## General

The Neolithic or New Stone Age (from Greek νέος néos 'new' and λίθος líthos 'stone') is an archaeological period, the final division of the Stone Age in Europe, Asia, Mesopotamia and Africa (c. , BC to c. , BC). It saw the Neolithic Revolution, a wide-ranging set of developments that appear to have arisen independently in several parts of the world. This "Neolithic package" included the introduction of farming, domestication of animals, and change from a hunter-gatherer lifestyle to one of settlement. The term 'Neolithic' was coined by Sir John Lubbock in as a refinement of the three-age system.

The Neolithic began about , years ago, when farming appeared in the Epipalaeolithic Near East and Mesopotamia, and later in other parts of the world. It lasted in the Near East until the transitional period of the Chalcolithic (Copper Age) from about , years ago ( BC), marked by the development of metallurgy, leading up to the Bronze Age and Iron Age.

In other places, the Neolithic followed the Mesolithic (Middle Stone Age) and then lasted until later. In Ancient Egypt, the Neolithic lasted until the Protodynastic period, c.  BC. In China, it lasted until circa BC with the rise of the pre-Shang Erlitou culture, as it did in Scandinavia.

Approximate centers of origin of agriculture in the Neolithic Revolution and its spread in prehistory: the Fertile Crescent (, BP), the Yangtze and Yellow River basins (, BP) and the New Guinea Highlands (,–, BP), Central Mexico (,–, BP), Northern South America (,–, BP), sub-Saharan Africa (,–, BP, exact location unknown), eastern North America (,–, BP).

Following the ASPRO chronology, the Neolithic started in around , BC in the Levant, arising from the Natufian culture, when pioneering use of wild cereals evolved into early farming. The Natufian period or "proto-Neolithic" lasted from , to , BC, and is taken to overlap with the Pre-Pottery Neolithic (PPNA) of ,– BC. As the Natufians had become dependent on wild cereals in their diet, and a sedentary way of life had begun among them, the climatic changes associated with the Younger Dryas (about , BC) are thought to have forced people to develop farming.

The founder crops of the Fertile Crescent were wheat, lentil, pea, chickpeas, bitter vetch, and flax. Among the other major crop domesticated were rice, millet, maize (corn), and potatoes. Crops were usually domesticated in a single location and ancestral wild species are still found.

Early Neolithic farming was limited to a narrow range of plants, both wild and domesticated, which included einkorn wheat, millet and spelt, and the keeping of dogs. By about BC, it included domesticated sheep and goats, cattle and pigs.

Not all of these cultural elements characteristic of the Neolithic appeared everywhere in the same order: the earliest farming societies in the Near East did not use pottery. In other parts of the world, such as Africa, South Asia and Southeast Asia, independent domestication events led to their own regionally distinctive Neolithic cultures, which arose completely independently of those in Europe and Southwest Asia. Early Japanese societies and other East Asian cultures used pottery before developing agriculture.

In the Middle East, cultures identified as Neolithic began appearing in the th millennium BC. Early development occurred in the Levant (e.g. Pre-Pottery Neolithic A and Pre-Pottery Neolithic B) and from there spread eastwards and westwards. Neolithic cultures are also attested in southeastern Anatolia and northern Mesopotamia by around  BC.[citation needed]

Anatolian Neolithic farmers derived a significant portion of their ancestry from the Anatolian hunter-gatherers (AHG), suggesting that agriculture was adopted in site by these hunter-gatherers and not spread by demic diffusion into the region.

The Neolithic (PPNA) period began around , BC in the Levant. A temple area in southeastern Turkey at Göbekli Tepe, dated to around  BC, may be regarded as the beginning of the period. This site was developed by nomadic hunter-gatherer tribes, as evidenced by the lack of permanent housing in the vicinity, and may be the oldest known human-made place of worship. At least seven stone circles, covering acres ( ha), contain limestone pillars carved with animals, insects, and birds. Stone tools were used by perhaps as many as hundreds of people to create the pillars, which might have supported roofs. Other early PPNA sites dating to around – BC have been found in Tell es-Sultan (ancient Jericho), Israel (notably Ain Mallaha, Nahal Oren, and Kfar HaHoresh), Gilgal in the Jordan Valley, and Byblos, Lebanon. The start of Neolithic overlaps the Tahunian and Heavy Neolithic periods to some degree.[citation needed]

The major advance of Neolithic was true farming. In the proto-Neolithic Natufian cultures, wild cereals were harvested, and perhaps early seed selection and re-seeding occurred. The grain was ground into flour. Emmer wheat was domesticated, and animals were herded and domesticated (animal husbandry and selective breeding).[citation needed]

In , remains of figs were discovered in a house in Jericho dated to  BC. The figs are of a mutant variety that cannot be pollinated by insects, and therefore the trees can only reproduce from cuttings. This evidence suggests that figs were the first cultivated crop and mark the invention of the technology of farming. This occurred centuries before the first cultivation of grains.

Settlements became more permanent, with circular houses, much like those of the Natufians, with single rooms. However, these houses were for the first time made of mudbrick. The settlement had a surrounding stone wall and perhaps a stone tower (as in Jericho). The wall served as protection from nearby groups, as protection from floods, or to keep animals penned. Some of the enclosures also suggest grain and meat storage.

The Neolithic (PPNB) began around  BC according to the ASPRO chronology in the Levant (Jericho, West Bank). As with the PPNA dates, there are two versions from the same laboratories noted above. This system of terminology, however, is not convenient for southeast Anatolia and settlements of the middle Anatolia basin.[citation needed] A settlement of , inhabitants called 'Ain Ghazal was found in the outskirts of Amman, Jordan. Considered to be one of the largest prehistoric settlements in the Near East, it was continuously inhabited from approximately  BC to approximately  BC.

Settlements have rectangular mud-brick houses where the family lived together in single or multiple rooms. Burial findings suggest an ancestor cult where people preserved skulls of the dead, which were plastered with mud to make facial features. The rest of the corpse could have been left outside the settlement to decay until only the bones were left, then the bones were buried inside the settlement underneath the floor or between houses.[citation needed]

Work at the site of 'Ain Ghazal in Jordan has indicated a later Pre-Pottery Neolithic C period. Juris Zarins has proposed that a Circum Arabian Nomadic Pastoral Complex developed in the period from the climatic crisis of BC, partly as a result of an increasing emphasis in PPNB cultures upon domesticated animals, and a fusion with Harifian hunter gatherers in the Southern Levant, with affiliate connections with the cultures of Fayyum and the Eastern Desert of Egypt. Cultures practicing this lifestyle spread down the Red Sea shoreline and moved east from Syria into southern Iraq.

The Late Neolithic began around , BC in the Fertile Crescent. By then distinctive cultures emerged, with pottery like the Halafian (Turkey, Syria, Northern Mesopotamia) and Ubaid (Southern Mesopotamia). This period has been further divided into PNA (Pottery Neolithic A) and PNB (Pottery Neolithic B) at some sites.

The Chalcolithic (Stone-Bronze) period began about  BC, then the Bronze Age began about  BC, replacing the Neolithic cultures.[citation needed]

Around , BC the first fully developed Neolithic cultures belonging to the phase Pre-Pottery Neolithic A (PPNA) appeared in the Fertile Crescent. Around ,– BC a settlement was established in Tell Qaramel, miles ( km) north of Aleppo. The settlement included two temples dating to  BC. Around  BC during the PPNA, one of the world's first towns, Jericho, appeared in the Levant. It was surrounded by a stone wall, may have contained a population of up to ,–, people, and contained a massive stone tower. Around  BC the Halaf culture appeared in Syria and Northern Mesopotamia.

In , a team of researchers from the Maison de l'Orient et de la Méditerranée, including Jacques Cauvin and Oliver Aurenche, divided Near East Neolithic chronology into ten periods ( to ) based on social, economic and cultural characteristics. In , Danielle Stordeur and Frédéric Abbès advanced this system with a division into five periods.

Natufian between , and , BC,

Khiamian between , and  BC, PPNA: Sultanian (Jericho), Mureybetian,

Early PPNB (PPNB ancien) between and  BC, middle PPNB (PPNB moyen) between and  BC,

Late PPNB (PPNB récent) between and  BC,

A PPNB (sometimes called PPNC) transitional stage (PPNB final) in which Halaf and dark faced burnished ware begin to emerge between and  BC.

They also advanced the idea of a transitional stage between the PPNA and PPNB between and  BC at sites like Jerf el Ahmar and Tell Aswad.

The earliest evidence of Neolithic culture in northeast Africa was found in the archaeological sites of Bir Kiseiba and Nabta Playa in what is now southwest Egypt. Domestication of sheep and goats reached Egypt from the Near East possibly as early as  BC. Graeme Barker states "The first indisputable evidence for domestic plants and animals in the Nile valley is not until the early fifth millennium BC in northern Egypt and a thousand years later further south, in both cases as part of strategies that still relied heavily on fishing, hunting, and the gathering of wild plants" and suggests that these subsistence changes were not due to farmers migrating from the Near East but was an indigenous development, with cereals either indigenous or obtained through exchange. Other scholars argue that the primary stimulus for agriculture and domesticated animals (as well as mud-brick architecture and other Neolithic cultural features) in Egypt was from the Middle East.

The neolithization of Northwestern Africa was initiated by Iberian, Levantine (and perhaps Sicilian) migrants around - BC. During the Early Neolithic period, farming was introduced by Europeans and was subsequently adopted by the locals. During the Middle Neolithic period, an influx of ancestry from the Levant appeared in Northwestern Africa, coinciding with the arrival of pastoralism in the region. The earliest evidence for pottery, domestic cereals and animal husbandry is found in Morocco, specifically at Kaf el-Ghar.

The Pastoral Neolithic was a period in Africa's prehistory marking the beginning of food production on the continent following the Later Stone Age. In contrast to the Neolithic in other parts of the world, which saw the development of farming societies, the first form of African food production was mobile pastoralism, or ways of life centered on the herding and management of livestock. The term "Pastoral Neolithic" is used most often by archaeologists to describe early pastoralist periods in the Sahara, as well as in eastern Africa.

The Savanna Pastoral Neolithic or SPN (formerly known as the Stone Bowl Culture) is a collection of ancient societies that appeared in the Rift Valley of East Africa and surrounding areas during a time period known as the Pastoral Neolithic. They were South Cushitic speaking pastoralists, who tended to bury their dead in cairns whilst their toolkit was characterized by stone bowls, pestles, grindstones and earthenware pots. Through archaeology, historical linguistics and archaeogenetics, they conventionally have been identified with the area's first Afroasiatic-speaking settlers. Archaeological dating of livestock bones and burial cairns has also established the cultural complex as the earliest center of pastoralism and stone construction in the region.

In southeast Europe agrarian societies first appeared in the th millennium BC, attested by one of the earliest farming sites of Europe, discovered in Vashtëmi, southeastern Albania and dating back to  BC. In most of Western Europe in followed over the next two thousand years, but in some parts of Northwest Europe it is much later, lasting just under , years from c. BC– BC. Recent advances in archaeogenetics have confirmed that the spread of agriculture from the Middle East to Europe was strongly correlated with the migration of early farmers from Anatolia about , years ago, and was not just a cultural exchange.

Anthropomorphic figurines have been found in the Balkans from  BC, and in Central Europe by around  BC (La Hoguette). Among the earliest cultural complexes of this area are the Sesklo culture in Thessaly, which later expanded in the Balkans giving rise to Starčevo-Körös (Cris), Linearbandkeramik, and Vinča. Through a combination of cultural diffusion and migration of peoples, the Neolithic traditions spread west and northwards to reach northwestern Europe by around BC. The Vinča culture may have created the earliest system of writing, the Vinča signs, though archaeologist Shan Winn believes they most likely represented pictograms and ideograms rather than a truly developed form of writing.

The Cucuteni-Trypillian culture built enormous settlements in Romania, Moldova and Ukraine from to  BC. The megalithic temple complexes of Ġgantija on the Mediterranean island of Gozo (in the Maltese archipelago) and of Mnajdra (Malta) are notable for their gigantic Neolithic structures, the oldest of which date back to around  BC. The Hypogeum of Ħal-Saflieni, Paola, Malta, is a subterranean structure excavated around  BC; originally a sanctuary, it became a necropolis, the only prehistoric underground temple in the world, and shows a degree of artistry in stone sculpture unique in prehistory to the Maltese islands. After  BC, these islands were depopulated for several decades until the arrival of a new influx of Bronze Age immigrants, a culture that cremated its dead and introduced smaller megalithic structures called dolmens to Malta. In most cases there are small chambers here, with the cover made of a large slab placed on upright stones. They are claimed to belong to a population different from that which built the previous megalithic temples. It is presumed the population arrived from Sicily because of the similarity of Maltese dolmens to some small constructions found there.

With some exceptions, population levels rose rapidly at the beginning of the Neolithic until they reached the carrying capacity. This was followed by a population crash of "enormous magnitude" after BC, with levels remaining low during the next , years. Populations began to rise after BC, with further dips and rises occurring between and BC but varying in date between regions. Around this time is the Neolithic decline, when populations collapsed across most of Europe, possibly caused by climatic conditions, plague, or mass migration.

Settled life, encompassing the transition from foraging to farming and pastoralism, began in South Asia in the region of Balochistan, Pakistan, around , BC. At the site of Mehrgarh, Balochistan, presence can be documented of the domestication of wheat and barley, rapidly followed by that of goats, sheep, and cattle. In April , it was announced in the scientific journal Nature that the oldest (and first Early Neolithic) evidence for the drilling of teeth in vivo (using bow drills and flint tips) was found in Mehrgarh.

In South India, the Neolithic began by  BC and lasted until around  BC when the Megalithic transition period began. South Indian Neolithic is characterized by Ash mounds[clarification needed] from  BC in Karnataka region, expanded later to Tamil Nadu.

In East Asia, the earliest sites include the Nanzhuangtou culture around – BC, Pengtoushan culture around – BC, and Peiligang culture around – BC. The prehistoric Beifudi site near Yixian in Hebei Province, China, contains relics of a culture contemporaneous with the Cishan and Xinglongwa cultures of about – BC, Neolithic cultures east of the Taihang Mountains, filling in an archaeological gap between the two Northern Chinese cultures. The total excavated area is more than , square yards (, m; . ha), and the collection of Neolithic findings at the site encompasses two phases. Between and BC, the Longshan culture existed in the middle and lower Yellow River valley areas of northern China. Towards the end of the rd millennium BC, the population decreased sharply in most of the region and many of the larger centres were abandoned, possibly due to environmental change linked to the end of the Holocene Climatic Optimum.

The 'Neolithic' (defined in this paragraph as using polished stone implements) remains a living tradition in small and extremely remote and inaccessible pockets of West Papua. Polished stone adze and axes are used in the present day (as of ) in areas where the availability of metal implements is limited. This is likely to cease altogether in the next few years as the older generation die off and steel blades and chainsaws prevail.[citation needed]

In , news was released about a new farming site discovered in Munam-ri, Goseong, Gangwon Province, South Korea, which may be the earliest farmland known to date in east Asia. "No remains of an agricultural field from the Neolithic period have been found in any East Asian country before, the institute said, adding that the discovery reveals that the history of agricultural cultivation at least began during the period on the Korean Peninsula". The farm was dated between and  BC. Pottery, stone projectile points, and possible houses were also found. "In , researchers discovered prehistoric earthenware, jade earrings, among other items in the area". The research team will perform accelerator mass spectrometry (AMS) dating to retrieve a more precise date for the site.

In Mesoamerica, a similar set of events (i.e., crop domestication and sedentary lifestyles) occurred by around BC in South America, but possibly as early as ,–, BC. These cultures are usually not referred to as belonging to the Neolithic; in America different terms are used such as Formative stage instead of mid-late Neolithic, Archaic Era instead of Early Neolithic, and Paleo-Indian for the preceding period.

The Formative stage is equivalent to the Neolithic Revolution period in Europe, Asia, and Africa. In the southwestern United States it occurred from to AD when there was a dramatic increase in population and development of large villages supported by agriculture based on dryland farming of maize, and later, beans, squash, and domesticated turkeys. During this period the bow and arrow and ceramic pottery were also introduced. In later periods cities of considerable size developed, and some metallurgy by BC.

Australia, in contrast to New Guinea, has generally been held not to have had a Neolithic period, with a hunter-gatherer lifestyle continuing until the arrival of Europeans. This view can be challenged in terms of the definition of agriculture, but "Neolithic" remains a rarely used and not very useful concept in discussing Australian prehistory.

During most of the Neolithic age of Eurasia, people lived in small tribes composed of multiple bands or lineages. There is little scientific evidence of developed social stratification in most Neolithic societies; social stratification is more associated with the later Bronze Age. Although some late Eurasian Neolithic societies formed complex stratified chiefdoms or even states, generally states evolved in Eurasia only with the rise of metallurgy, and most Neolithic societies on the whole were relatively simple and egalitarian. Beyond Eurasia, however, states were formed during the local Neolithic in three areas, namely in the Preceramic Andes with the Caral-Supe Civilization, Formative Mesoamerica and Ancient Hawaiʻi. However, most Neolithic societies were noticeably more hierarchical than the Upper Paleolithic cultures that preceded them and hunter-gatherer cultures in general.

The domestication of large animals (c.  BC) resulted in a dramatic increase in social inequality in most of the areas where it occurred; New Guinea being a notable exception. Possession of livestock allowed competition between households and resulted in inherited inequalities of wealth. Neolithic pastoralists who controlled large herds gradually acquired more livestock, and this made economic inequalities more pronounced. However, evidence of social inequality is still disputed, as settlements such as Çatalhöyük reveal a lack of difference in the size of homes and burial sites, suggesting a more egalitarian society with no evidence of the concept of capital, although some homes do appear slightly larger or more elaborately decorated than others.[citation needed]

Families and households were still largely independent economically, and the household was probably the center of life. However, excavations in Central Europe have revealed that early Neolithic Linear Ceramic cultures ("Linearbandkeramik") were building large arrangements of circular ditches between and  BC. These structures (and their later counterparts such as causewayed enclosures, burial mounds, and henge) required considerable time and labour to construct, which suggests that some influential individuals were able to organise and direct human labour – though non-hierarchical and voluntary work remain possibilities.

There is a large body of evidence for fortified settlements at Linearbandkeramik sites along the Rhine, as at least some villages were fortified for some time with a palisade and an outer ditch. Settlements with palisades and weapon-traumatized bones, such as those found at the Talheim Death Pit, have been discovered and demonstrate that "...systematic violence between groups" and warfare was probably much more common during the Neolithic than in the preceding Paleolithic period. This supplanted an earlier view of the Linear Pottery Culture as living a "peaceful, unfortified lifestyle".

Control of labour and inter-group conflict is characteristic of tribal groups with social rank that are headed by a charismatic individual – either a 'big man' or a proto-chief – functioning as a lineage-group head. Whether a non-hierarchical system of organization existed is debatable, and there is no evidence that explicitly suggests that Neolithic societies functioned under any dominating class or individual, as was the case in the chiefdoms of the European Early Bronze Age. Possible exceptions to this include Iraq during the Ubaid period and England beginning in the Early Neolithic (– BC). Theories to explain the apparent implied egalitarianism of Neolithic (and Paleolithic) societies have arisen, notably the Marxist concept of primitive communism.[citation needed]

The shelter of early people changed dramatically from the Upper Paleolithic to the Neolithic era. In the Paleolithic, people did not normally live in permanent constructions. In the Neolithic, mud brick houses started appearing that were coated with plaster. The growth of agriculture made permanent houses far more common. At Çatalhöyük , years ago, doorways were made on the roof, with ladders positioned both on the inside and outside of the houses. Stilt-house settlements were common in the Alpine and Pianura Padana (Terramare) region. Remains have been found in the Ljubljana Marsh in Slovenia and at the Mondsee and Attersee lakes in Upper Austria, for example.

A significant and far-reaching shift in human subsistence and lifestyle was to be brought about in areas where crop farming and cultivation were first developed: the previous reliance on an essentially nomadic hunter-gatherer subsistence technique or pastoral transhumance was at first supplemented, and then increasingly replaced by, a reliance upon the foods produced from cultivated lands. These developments are also believed to have greatly encouraged the growth of settlements, since it may be supposed that the increased need to spend more time and labor in tending crop fields required more localized dwellings. This trend would continue into the Bronze Age, eventually giving rise to permanently settled farming towns, and later cities and states whose larger populations could be sustained by the increased productivity from cultivated lands.

The profound differences in human interactions and subsistence methods associated with the onset of early agricultural practices in the Neolithic have been called the Neolithic Revolution, a term coined in the s by the Australian archaeologist Vere Gordon Childe.

One potential benefit of the development and increasing sophistication of farming technology was the possibility of producing surplus crop yields, in other words, food supplies in excess of the immediate needs of the community. Surpluses could be stored for later use, or possibly traded for other necessities or luxuries. Agricultural life afforded securities that nomadic life could not, and sedentary farming populations grew faster than nomadic.

However, early farmers were also adversely affected in times of famine, such as may be caused by drought or pests. In instances where agriculture had become the predominant way of life, the sensitivity to these shortages could be particularly acute, affecting agrarian populations to an extent that otherwise may not have been routinely experienced by prior hunter-gatherer communities. Nevertheless, agrarian communities generally proved successful, and their growth and the expansion of territory under cultivation continued.

Another significant change undergone by many of these newly agrarian communities was one of diet. Pre-agrarian diets varied by region, season, available local plant and animal resources and degree of pastoralism and hunting. Post-agrarian diet was restricted to a limited package of successfully cultivated cereal grains, plants and to a variable extent domesticated animals and animal products. Supplementation of diet by hunting and gathering was to variable degrees precluded by the increase in population above the carrying capacity of the land and a high sedentary local population concentration. In some cultures, there would have been a significant shift toward increased starch and plant protein. The relative nutritional benefits and drawbacks of these dietary changes and their overall impact on early societal development are still debated.

In addition, increased population density, decreased population mobility, increased continuous proximity to domesticated animals, and continuous occupation of comparatively population-dense sites would have altered sanitation needs and patterns of disease.

The identifying characteristic of Neolithic technology is the use of polished or ground stone tools, in contrast to the flaked stone tools used during the Paleolithic era.

Neolithic people were skilled farmers, manufacturing a range of tools necessary for the tending, harvesting and processing of crops (such as sickle blades and grinding stones) and food production (e.g. pottery, bone implements). They were also skilled manufacturers of a range of other types of stone tools and ornaments, including projectile points, beads, and statuettes. But what allowed forest clearance on a large scale was the polished stone axe above all other tools. Together with the adze, fashioning wood for shelter, structures and canoes for example, this enabled them to exploit the newly developed farmland.

Neolithic peoples in the Levant, Anatolia, Syria, northern Mesopotamia and Central Asia were also accomplished builders, utilizing mud-brick to construct houses and villages. At Çatalhöyük, houses were plastered and painted with elaborate scenes of humans and animals. In Europe, long houses built from wattle and daub were constructed. Elaborate tombs were built for the dead. These tombs are particularly numerous in Ireland, where there are many thousand still in existence. Neolithic people in the British Isles built long barrows and chamber tombs for their dead and causewayed camps, henges, flint mines and cursus monuments. It was also important to figure out ways of preserving food for future months, such as fashioning relatively airtight containers, and using substances like salt as preservatives.

The peoples of the Americas and the Pacific mostly retained the Neolithic level of tool technology until the time of European contact. Exceptions include copper hatchets and spearheads in the Great Lakes region.

Most clothing appears to have been made of animal skins, as indicated by finds of large numbers of bone and antler pins that are ideal for fastening leather. Wool cloth and linen might have become available during the later Neolithic, as suggested by finds of perforated stones that (depending on size) may have served as spindle whorls or loom weights.