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# Settling down in Southwest Asia: the Epipalaeolithic-Neolithic transformation

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Permanent settlement began in southwest Asia across the end of the Pleistocene (the Epipalaeolithic) and the beginning of the Holocene (the Neolithic). Aggregation represents a transformation of the cultural niche, involving major social and cultural innovations and profound developments of the strategies of subsistence. At first, the scalar stress of living in large, permanent communities was diffused through corporate effort in the construction and maintenance of monumental communal buildings, a complex material symbolism, and increasing intensity of communal rituals; participation demonstrated commitment and conformity to community norms. As cultivated crops and managed herds of sheep and goat gradually became the predominant source of subsistence, the old sharing ethos was overtaken by the household as the central socio-economic unit; the household became the focus for ritual and symbolism. As population aggregations grew larger, their supra-regional networks of socio-economic sharing and exchange also became more complex, extensive and intensive. The new cultural niche based on networked aggregations produced a marked acceleration in both the rate of cultural accumulation and the rate of demographic growth. At the end of the Neolithic, plow-agriculture began in place of horticulture; there are the first signs of mixed agro-pastoral economies, the marking of private property, new technologies (ceramics and copper metallurgy), and, in southern Iraq, irrigation agriculture. At this time, too, the accelerating expansion of the population of farmers is marked by the appearance of their new settlements in all directions.

## KEYWORDS

aggregation, cultural niche construction, sedentism, scalar stress, domestication of plants and animals, socio-economic networks, Neolithic, Epipalaeolithic

## Introduction

This paper sets the cultural-social-economic transformation that occurred between 23,000 and 8,000 BP in southwest Asia in the context of the long term of human cultural evolution. Cultural niche construction theory provides the foundations for the argument of this paper. While the cultural niche may be pushed into adaptations by exogenous factors, it is well able to evolve of itself. Looking at the overall process of human cultural evolution, leading cultural evolutionary theorists such as Sterelny (2011), Henrich (2015), and Laland (2017) have shown how the evolution of the human cultural niche is characterized by the intense positive feedback loops between elements of the niche, its capacity to ensure the intergenerational transfer of increasingly complex cultural packages in parallel with the increasing scale of human social groups. Henrich (2015, p. 57) concludes that, from an early stage in the human evolutionary story, “cultural evolution became the

primary driver of our species' genetic evolution". Laland highlights "the significance of accelerating cycles of evolutionary feedback, whereby an interwoven complex of cultural processes reinforce each other in an irresistible runaway dynamic" (Laland, 2017, p. 3).

The basic claim that underpins this paper is that the emergence of permanent aggregation represents a powerful inflection point in the graph of accelerating cultural, social, demographic and economic evolution: it imparts a distinct acceleration to the rate of cultural, social and economic change (Sterelny and Watkins, 2015). The earliest known example of that transformation of the cultural niche occurred in southwest Asia across the end of the Pleistocene (in archaeological terms the Epipalaeolithic) and the beginning of the Holocene (the Neolithic). The formation of aggregations replaced the age-old mobile forager strategies, involving profound social and cultural adaptations and equally profound developments of the strategies of subsistence economics (often referred to as "the origins of agriculture"). Throughout, or at least until recently, the trigger for this major transformation has been thought of in simplistic evolutionary terms, whereby an external, exogenous, environmental factor such as climate change provoked cultural adaptations.

## Unfolding in four stages

The transformation of the cultural niche in southwest Asia can be summarized in four stages, the first of which begins around 23,000 BCE, in the heart of the Last Glacial Maximum, and continues for about nine millennia. The transformation began within a zone that has been labeled the hilly flanks of the Fertile Crescent, an arc of relatively well-watered hill-country from Israel, the Palestinian territories, and Jordan, through Lebanon and western Syria, turning eastwards through southeast Türkiye, across north Iraq, and the Zagros piedmont and intermontane valleys along the Iraq-Iran border. For more than 70 years most field research has been focused within that arc; the transformation process is now beginning to be found and documented in parts of central Anatolia, and the island of also Cyprus has a surprising part to play.

The first phase covers most of the Epipalaeolithic period. By contrast with the Upper Paleolithic period, the number of sites in the Epipalaeolithic rapidly increases, and the degree of mobility of forager groups reduces. At the boundary between the Upper Paleolithic and the beginning of the Epipalaeolithic periods, at Ohalo II in north Israel a group of hunter-gatherers stayed seasonally, possibly throughout the year, at an ecotone location from which a wide range of different food resources were on hand (Nadel and Werker, 1999; Nadel, 2017). They harvested a wide range of grasses and wild cereals. The Ohalo research team has suggested that these wild cereals were beginning to be tended and cultivated (Nadel et al., 2012; Snir et al., 2015a,b). Later in this first period, in seasonal wetland areas within the semi-arid of north Jordan, several "aggregation sites" have been identified, where very large numbers of hunter-gatherer groups gathered in seasons of plenty. The deposit at the site of Kharaneh IV, for example, is up to 2 m thick, and extends to more than 21,000 square meters (Maher, 2010; Macdonald and Maher, 2022).

## The beginning of permanent settlements

The second phase includes the last part of the Epipalaeolithic and the earliest Neolithic (Pre-Pottery Neolithic A), approximately 14,000 and 8,500 BCE. In this phase populations became fully sedentary, living in what seem to us to be small settlements that nevertheless, by contrast with earlier periods, represent people living together in larger numbers in permanently co-resident societies. How to understand late Epipalaeolithic settlement sites such as Eynan in north Israel, where there is a stratigraphic succession of permanent buildings that in total cover >2,000 years, remains to be resolved (Valla and Bocquentin, 2009; Valla et al., 2017). Is it possible that what looks like a permanent settlement of successively rebuilt stone houses was continuously occupied throughout that length of time? Whether in the late Epipalaeolithic or the early Pre-Pottery Neolithic, the sedentary way of life in a permanent settlement depended on hunting and gathering within the territory immediately around the settlement; the broad-spectrum strategy was occasioned more by the needs of a sedentary population than being enforced by the reduced availability of large ungulates. The evidence now shows that these communities were engaged in pre-domestication cultivation (Willcox, 2012), managing crops of both cereals (primarily wheat and barley) and legumes (notably pulses such as lentils and chickpeas).

Across the whole of the Epipalaeolithic-Neolithic transformation there were dramatic shifts in world climate, although the evidence for the local impact of global climate change varies considerably. Nevertheless, the rapid amelioration of climate at the beginning of the Holocene, around 9,500 BCE, may well have encouraged the proliferation of permanent settlements around the hilly flanks and in central Anatolia. Coming together to live in permanent settlements required the greater implementation of ritual activities and the construction of large and elaborate communal buildings, for example at Jerf el Ahmar in north Syria (Stordeur et al., 2000; Stordeur, 2015). The communal buildings of Jerf el Ahmar, like those of the more famous site of Göbekli Tepe in southeast Türkiye, are associated with sculpted stone stelae, massive T-shaped anthropomorphic monoliths (in the case of Göbekli Tepe and other nearby settlements), and a complex shared vocabulary of symbolic imagery. The burial of their dead in places where they had lived was a practice that had begun as far back as the late Middle Paleolithic. In the later Epipalaeolithic there are sites with clusters of elaborate burials under buildings. In the early Pre-Pottery Neolithic there is a range of burial practice within the permanent settlements. Along the Tigris valley in southeast Turkey, each settlement was different in terms of the numbers of intramural burials, with Körtiktepe topping the table with several hundred bodies buried below the floors of the houses (Benz et al., 2018).

The new, larger-scale societies needed new or enhanced social mechanisms to ensure social cohesion among numbers of people who were unrelated or not directly known to one another. Sterelny (2018, 2020) shows how the emergence of what he calls "articulated religion" involved the costly signaling of collective rituals within the linked stories of a mythology or ideology. In the larger and more complex network context of super-communities made

up of (relatively) large, sedentary communities, that articulation took the form of architectural symbolism, sculpture and iconic symbols (Watkins, 1990, 2004a,b). From another perspective, the new cultural niche required new social institutions that countered the increased stresses of living in sedentary communities and dampened the inevitable conflicts. Dunbar (2022) argues that the community-level institutions and rituals such as the creation, maintenance and use of communal buildings served to enhance the sense of belonging and community bonding.

## “Mega-sites” and supercommunities

The third phase covers the later Pre-Pottery Neolithic period (~8,500–6,500 BCE). The size of co-resident communities grew, and, in a number of cases, there would have been many hundreds or several thousand people living together in settlements that have been called “mega-sites”. In some cases the growth of the population was too rapid to be simply the result of population growth; it has been suggested that the mega-sites were social environments that attracted more and more incomers. Despite the challenging scale of their populations, many sites of this period persisted for many centuries. There were significant economic (and therefore presumably social) changes from around 8,800–8,500 BCE; the communal buildings and shared storage came to an end, and the evidence for fully domesticated varieties of cereals and animals implies a significant upscaling in the investment in both cultivation and herding. In this phase the subsistence economy was increasingly dependent on hoe-agriculture of domesticated cereals and pulses and the herding of sheep and goat. Wild cattle were domesticated in a few places (Arbuckle, 2014), and were taken to Cyprus around 8,500 BCE (Vigne et al., 2023); cows for milking and oxen for plowing become significant in or after the fourth phase.

Social and cultural networking in the later Pre-Pottery Neolithic was both more intensive and more extensive, creating regionally extensive cultural super-communities (Watkins, 2008). One dimension of the complexity and intensity of networking has been explored through the distribution of central Anatolian obsidian throughout settlements in the Levant (Ibañez et al., 2015; Ortega et al., 2016). The obsidian statistics show the growth through time in the amounts in the network, standing as a proxy for its intensification. The exchange networks also became more complex and sophisticated with time. Communities tended to concentrate on building relations with larger settlements up to 180 km away. The ratio of obsidian (from sources hundreds of kilometers away) to flint (available locally) varied markedly in relation to settlement size, particularly in the later Pre-Pottery Neolithic. “Big” sites of that period are at least six times larger in area than “small” sites, but the “big” sites had 33 times more obsidian than the “small” sites that they served. The distribution is modeled in terms of “small-world” networking; and the results look like the effect of settlement scaling (cf. Lobo et al., 2020), whereby “productivity” or “wealth” increases with the scale of the settlement’s population in accordance with a super-linear exponent, as these larger settlements began to play a key role as hubs in regional social exchange networks.

At one level, each community attended to the needs of social cohesion and social bonding, resulting in the individual characteristics of each of them in the archaeological record. At the same time there were supra-regional “interaction spheres” within which these societies were actively engaged. The peer-polity interaction sphere model proposed by Renfrew (1986) seems appropriate: that is a kind of interaction sphere where all the participating communities show by their sharing and exchange that they shared the same values, while each had its own particular way of doing so. Renfrew emphasized the importance of “competitive emulation” within the interaction sphere. The things in the social exchange networks, such as obsidian, marine shells, figurines and decorated stone bowls had become standardized, a process that Renfrew calls “symbolic entrainment”. Inter-communal competition leading to conflict has been seen to be a risk, and inter-community warfare is not uncommonly encountered in the ethnographic literature. Archaeological examples of warfare in Neolithic contexts have been found across Europe, but not in the Neolithic of southwest Asia.

## Intensification or dispersal

The fourth phase (7,000–6,000 BCE) starts with the end of the Pre-Pottery Neolithic and continues through what archaeologists consequently call the Pottery Neolithic. The large, classic later Pre-Pottery Neolithic settlements declined rapidly in size or were abandoned, and there was a spread of many, smaller, less densely built-up settlements across a much wider area. Communities by this time had reliable, if still simple, mixed farming practices, and they could expand into environments that were not practical for the earlier communities. Settlement within southwest Asia spread out beyond the hilly flanks and central Anatolia, implementing new adaptations as it extended into the drier tracts of inland Syria and Jordan, new farming strategies across the green Jezirah of north Mesopotamia, and new irrigation technology in the alluvial lands of southern Iraq and southwest Iran. At the end of the Neolithic domesticated cattle opened the way to extensive plow-agriculture in place of horticulture by hand. There are the first signs of mixed agro-pastoral economies, and the marking of private property.

By the end of the Neolithic there existed the potential for the accumulation of wealth, whether in real estate or flocks and herds, and heritable wealth is the foundation of social and economic inequality (Borgerhoff Mulder et al., 2009; Bogaard et al., 2019). The use of painted pottery spread throughout the whole region, signaling new ways of storing, preparing, cooking and—importantly—serving and sharing food. From 7,000 BCE there was expansion not only within the arc of the hilly flanks of the Fertile Crescent, but also an outward expansion, which is best documented in a westward direction, from northwest Anatolia into the Balkans, into the western Anatolian coastlands, the Aegean islands, and the Greek mainland—the beginning of an extraordinarily rapid expansion of farming population across Europe. From this point therefore there were two trajectories. Within the core of southwest

Asia the trajectory was toward intensification, diversification, and further acceleration of cultural accumulation (for example, dairy farming, plow agriculture, irrigation, metallurgy, textiles, ceramic mass-production). Beyond southwest Asia, for example across Europe, there was—for a time—almost limitless new land to exploit, and the new cultural niche was spread by the rapidly expanding population, adapting repeatedly to new environments (and, in some regions, reacting with indigenous foraging populations).

What is striking about the Epipalaeolithic-Neolithic transformation in southwest Asia is the acceleration in the tempo of cultural cumulation (innovation), and the parallel acceleration in the rate of population growth. Both cultural niche construction theory and settlement scaling theory would expect that, as population numbers and their social interconnectivity increased, so there should be an increase in the tempo of innovation. Thus the Epipalaeolithic-Neolithic transformation in southwest Asia established the new baseline conditions for the unprecedented rates of cultural and socio-economic evolution of later periods.

## Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

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## Author contributions

The author confirms being the sole contributor of this work and has approved it for publication.

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## Supplementary material

The Supplementary Material for this article can be found online at: <https://www.frontiersin.org/articles/10.3389/fhumd.2023.1250167/full#supplementary-material>

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