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The Coming of Farming

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The Neolithic Revolution

The coming of farming is often called the “Neolithic Revolution”. The word “Neolithic” is derived from the Greek for “new” (*neo*) and “relating to stone” (*lithic*), and this period is often called the New Stone Age. The innovation in stone-making technology which this label implies was that people started *polishing* stones, rather than just chipping them, as they had done before. Why was this so

important? Because, besides making axes and arrow heads for hunting, they were now making tools for farming, such as scythes and hoes. For these, the stones needed polishing, to give them a flat but sharp edge.

The transition from hunter-gathering to farming is described as a “revolution” because it constituted the crucial breakthrough which made possible all later human advances. Moreover, during its course every aspect of peoples’ lives was transformed.

Before we go any further, it is important to note that the Neolithic Revolution also gave rise to a second kind of economy, based on the raising of domesticated animals (sheep, goats, cattle, pigs, horses and so on). This is called pastoralism. Some see this as a specialist kind of agriculture, but pastoralism involves a lifestyle so different from that of most farmers that it is dealt with in a separate article [see [Early Pastoralists \(/pastoralists\)](#)].

A backward step?

It is very doubtful whether the people involved in this “revolution” actually noticed that they were living in a time of change. The transition took place over many generations, probably in a sequence of many tiny steps taken in response to practical problems. For hundreds, even thousands of years, early farmers continued to forage for fruit and berries and hunt wild game, and it was only gradually that their economy shifted more towards agriculture. It would only have been when the farming population grew to an extent which restricted hunting and foraging that they became less important.

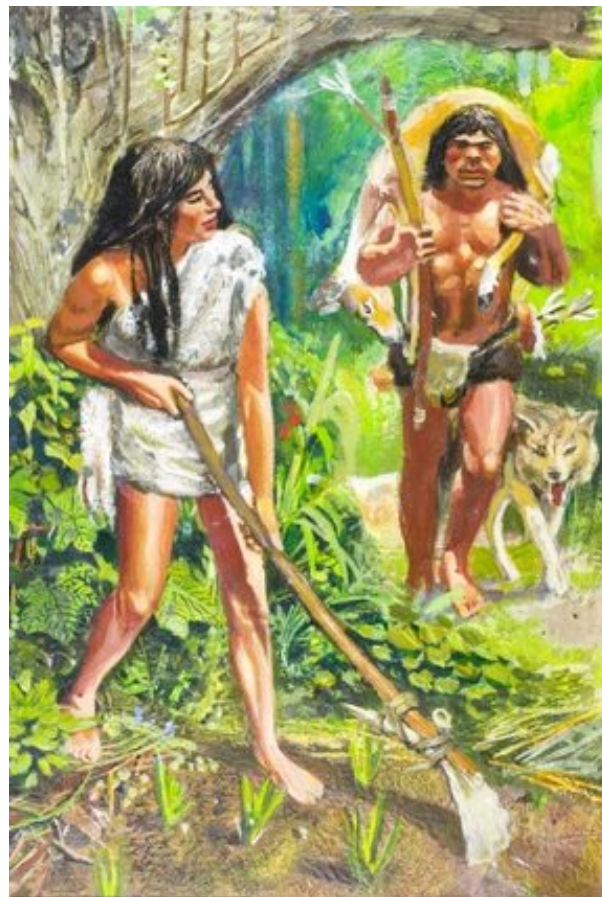
The gradual nature of the transition also meant that people would not have noticed that, in some ways, their lifestyles were getting more onerous and less healthy. Farmers were creating a more reliable source of food, but their diets were becoming increasingly restricted. Farming and related activities also required much harder work than hunting and gathering. The human remains of early farmers show more health problems, and somewhat shorter lives, than amongst hunter-gatherers.

Some scholars have argued from this that the coming of farming was a step back for humankind (*). Without this step, though, no further advances would have been possible. Moreover, the archaeological record needs careful interpretation. It could be, for instance, that the remains we have from hunter-gatherer days are of people who tended to be of higher status (the bodies of the majority being just left to wild animals to dispose of), which may well have implied above-average age at death. Also, the existence of less healthy individuals in the archaeology of early farming communities implies societies that were able to allow their weaker members to survive – which most today would consider a positive thing.

The World in 10,000 BC

In 10,000 BC, the topography of the Earth was much as it is today, albeit with plenty of “small” differences, such as the English Channel not yet dividing the British Isles from the rest of Europe (that was to happen about 7000 BC), and the coastlines of China and Mesopotamia being different (by some hundreds of miles in places!). For the past 12,000 years or so, we have been living in a period of comparative topographical stability, which some scientist think may be coming to an end.

Across the continents, the basic distribution of human races was more or less as it would be until about AD 1500, when Europeans ventured out across the oceans. The Mongoloid peoples lived in eastern Asia, with an off-shoot in the Americas; the Black races inhabited Africa south of the Sahara; the Caucasoids lived in Europe, western and southern Asia and northern Africa; and the aboriginals lived in Australia and New Guinea.



Socially speaking, however, the world of 10,000 BC was very remote from that of today. For a start, it was an empty world. There were perhaps ten million humans in total. All were hunter gatherers (/hunter-gatherer) – that is, they hunted animals and gathered wild plants for their sustenance.

A Changing World

The world was changing, however. It was getting warmer, and had been for several thousand years. The last Ice Age had started to retreat about 17000 BC (a process that would not be complete until ten thousand years later). For a further few thousand years more, some regions would experience

climatic changes associated with this warming. Notably the lush grasslands of northern Africa would gradually give way to the greatest desert on Earth, the Sahara.

The world was changing in another way, too. Humans were beginning to acquire capabilities that would eventually enable them to re-fashion much of the planet's surface to meet their own particular needs.

In pre-agricultural, [hunter gatherer \(/hunter-gatherer\)](#) societies, the average population density was no more than 10 people per square mile. Farming, however, concentrates edible plants and animals into a much smaller area of land, ensuring that it could support many more people. In early agricultural society it took about 25 acres of land to feed one family. This meant that people did not have to regularly move from place to place, and that more stable settlements could be formed; it also meant that the natural environment where farmers settled was altered to allow the few species of plants and animals useful to humans to flourish at the expense of all other species.

The Origins of Farming

Evidence for the harvesting of wild cereal grasses dates to around 10,000 BC in the Middle East; and the first flint sickles to have been found probably came from this period. There is no evidence of cultivation of the soil at that time, but by 9000 BC the crucial breakthrough had occurred in Palestine and southern Turkey (according to our current knowledge), where cereals such as wild emmer and barley, which flourished in the region, were deliberately grown and bred.

It seems that quite separate centres of farming appeared in [China \(/history-ancient-east-asia#yangtze\)](#) (based on millet in the north and rice in the south) and later, [Sub-Saharan Africa \(/history/africa-1500bc\)](#) (based on various tropical plants); a third centre may have been [South Asia \(/civilizations/Indus-Valley-civilization#prehistory\)](#). These formed the nuclei of different farming expansions. Another centre of very early plant domestication was in New Guinea, where gardens of large peas, beans, cucumbers and water chestnuts were grown, but this seems to have remained quite isolated.)

While the domestication of selected grasses was taking place, something similar was occurring with some animals. The first traces of sheep-keeping go back to around 9000 BC, in northern Iraq. Within a thousand years or so, goats, pigs and cattle had been added to the list. Once domesticated, these animals were bred to improve their usefulness to humans, and soon they were yielding not only meat for food and skin for clothing, but also milk for additional nutrition. They also produced manure, an excellent fertiliser.

Early farmers mostly raised both crops and animals. The two activities are complimentary, as animals provided traction for plows and manure for crops, as well as being an important source of food. Areas of poor soil and little rainfall, however, are unsuitable for growing crops. In such places, such as in the grasslands of the Middle East and central Asia, some groups specialized in pastoralism – the keeping of herds of animals. Whilst their numbers were far fewer than the farmers, the pastoralists were to have a big impact on world history, right up to recent times. They are dealt with in a separate article, Early Pastoralism.

New Technologies

The domestication of plants and animals led to a host of other technological advances. Some were directly connected with agriculture, others were made possible by the more settled lifestyle that the Neolithic Revolution brought about.

Pottery

By 7000 BC, pottery was being made in Middle Eastern villages. This is an important marker for archaeologists, as pottery is associated with truly settled life – its weight, bulk and fragility make it unsuitable for the wandering life of the hunter-gatherer. It also requires firing at high temperatures, a technique involving large brick-built kilns.



(<http://stoneagein3w.wikispaces.com/Farming>).

The early potters made their pots by adding coils of clay, layer upon layer. Later, around 4000 BC, the potter's wheel came into use in the Middle East. One feature of this was that (initially at any rate) pots become less highly decorated. This was because the potter's wheel allowed the mass-

production of ceramics, showing that larger and denser populations were providing a strong market demand for ceramics, which were now being produced by full-time potters. These signs of increasing specialization are indications that urban civilization is on its way.

Incidentally, the wheel was used in pottery long before it was applied to transport. This later development took place amongst pastoral peoples on the steppes north of the Black Sea.

Textile technologies

Textile technologies were also very important to early farmers. Whereas hunter-gatherers had used the skins of animals to clothe themselves, the domestication of plants and animals gave farmers access to new textiles, superior in every way. Flax (for making linen) was one of the first recorded crops; and with sheep and goats, people had regular access to animal wool. Later, the cotton plant was domesticated (firstly in the Indus Valley civilization), and later still (in China, c. 3000 BC) the silk worm began to be cultivated for the fibre it produced.

All these fibres required processing to make them fit to wear, with spinning and weaving being the core activities. Hunter-gatherers knew simple spinning techniques, which only required small sticks around which to wrap fibres. These gradually evolved into hand spindles, a process completed by 5000 BC at the earliest (the spinning wheel, a comparatively complex machine, would not appear for thousands of years).

Weaving is a more complicated process, but hunter-gatherers certainly practiced basketry, which uses the same basic principles as textile weaving. Looms are required to weave any large amount of cloth, however, and, being comparatively large and heavy, these would not have been easy for hunter-gatherer groups to carry around with them. Once settled villages had appeared, however, looms soon came into use, with the earliest dating to c. 7000 BC.

Decoration

Hunter-gatherers had certainly produced decorative items for wear, using small stones, bone, teeth and so on. The early farmers inherited these practices, and added to the range of materials used. Obsidian, a type of volcanic glass, seems to have been accorded mystical significance and was traded over wide areas; and metals such as copper and tin were used in jewellery. At this stage these soft metals were hammered into shape and were not suitable for use in either farming or warfare.

Plows

A crucial development in early agriculture was the invention of the plow. The earliest farmers used digging sticks and hoes to prepare the ground for cultivation. The lightly scratched soil would soon become exhausted, and farmers had constantly to clear new ground. To do this they set fire to the

stumps and brush that was left over from cutting the trees, and this also left the soil rich in potash and lime. Once cleared and fired, the new land was able to give several years of good harvests, and after it had ceased to do so, was left waste as the farmers moved on to another area to clear and fire. This primitive approach is known as “slash and burn” or “swidden” farming.

The two-man plow – one man pulling on a rope in front, the other pressing the plow’s point into the ground – made its appearance in the Middle East around 7000 BC. Later, a cross-beam was added for greater rigidity and control.

Eventually, from about 4000 BC, the use of cattle transformed plowing, making it possible to cultivate larger areas and deeper soils. The castration of bulls to turn them into oxen seems to have first happened in northern Iraq at about the same time, and this also aided plowing. A little later, the invention of the yoke in [Mesopotamia \(/timemap/iraq-3500bc\)](#) meant that two oxen could be bound firmly together to pull much heavier plows. These developments would have allowed increasingly intensive farming, as the deeper the ground is turned the more slowly it becomes exhausted. Also, cattle and other animal manure would have helped fertilize the soil.

Irrigation

A major advance in farming practices occurred in 6000 to 5000 BC, as farmers began to settle the plains of Mesopotamia (<http://www.timemaps.com/encyclopedia/ancient-mesopotamia-history>). The climate here is very dry, except in spring when the rivers Tigris and Euphrates break their banks and flood a huge area around about. The floods makes the soil very fertile, and of course provide a lot of water, but for only a short period of time. To take advantage of this situation the settlers had to learn to control the supply of water so that it was available throughout the growing season. The farmers developed techniques of irrigation, constructing a system of dykes and dams to hold the water back from their villages during the spring floods, and digging ponds and channels to take the river water to their fields for the rest of the year.

This process was repeated in the [Nile \(/ancient-egyptian-history-3500bc\)](#) and Indus valleys (in Egypt and South Asia respectively) a little later. The Yellow River valley in China has a rainier climate, so irrigation was not so essential in getting agriculture started here; however, irrigation schemes would later be undertaken on a large scale to make farming more intensive, along with the drainage of large swamps to create new farmland and the construction of dams to control the devastating flood waters of the great river.

In the Yangtze valley of central China, rice crops grown in flooded (“paddy”) fields was pioneered. This required perhaps the most sophisticated system of water control of all.

The Spread of Farming

Modern genetic techniques suggest that agriculture was largely spread by the slow migration of farmers themselves. It also seems clear that in some times and places, such as in northern [South Asia \(/civilizations/Indus-Valley-civilization#prehistory\)](#), it was spread by the passing on of agricultural techniques to [hunter-gatherers \(/hunter-gatherer\)](#). The farming “frontier” seems to have pushed outwards into hunter-gatherer territory at the rate of about one mile per year. It therefore took several millennia to spread throughout western and [southern Asia \(/history/south-asia-3500bc\)](#), and across northern [Africa \(/history/africa-3500bc\)](#) (including Egypt) and [Europe \(/history/europe-3500bc\)](#). By [3500 BC \(/history/world-3500bc\)](#) most human beings were farmers, and would remain so until the [Twentieth century \(/history/world-1914ad\)](#).

The settling of farmers on new land led to hunter-gatherers being either pushed off their land, or annihilated, or absorbed into the expanding farming population.

Wherever farming went, the more reliable food source which it produced led to a massive upswing in population, and to dramatic reductions in the variety of local flora and fauna, as more and more land was given over to just a few varieties of plants and animals of use to humans. For the first time, humans were deliberately altering the land for their own purposes. Large areas were turned into fields and pastures, and any plants and animals not useable were ruthlessly uprooted and relentlessly kept away.

Large regions, notably the river valleys of the Tigris and Euphrates in Mesopotamia and the Nile in Egypt, the Indus in South and the Yellow and Yangtze rivers in China, were totally transformed: forests cleared, swamps drained, fields laid out, rivers dammed, channels dug, ponds constructed, hillsides terraced, villages built. In short, whole landscapes were domesticated.

Away from the river valleys the transformation was patchier and less pervasive, as Stone Age farming practices did not allow intensive agriculture in any but the most favourable locations.

Early farming societies

The coming of farming led to a radical transformation of human society. Whereas hunter-gatherers had lived in small family groups, erecting temporary shelters in their wanderings across the landscape, farmers settled down in more permanent villages. Many of these were tiny hamlets of less than fifty or so individuals; but some villages, especially in more fertile areas (such as river valleys) could house several hundred inhabitants. Eventually some of these would grow into towns and cities.

Authority

Neolithic villages would have been structured along clan lines: groups of families tracing their origins back to a (frequently mythical) common ancestor. Villages would have included one or more of these clans. The clan leaders were the village elders, and where more than one clan existed, one “royal” clan would often have provided a village “king”.

It seems clear that in most cases the role of a “king” was religious rather than political, with no means of coercing his fellow villagers to obey him. In the days when religion was a hugely important part of life, however, with no real demarcation between the spiritual and the material, such village “kings” would usually have been the preeminent authority-figures in their communities.

In modern-day parlance, villages would have been “independent” from one another (though we must bear in mind that the whole concept of “independence” would have been incomprehensible to the people of the time, just as the concept of “politics” as an activity in its own right, distinct from religion or normal social intercourse, would have been). There would however have been cult centres which commanded the reverence of people from all the villages in an area. The villagers would have visited the local shrine regularly, using the opportunity to exchange produce, make inter-village marriage alliances, discuss matters of joint concern or try to resolve disputes between villages. Such inter-village relations would have been underpinned by the religious sanction deriving from the cult, and the shrine’s shamans or priests would have lent their authority and prestige to helping maintain peace between the people of different villages. In all likelihood they would have been called on to hear disputes, and to make decisions applying to more than one village.

The moral authority of such cult centres could only go so far, however. Inter-village disputes often became more intense than could be resolved peaceably. Indeed, as anthropologists attest, cult centres often did not even try to resolve inter-village disputes, and clashes between villages were frequent, and often lethally violent.

Social class

Neolithic farming practices were very unproductive by later standards, and early farmers were generally able to grow only enough food for their own needs, and little more. This meant that almost everyone had to spend their time in agriculture or related activities. Except in the most favoured locations, as we shall see, there was no surplus to feed a significant class of non-farmers (professional artisans or soldiers, for example).

It is clear, however, that many communities included individuals – hereditary headmen, for example, or cult priests – who enjoyed higher status than the rest, and it is quite possible that some of these would have been able to live off the gifts offered by the other members of the community.

There would also have been present in many villages some of inferior status to the rest – people captured in raids, for example, or condemned to slavery through committing some crime. These would have had considerable social stigma attached to them, and would have had to undertake roles which other villagers would shun – as domestic servants in the headman's house, for example, or slaves on his farm.

Rudimentary class distinctions were thus beginning to show themselves in some Neolithic communities. On the other hand, early farmers had to work cooperatively in order to clear land, plow fields and harvest crops. The concept of private property lay far in the future. These factors – as well as the smallness of the surpluses available – will have limited the scope for different classes. It was only in the river valleys, as the populations there grew denser and produced larger and larger surpluses, that true class-based societies began to appear for the first time [[The Origins of Civilization \(/origins-of-civilization\)](#)].

Women

Women may well have had lower status in farming communities than amongst hunter-gatherers, although, since we really know very little about either ancient hunter-gatherers or early farmers, we can't be sure. It is the case, however, that in many of today's hunter-gatherer societies women have a higher status than in traditional agricultural communities.

If an increased inequality between the sexes was indeed the case, the fact that women provided most of the nutrition in hunter-gatherer groups may have been a factor. In farming communities men were the main breadwinners, with women allocated the more ancillary roles of child care, food processing and clothes making. It is also possible that hunter-gatherer groups, if they were to survive in a hostile environment, would have needed all members, of whichever sex, to have the trust and respect of all the others. The ability to rely on each other could have made the difference between life and death on a regular basis. In farming communities, which were larger and had a more reliable food source, this was perhaps less so.

Religion

Animistic beliefs (in which many features of the natural environment are imbued with spirits) and ancestor worship were probably common in Neolithic times. By the end of the period the polytheistic religions – which differ from animism in having a more restricted pantheon of gods and goddesses, which are not identified with natural phenomena so closely – practiced in ancient Egypt, ancient Mesopotamia and amongst the Indo-European peoples had clearly emerged.

As with the hunter-gatherers before them, it should be emphasised that the concept of "religion" as a separate element within life and culture would not have been understood by the people of this period. For them, the spiritual dimension infused all activities and all things.

One of the striking developments of Neolithic times is the appearance of numerous religious centres, easily identifiable in the archaeological record. Examples have been found all over Eurasia, with megalith (standing stones) sites as far apart as England and Korea. The ever larger and more elaborate temple complexes of Mesopotamia became the nuclei around which the earliest cities grew up.

These early example of monumental architecture reflect the increasing organization of religious life within communities. The cult centres were undoubtedly tended by priests, who conducted the public rituals which were the focus of all community life. They may well have been the successors to the earlier shamans (who continued to exist in many places), and like them, were the most revered figures in the community. Their sphere of activity would have gone well beyond what we consider religious; they would have been judges, arbitrators and probably law-makers. In the river valleys of Mesopotamia, Egypt and elsewhere, some of their number would become the scribes and officials in the states that would emerge at the end of the Neolithic; the high priests would become kings.

Trade

Highly-prized items such as pieces of obsidian could travel long distances within the Neolithic world, and extensive trade routes have been identified. However, these items were not carried by professional merchants over long distances; rather, the trade was carried out by a series of local exchanges, with communities swapping goods with one another, perhaps as part of their effort to maintain peaceable relations with one another. The nearest the Neolithic world got to specialist traders were the nomadic pastoral groups, some of whom may have used the contacts they made with settled peoples to exchange goods over a wide area. This has certainly been the case in more recent times.

The End of the Neolithic

The Neolithic period began to draw to a close shortly after 4000 BC, as urban, literate societies began to emerge in Mesopotamia, Egypt and the Indus valley. In other places, the Neolithic lasted longer, and was only brought to an end as the Bronze Age spread from Mesopotamia, from the mid-3rd millennium BC onwards.

Even then, the great majority of the people lived and worked as their Neolithic ancestors had done, as bronze was too expensive to be used widely in farming. It would only be with the spread of iron tools, in the centuries after 1000 BC, that Neolithic practices and lifestyles could at last be superseded.

* for example, Y N Harari, in *Sapiens: A Brief History*