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The Global Dynamics of Inequality (GINI) project

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Abstract:	The GINI project investigates the social dynamics of inequality over the long-term by synthesizing the archaeological record of housing, especially house areas and storage capacities, at specific times and locales around the world. We foreground regions underrepresented in previous work to address broad questions surrounding the causes and consequences of inequality, of relevance to contemporary societies globally.

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Abstract

The GINI project investigates the social dynamics of inequality over the long-term by synthesizing the archaeological record of housing, especially house areas and storage capacities, at specific times and locales around the world. We foreground regions underrepresented in previous work to address broad questions surrounding the causes and consequences of inequality, of relevance to contemporary societies globally.

Introduction

Growing economic disparity has prompted a renewed focus on the long-term dynamics of inequality (Borgerhoff Mulder *et al.* 2009; Flannery & Marcus 2012; Piketty 2014). Archaeology is uniquely placed to investigate long-term inequality: we produce the relevant data and expertise in what constitutes wealth, and how institutional mechanisms shape inequality (Chirikure *et al.* 2018). There is much to learn from our accumulated data. A previous collaboration to assess wealth inequality by comparing archaeological data on house area (Kohler *et al.* 2017) revealed surprising continental-scale differences.

GINI (The **G**lobal Dynamics of **I**nequality Project) brings together archaeologists working across the globe, including regions underrepresented in previous work (Fig 1). Our aim is to investigate the causes and consequences of socioeconomic inequality over the long-term using methods and metrics of contemporary relevance.

Project aims

It has been argued that human societies have a persistent attraction to inequality (Scheffer *et al.* 2017; Chase *et al.* 2020), reflected in the skewed distributions of network science (Bettencourt 2021). Mobile foragers have often been characterized as classless, but hunter-gatherer-fishers can develop marked wealth inequalities, including on a seasonal basis (Wengrow and Graeber 2015; Mattison *et al.* 2016; Pandit *et al.* 2020). Wealth inequalities can intensify with agriculture, a process apparently abetted by domesticated animals (Kohler *et al.* 2017; Styring *et al.* 2017). Within a few millennia of agricultural emergence, some societies exhibit enormous wealth and power differences. Other past urban societies apparently suppress extremes of high inequality and have attracted particular scrutiny (e.g. McIntosh 2005; Graeber and Wengrow 2021; Green 2021).

GINI examines changing distributions of housing area over the long-term. Our focus is Holocene prehistory, but we also include historical and contemporary contexts. We measure inequality using the Gini coefficient, calculated over house area distributions and storage capacities within sites and at larger scales of aggregation. We also assess potential biases in sampling, multiproxy indicators of wealth and measures of uncertainty (Fochesato *et al.* 2019; Fochesato and Bowles 2022; Munson and Scholnick 2022).

Foregrounding regions underrepresented in previous studies (Figs 1-5) enables us to consider global questions. Under what circumstances do societies develop sustained high or low levels of inequality (Blanton and Fargher 2008)? What is the role of labour- versus land-limited production in the maintenance of (in)equality (Bogaard *et al.* 2019)? Where surplus-

producing societies resist high wealth inequalities, how is that achieved (Kohler and Higgins 2016; Hodder 2022)?

We also investigate how house area distributions reflect wealth inequality today. Massive housing datasets and associated economic information (e.g., Leyk *et al.* 2020) enable assessment of what house areas represent in contemporary socioeconomic terms. This is crucial for determining how far our findings reflect processes common to the past and present.

So far, we have assembled data on ~26,000 houses. Preliminary results (Fig 1) show high variability in Gini coefficients, especially in Asia, Europe and Mesoamerica, where data are most abundant. Ongoing analyses seek to disentangle temporal, spatial and ecological trends within and across world regions.

GINI pushes beyond categories such as “hierarchical” and “egalitarian” to examine the tensions between these polar modes of social organization and how inequities are negotiated in particular times and places. If persistent egalitarianism required fundamental social and economic commitments (e.g., Osborne 2007; Hodder 2022), its monitoring across societies and through time deserves our closest attention.

Funding statement

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4 world's first cities were fed. *Nature Plants* 3:17076.
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8 the origins of inequality. *Journal of the Royal Anthropological Institute* 21:597-619.
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10 11 12 13 14 **Figure captions** 15

16
17 Figure 1. Locations and mean site dates for sites in the GINI Project database as of
18 13/04/2023. A: All Sites. B: Boxplots of Ginis for sites with 5 or more houses, by major world
19 region and mean site date (see legend, A). Ginis are computed by site on the total area per
20 house, including storage.
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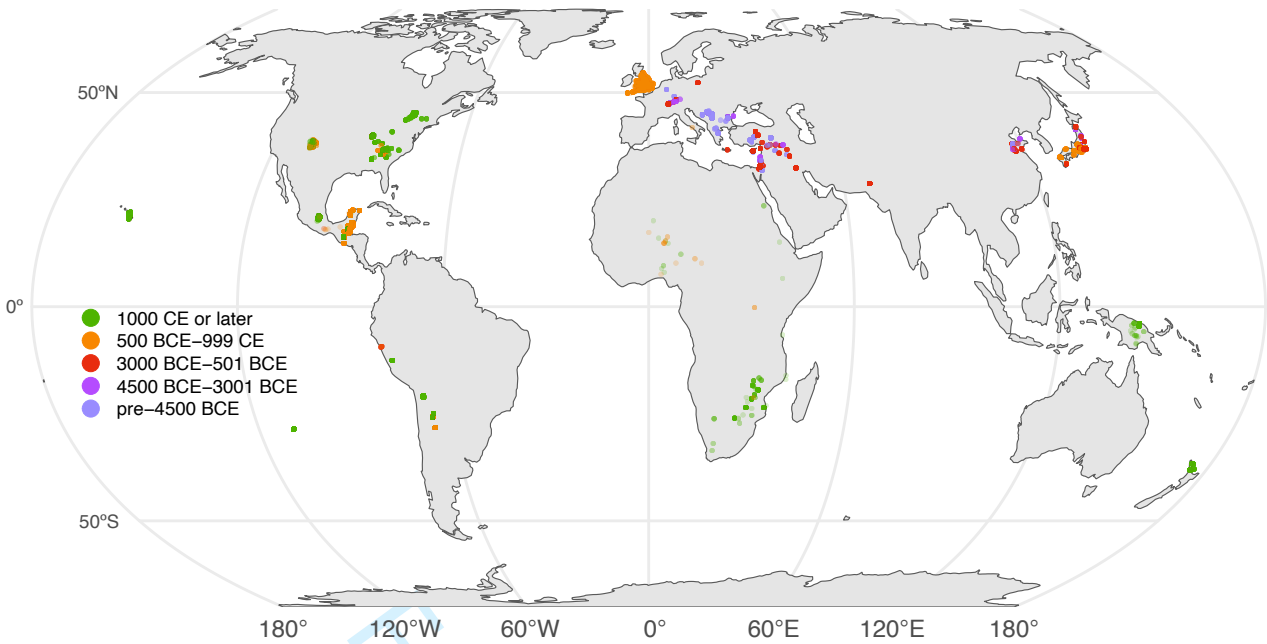
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23 Figure 2. Stone foundations of houses along the coast of Hawai'i Island, Lapakahi State
24 Historical Park. Photo: Mark D. McCoy.
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27 Figure 3. The Loma Pucara site of Ayque (Intersalar Region, Potosi, Bolivia), an altiplanic
28 settlement of the Late Intermediate Period, around AD1300. Photo: Pablo Cruz.
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31 Figure 4. The Great Enclosure (c. 1250-1450 CE) at Great Zimbabwe. The drystone walls
32 enclosed courtyards where multiple houses were built. Photo: Shadreck Chirikure.
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35 Figure 5. Traces of houses and pits at Masudpur 1 (Haryana, India), a settlement of the
36 urban period of the Indus Civilisation. Photo: Cameron Petrie.
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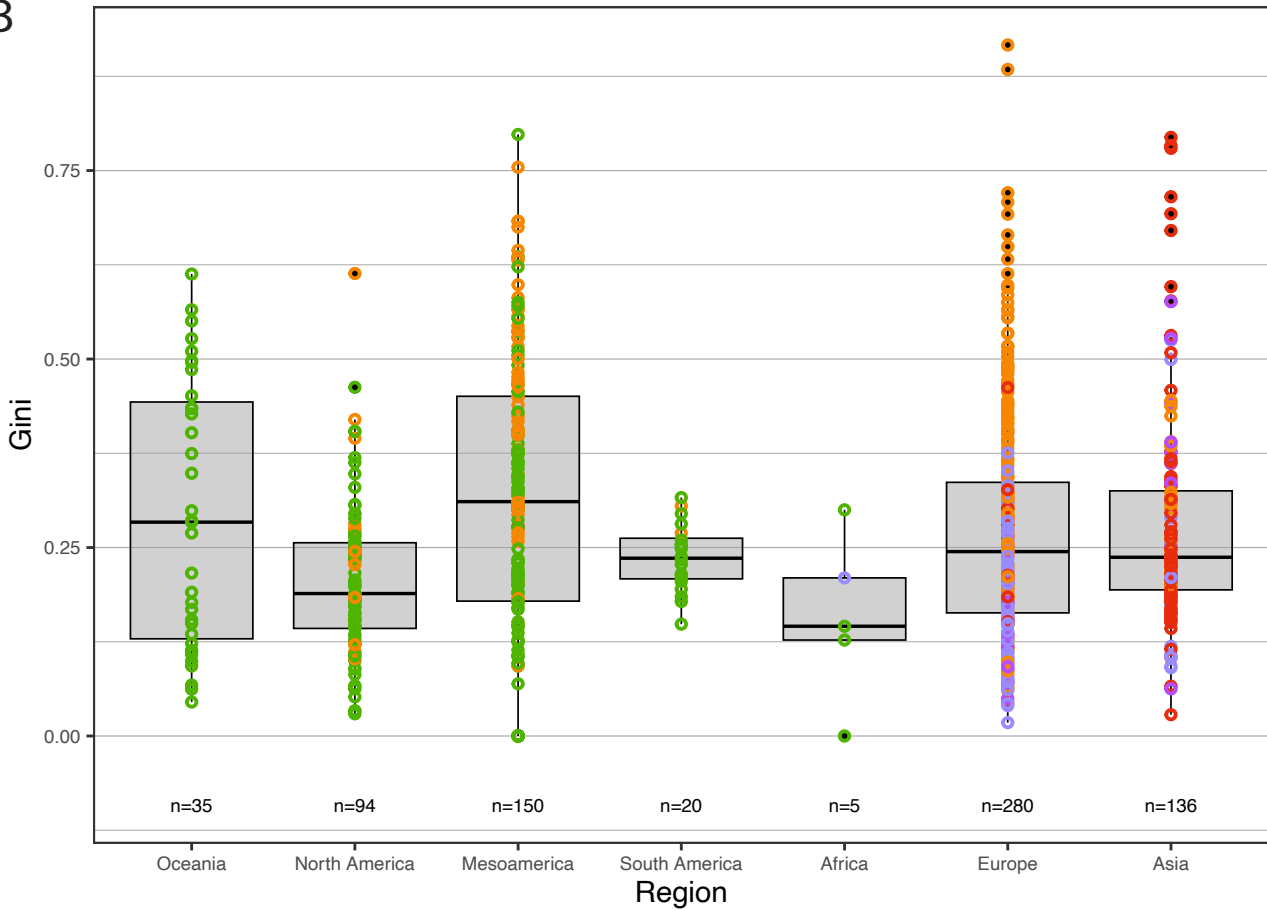




Figure 2. Stone foundations of houses along the coast of Hawai'i Island, Lapakahi State Historical Park.
Photo: Mark D. McCoy.

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Figure 3. The Loma Pucara site of Ayque (Intersalar Region, Potosi, Bolivia), an altiplanic settlement of the Late Intermediate Period, around AD1300. Photo: Pablo Cruz.

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Figure 4. The Great Enclosure (c. 1250-1450 CE) at Great Zimbabwe. The drystone walls enclosed courtyards where multiple houses were built. Photo: Shadreck Chirikure.

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Figure 5. Traces of houses and pits at Masudpur 1 (Haryana, India), a settlement of the urban period of the Indus Civilisation. Photo: Cameron Petrie.

295x221mm (300 x 300 DPI)