

The origins of wealth inequality as reflected in the archaeological record

Philip Guelpa
7 May 2025

A newly published study (“Economic inequality is fueled by population scale, land-limited production, and settlement hierarchies across the archaeological record,” PNAS, April 14, 2025) provides insight into the initial rise of class societies across the world. Using data from 1,100 archaeological sites from Europe, Asia and the Americas, the researchers trace the beginnings of wealth inequality back to over 10,000 years ago, millennia before the first major civilizations (e.g., Egypt, Mesopotamia, the Maya). The study elucidates some of the primary factors in the transition from egalitarian hunter-gatherer social groups to early farming societies in which indications of wealth and status differentiation can be discerned.

The initial processes that eventually led to the emergence of class societies (although the word “class” does not appear anywhere in the PNAS article) began to appear during the last stages of the Pleistocene and the beginning of the Holocene (the post-glacial period in which we have lived for approximately the last 10,000 years). Since there are no written records from those times, the researchers employ a proxy data set—dwelling sizes—specifically the in-ground footprint of structures which are the usual housing remnants, if any, found in archaeological sites. No standing buildings survive from the time period in question. The study gathered data from over 47,000 residential structure remains, documented at 1,100 archaeological sites from around the world. The large sample size alone gives a degree of confidence in the study’s results.

The study identifies several commonalities in the initial emergence of economic inequality:

Growth of wealth differences among households has been a long-term though not universal trend in the Holocene. Marked increases typically lagged plant domestication by 1,000 y[ears] or more and were tightly linked to development of hierarchies of settlement size and land-limited production. We infer that the social upscaling (growth of polities in

population and area) that typically began one to two millennia after agriculture became locally common, and continued in some areas throughout the Holocene, interfered with traditional leveling mechanisms including enforcement of egalitarian norms.

In general, in egalitarian societies the dwelling sizes of constituent family groups tend to be similar at any given settlement, reflecting a general equality in economic and social status. As wealth and social stratification developed, the study found that differences in dwelling sizes begin to appear. As societies become more complex, the number of levels of dwelling sizes increases, reflecting the different levels of social stratification.

A significant observation resulting from this study is that the process of differentiation becomes noticeable roughly one to two millennia after the advent of agriculture, the pace of which varies in different parts of the world. The inference is that the factors driving social stratification were not an immediate consequence of the initial forms of agriculture, which were likely little more than plant tending, weeding and other such practices to favor the growth of targeted plant resources.

Indeed, other archaeologists have hypothesized that agriculture originated in societies with what is labeled “harvesting economies.” These are characterized by the presence of multiple naturally occurring food resources which happened to be located in close proximity to each other, together providing a complete diet. Such settings allowed more or less permanent settlement at a single location, or perhaps two seasonally alternating locations, as opposed to the more typical hunter-gatherer pattern of migration between multiple, temporary settlements to exploit spatially dispersed resources. The latter pattern necessitated light, easily transportable and flexible material culture.

In egalitarian hunter-gatherer societies, the relatively simple technology and more or less equal access to wild

food resources means that each family group is on relatively equal footing with every other in a given community. Therefore, no individual or small group can control access to necessary resources for other members of the community. Social distinctions are primarily based on age and sex. Leadership positions, to the extent they exist, are based on the assent of other members of the social group. As a result, dwelling sizes of the members of a given group tend to be similar.

By contrast, the more sedentary occupation pattern of harvesting economies made the investment of labor to improve the conditions of favored plant species economically rewarding, as well as the development of specialized technology for the efficient exploitation of such resources. Among the latter was the advantage gained through the use of food processing and storage technologies which allowed for the long-term availability of larger amounts of food resources beyond the immediate time of harvest.

In addition, the more stable settlement locations of groups with harvesting economies and the increased reliability of stored food resources encouraged population growth. This set up a positive feedback (i.e., self-reinforcing) loop. The growing population necessitated an increase in the food supplies, promoting expansion and intensification of agriculture, leading to the development of domesticated plants, improvements in technology, and over time the development of a division of labor.

As the authors of the study point out, a key limiting factor for such emerging agricultural groups was the availability of arable land. Competition over rights to this limited resource both promoted innovations to increase productivity, such as irrigation, drainage, and terracing, but also inevitably led to conflicts and social tensions which necessitated adjudication by a “higher authority.” The increasing complexity of these technologies and the need to organize large labor forces for their construction, including individuals with specialized knowledge, required the development of administrative roles.

Another administrative need was the control over and allocation of stored food and other resources. The combination of these factors tended, in areas where such intensification was possible, to a greater need for administrative roles, usually based on the leaders of kinship groups. Since not all land is equally productive, differences in prosperity and wealth would eventually emerge. This tended to lead to the development of hierarchical relationships within and between kin groups. In other words, class differences.

Another significant factor in the relative pace of developing economic inequality within regions suggested by

the study’s authors, although difficult to verify archaeologically, is resistance by some members of a social group to their loss of independence and to the assertion of control by those in the upper levels of the emerging hierarchy. In some societies, even in the recent past, behaviors known as “leveling mechanisms,” such as redistribution and ostracism, functioned to put restraint on incipient social stratification.

In egalitarian societies, a method of social control was the expulsion of members of a community who fell afoul of social norms (i.e., ostracism). As wealth differentiation grew in agricultural societies, attempts to remove offending individuals would have become more difficult. In some societies, social pressure growing from kinship relations imposed requirements for those in leadership roles to distribute some of the food and other resources over which they exercised control to the lower levels of the group in order to validate their qualifications to hold the leadership position. As levels of inequality increased, the enforcement of such practices would have become more difficult.

The article goes on to provide a great deal of fine-grained statistical analysis of some of the factors relevant to explaining regional variations in the pace and specific characteristics of the development of social hierarchies.

Overall, the study concludes that, “Worldwide there is pervasive though not universal evidence for increasing economic inequality some 1,500 y[ears] after plant domestication became locally common (somewhat later in Europe, somewhat earlier in Asia).” Furthermore, “We present strong evidence that a pervasive reworking of settlement structure, partly preceded by, but also accompanying, shifts to more land-intensive strategies of subsistence, together contributed to increasing wealth inequality worldwide. These processes began and had their most important effects on inequality well before writing.”

The great value of this study is that it demonstrates that regardless of the important cultural differences that existed across the globe, the underlying material factors driving this process are largely consistent whatever the setting. Social evolution is determined in the final analysis by objective, lawful processes that can be scientifically discovered and understood.



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