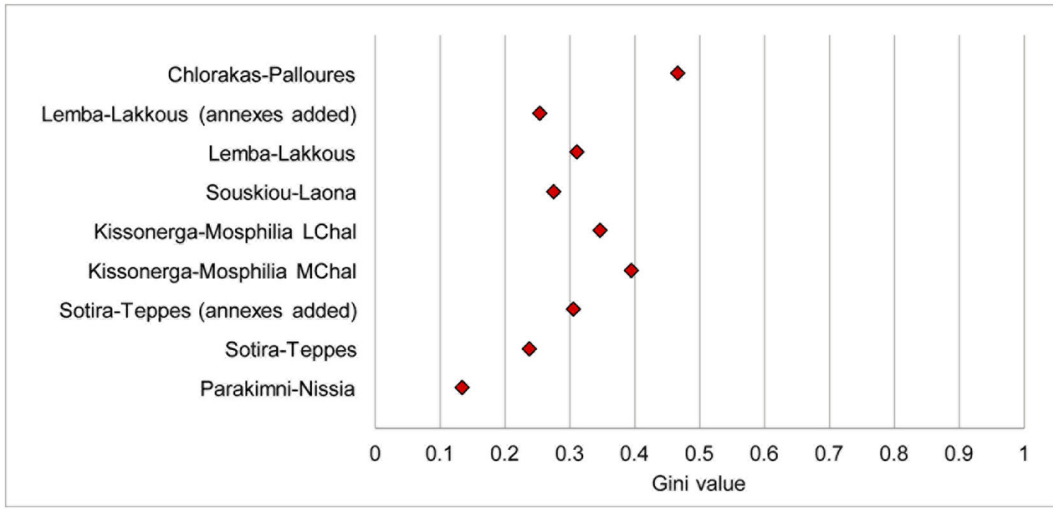

FIGURE 3
Gini values for the buildings at Chlorakas-*Palloures*; Lemba-*Lakkous*; Souskiou-*Laona*; Kissonerga-*Mosphilia*; Sotira-*Teppes* and Paralimni-*Nissia*.

structures were possibly owned by a household occupying yet another building, it is not possible to determine with which one they should be linked. Excluding these non-domestic buildings from the Gini calculations lowers the value marginally from 0.418 to 0.415.

The buildings at Kissonerga-*Mosphilia* can be divided into those belonging to the Middle and the Late Chalcolithic. The buildings from the Middle Chalcolithic yield a Gini of 0.394 and those from the Late Chalcolithic 0.347. The higher value for the Middle Chalcolithic can be explained by the presence of one especially large building (building 206) which measures over 112 square metres internally. If this building was not present in this dataset, the Gini would drop below the value for the Late Chalcolithic. Similarly, the discovery of a single building of such proportions would dramatically increase the value for the Late Chalcolithic.

At Chlorakas-*Palloures*, all excavated buildings date to the Late Chalcolithic (Düring *et al*. 2018a; in press). Like at Kissonerga-*Mosphilia*, an exceptionally large building was discovered at this site, measuring 107 square metres. The total number of buildings for which an internal surface could be reconstructed is lower than other sites, standing at 12. In part due to the smaller sample size and the presence of one exceptionally large building, the resulting Gini value is remarkably high at 0.467. All buildings from Palloures used in the calculations are interpreted as domestic dwellings, and no annexes were identified. If we were to exclude the monumental sized Building 1, the Gini value would fall well below 0.3.

In summary, if we compare the data from the Ceramic Neolithic and Chalcolithic sites from Cyprus analysed here we can see a clear increase in Gini values. For the Neolithic sites of Paralimni-*Nissia* and Sotira-*Teppes* the combined Gini is 0.189, whereas for the Chalcolithic sites of Lemba-*Lakkous*, Kissonerga-*Mosplilia* and Chlorakas-*Palloures*, the combined Gini is 0.383, which is clearly a substantial increase in span of building sizes. How remarkable the values for the Chalcolithic sites really are can be demonstrated by comparing these values to those from other sites. For example, the Early Bronze and Middle Bronze Age site of Marki-*Alonia* on Cyprus, for which we have evidence for plough-based agriculture and substantial metallurgical production, has Gini values in the range of 0.22–0.34 (Basri and Lawrence 2020, supplementary data). The outlier position of Chalcolithic sites on Cyprus is also clear when compared to the aggregate Gini datasets of the Eastern Mediterranean. The data gathered by Basri and Lawrence (2020, 698, compare also Kohler *et al*. 2017) across Western Asia show that in the Neolithic sites had Gini values of *c*.0.15–0.32, Bronze Age sites had values of *c*.0.18–0.38 (excluding the large sites with palaces), and Iron Age sites had values similar to those of the Bronze Age. If we plot the Chalcolithic Gini values of our Cypriote sites they are remarkably high, and can be compared to those of urban societies with plough-based agriculture of the Bronze Age elsewhere in Western Asia (Fig. 4).

Qualifying Gini values

How can we make sense of the remarkably high Gini values in Chalcolithic settlements in Cyprus? Is it possible that these pre-urban communities relying on horticulture, animal husbandry, and hunting, had inequality levels similar to those occurring in Bronze Age urbanized communities which relied on plough-based agriculture? If so, how can we explain the exceptional position that Chalcolithic Cyprus has, in light of comparative data from across Western Asia?

We argue that Gini values need to be qualified in broader cultural contexts. First, one can ask whether differentiation in house sizes is mirrored in other aspect of the material assemblages. Here we can note that in the Bronze Age of Western Asia there is a range of practices that

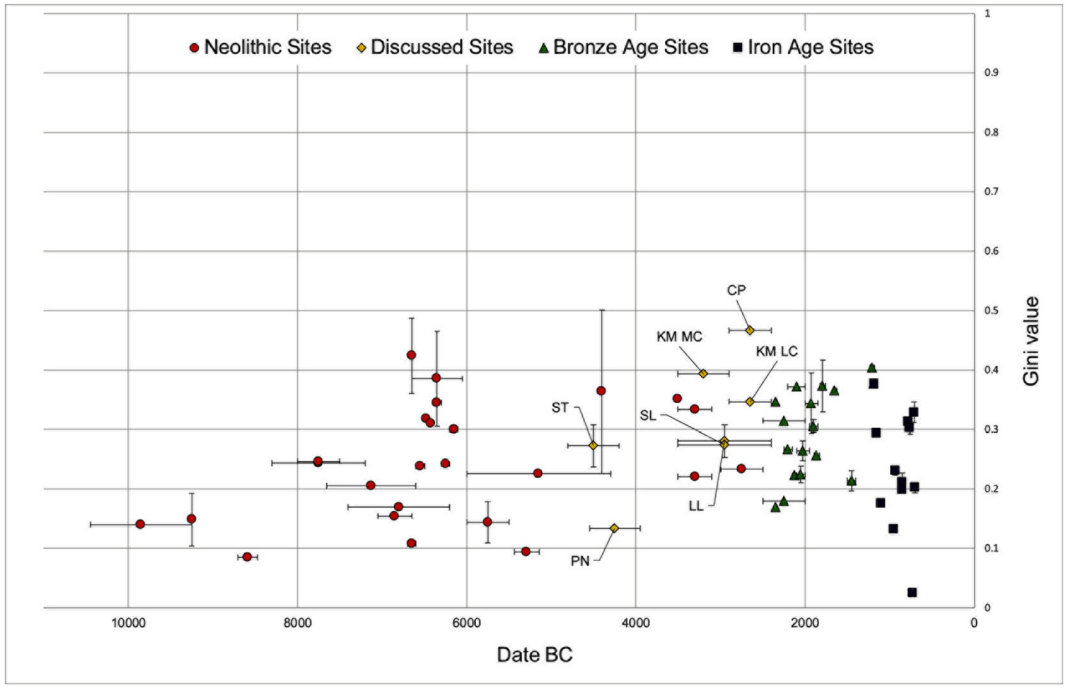

FIGURE 4
Scatterplot of the Gini values discussed in this paper, compared to values from other Neolithic to Iron Age sites in Western Asia, excluding data for palaces. ST: Sotira-*Teppes*, PN: Paralimni-*Nissia*, SL: Souskiou-*Laona*, LL: Lemba-*Lakkous*, KM MC: Kissonerga-*Mosphilia* Middle Chalcolithic, KM LC: Kissonerga-*Mosphilia* Late Chalcolithic, CP: Chlorakas-*Palloures*. (Comparative data were obtained from Basri and Lawrence 2020.)

differentiate elites from commoners. These take the form of artefacts made in precious and usually visually conspicuous materials, often hauled from half way across the globe, consider for example amber from Scandinavia and lapis lazuli from Afghanistan (Wilkinson 2014; Massa and Palmisano 2018), and produced in intricate technologies by artisans sponsored by the elites culminating in hoards such as those found at Troy and in the Royal Graves of Ur (Bachhuber 2009; Baadsgaards and Zettler 2014). Nothing remotely comparable, in terms of elite material culture or ostentatious burials, is known from Chalcolithic Cyprus, although there are a few imported metal and faience objects (Peltenburg 2018; Düring *et al.* 2021).

Second, one can ask how stable the differences materialized in Chalcolithic houses were over time. Here again we can draw marked differences between the reproduction of elite buildings in the Bronze Age, often located in spatially segmented and elevated spaces, such as the upper towns known from sites such as Troy and Kültepe (Ezer 2014). By contrast, in Chalcolithic Cyprus, all buildings were located within the general settlement extent which lacked areas of clear distinction. Large buildings were often found grouped together with other, smaller structures.

The biographies of buildings show that size was not an indicator for enduring status. Building 1 at Chlorakas-*Palloures* for instance, measuring an impressive fourteen metres in diameter, was reused for outside activities for the majority of its lifetime. Such functional changes are frequently observed at Chalcolithic buildings in constantly changing floor sequences

(Klinkenberg 2021). In contrast, the pithos building at Kissonerga-*Mosphilia* yielded a clear functional continuation in a sequence of three buildings, but this example seems to be an exception rather than the rule (Peltenburg 2018; Klinkenberg 2022). The pattern that we see for large Chalcolithic buildings is that they often appear to have been in use as monumental structures – with for example well-constructed and clean floors – relatively briefly, and that such buildings were often reused for storage and craft activities rather than being restored to residential and representational functions. Thus, the use of such buildings as monumental structures appears to have been a relatively brief episode in their overall biography. This raises the question of how these buildings can be understood. Why make the effort of constructing such buildings, when they were in use only briefly? One model can be found in various ethnographic and archaeological studies, in which houses are often intimately linked to the identity of a charismatic person, and houses are often used to articulate wealth and status (Carsten and Hugh-Jones 1995; Borić 2008). House abandonment often reflects changes in the household such as the death of a household member (Bloch 1995; Verhoeven 2000). The violent destruction of houses has been explained as an attempt to express continuation of the household status and identity (Stevanović 1997; Tringham 2000). In the case of Chalcolithic Cyprus, a dynamic social system, in which status could be achieved and lost during the life of a leader, could explain the trajectories we see. Therefore, the biographies of buildings and people do not necessarily map onto each other. Indeed, in some cases, such as Building 1 at Chlorakas-*Palloures*, our data suggest that the social capital that sustained it might have collapsed only a few years after it was built.

Further, we see that many Chalcolithic buildings were terminated long before the end of their use life, and that this event often included practices such as the burial or leaving behind of valuables, setting fire to buildings, or blocking their doorways (Klinkenberg 2022). There can be little doubt that such premature terminations of a building represented a destruction of wealth in its own right, and in cases in which these terminations included large quantities of storage vessels and other artefacts in a burnt context, this destruction of wealth is clearly amplified. Remarkably, at the sites of Kissonerga-*Mosphilia* and Chlorakas-*Palloures*, around one in seven buildings was terminated in such a practice. A particularly spectacular example is the so-called pithos building (Building 3) at Kissonerga-*Mosphilia*, where 300 objects where found, including 58 storage vessels that occupied about half the space of the building (Peltenburg *et al*. 1998, 37–43), and similar contexts are now being excavated at Chlorakas-*Palloures*. These types of termination practices do not occur exclusively in large buildings, and we therefore cannot correlate building size to this type of wealth destruction. Again, our proposition would be that such practices are best explained as linked to changes in status of key inhabitants. House and wealth destruction could, for example, be a practice linked to the sudden or inauspicious death of a charismatic leader. While such scenarios cannot be proven in our archaeological context, the discovery of the skeleton of a young child in the wealth destruction context of the pithos house at Kissonerga-*Mosphilia* (Peltenburg *et al*. 1998, 6), does suggest that a relation between death and wealth destruction existed.

We argue therefore that marked differences in building size, and associated customs of destruction of buildings and wealth in termination practices, in Chalcolithic Cyprus are best understood as linked to the social system, in which status of leaders was highly dynamic. Thus, wealth differences were at the same time very high and very unstable. Efforts to measure such wealth differences, including the Gini method, in effect measure episodes that left a material residue, of an ever-changing configuration of status and power in this prehistoric society. Indeed, it is likely that the very instability of these wealth differences was the very reason why they were maximized in

the houses and their termination practices, in an effort to (literally) manifest and consolidate power differences.

The Gini in Context

How do our results bear on the broader discussion in recent years on the development of social inequalities? In this debate, one group of scholars using Gini calculations argues that social inequalities increased significantly in the Bronze Age thanks to plough-based agriculture (Kohler *et al*. 2017, 621; Bogaard *et al*. 2018, 212; Basri and Lawrence 2020, 698). A second group argues that social inequalities are part and parcel of human societies from the very start and that such inequalities occur in specific social situations (Wengrow and Graeber 2015; Mattison *et al*. 2016; Graeber and Wengrow 2021, 112), and that we should investigate when and why social inequalities occurred.

The case of Chalcolithic Cyprus presented here, with its Gini values that are higher than those of most urban sites of the Bronze Age in Western Asia, clearly shows that we cannot take these measures at face value. At the same time, the pattern that our colleagues have demonstrated for Western Asia is based on a lot of empirical data and should be considered robust. Thus, this period is one in which many societies got 'stuck' in persistent social inequalities (Graeber and Wengrow 2021, 112), just as it probably became 'unstuck' again in later periods, such as at the end of the Late Bronze Age in Western Asia. It is because we regard this broader pattern as robust that the anomaly of our Cypriot Chalcolithic Gini values becomes all the more remarkable.

It is important therefore to study Gini values also qualitatively, through the analysis of how wealth differences are articulated in culturally specific practices. In Chalcolithic Cyprus there is a consistent lack of any form of differentiation of elites – in buildings, burials and assemblages, and we have shown that wealth differences are highly dynamic and are most likely caught up in biographies of important leaders that managed to attract followers, but in many cases might not have been able to sustain their acquired status. The destruction of wealth, in the termination of buildings and in some cases rich assemblages of objects and goods, occurs regularly, perhaps to make sure that wealth was not transferable. Thus, despite the clear house size differences, and the social inequalities that are articulated through them, these societies give no evidence for the accumulation of transmissible, material wealth, or enduring hereditary social positions, typically related to wealth inequalities (Borgerhoff Mulder *et al*. 2009).

We postulate that it is precisely the achieved and temporary nature of status differences that might explain why in Chalcolithic houses Gini values are higher even than in many societies were social inequalities were well established. It is precisely where power differences were not secure that these perhaps needed to be marked the most (see Dickson 2013 for a similar argument in a different context).

CONCLUSION

In conclusion, we would argue that Gini values do provide a robust dataset to investigate long term and aggregate trends in the articulation of social inequalities in archaeology, and we argue that this measure has created a baseline for assessing specific periods. At the same time, we need to ask how wealth distributions – which is what Gini measures, not social inequality – functioned in particular social contexts, which were the cultural practices responsible for material expressions of

wealth we can study in archaeology, and how stable or dynamic wealth differences were in particular societies. Paradoxically, it appears that remarkably high Gini values might exist precisely because social inequalities of a stable kind are absent, as might be the case for Chalcolithic Cyprus. We should therefore take seriously the call to arms by Wengrow and Graeber that social inequalities can occur everywhere in human societies and can fluctuate. We need Gini values to provide our base line and discover anomalies therein, and then, to initiate an assessment of how wealth mattered in individual past societies.

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SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

Data S1. Supporting Information