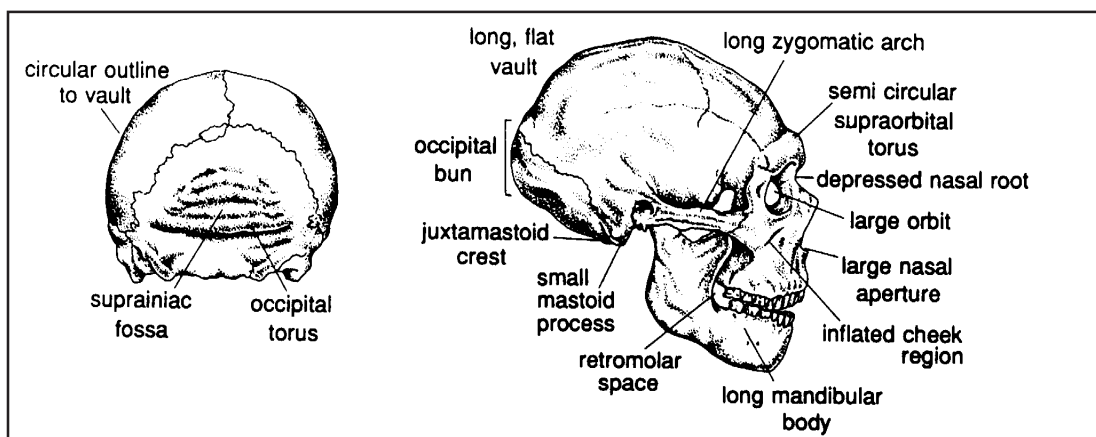
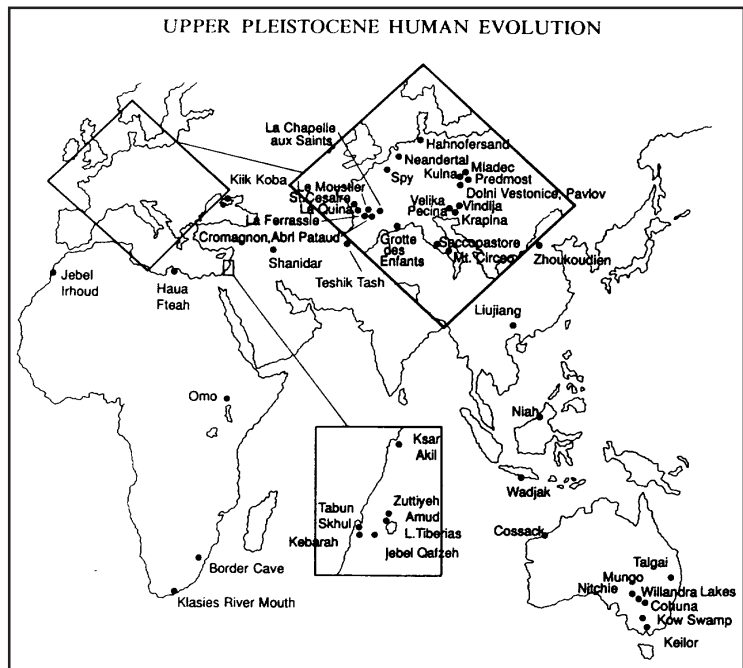


Lecture 8. The Upper Pleistocene and *Homo sapiens* - modern man

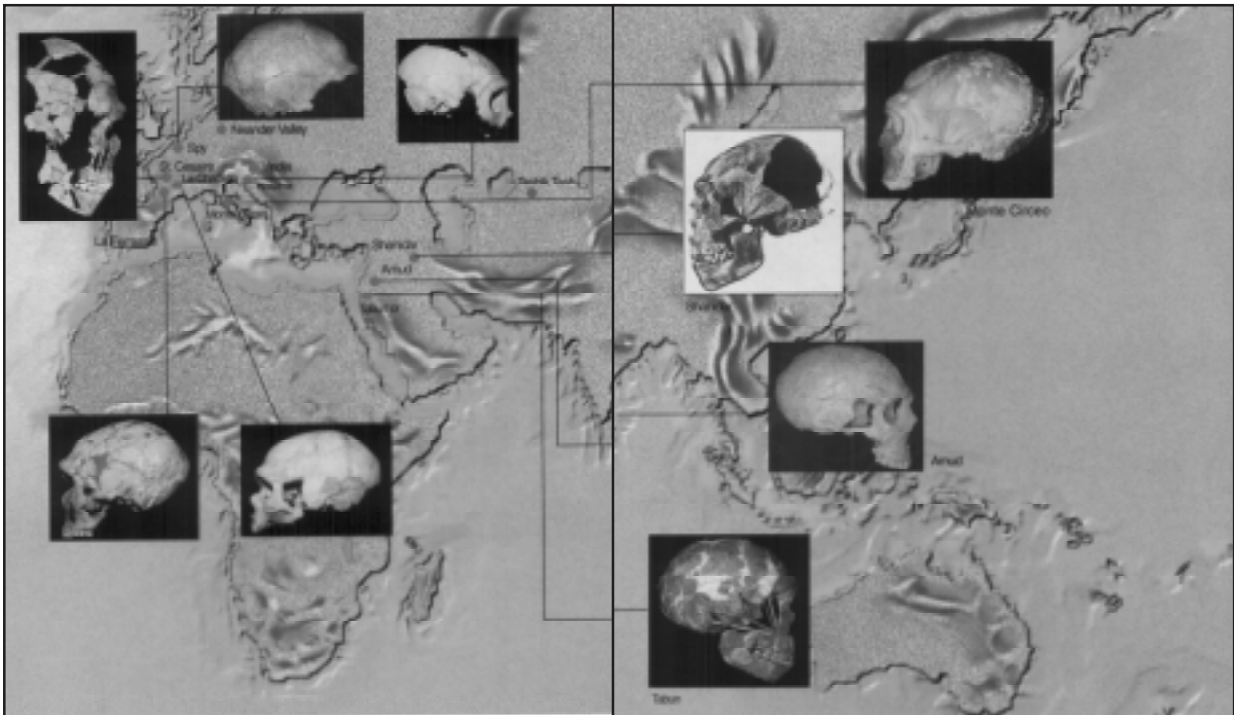
We said last time that by the Middle Pleistocene *Homo sapiens* was appearing and that man had left Africa and was to be found in Asia and India, and possibly in Europe. The change from *erectus* to *sapiens* was controversial and unclear. Biochemical data supported the idea of multiple emigrations from Africa to Asia and to Europe, but didn't tell us if *sapiens* arose in Africa as a species then migrated, clearing lesser mortals from his path as he did so or migrated and interbred, thus forming *sapiens*.

In the Upper Pleistocene (130,000-13,000ya) fossils are more numerous and complete, and there is an even greater geographical range. But time scales are shorter and morphological contrasts are less marked: we are now dealing with the fine detail of human evolution.



During this period we see early *Homo sapiens* being supplemented by *H. sapiens sapiens*, modern man, anatomically indistinguishable from you or me. And here we have yet another prob-

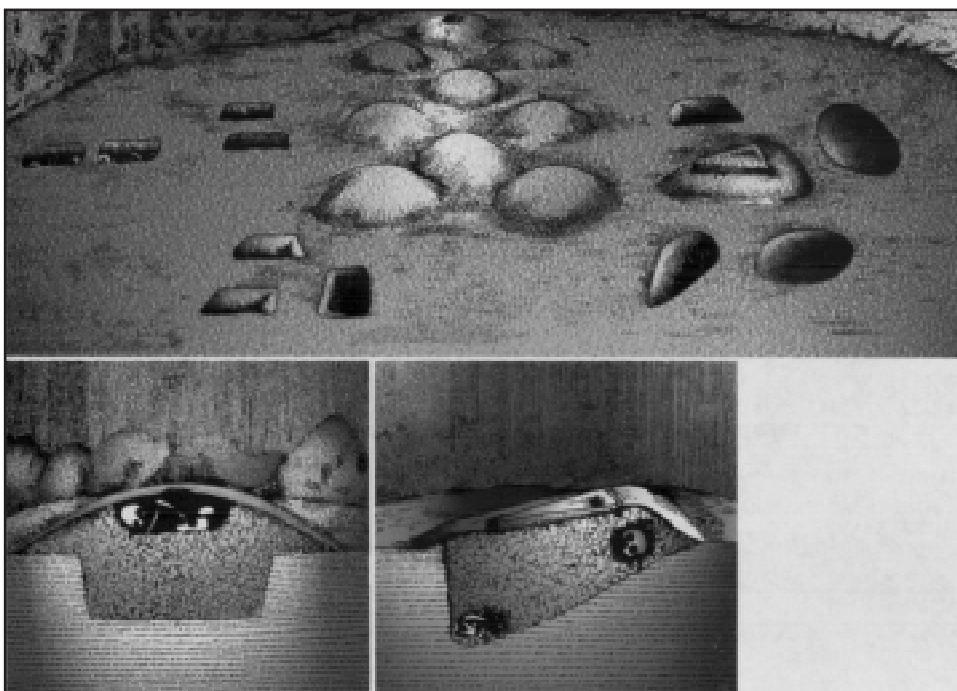
lem in that the fossil record of modern man is densest in areas such as western Europe, on the



edge of his range and unlikely to be the source or focus of significant changes.

Fossil men in Europe

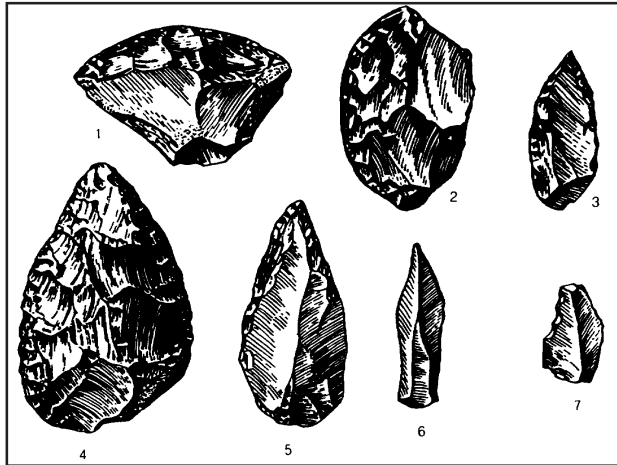
Alongside modern man in Europe were the Neanderthals, named from the valley of the Neander



in Germany but found from the Atlantic seaboard across to Uzbekistan and south to the middle east and possibly N Africa They are known here from 120,000 - 35,000 years ago,

but characteristic Neanderthal features can be seen in earlier African **H sapiens** specimens

After a long slow development Neanderthals disappeared quickly from Europe, giving rise to the popular myth that they were exterminated by sapiens, or interbred. By the early Upper Pleistocene Neanderthals were present in Europe and the Middle East.



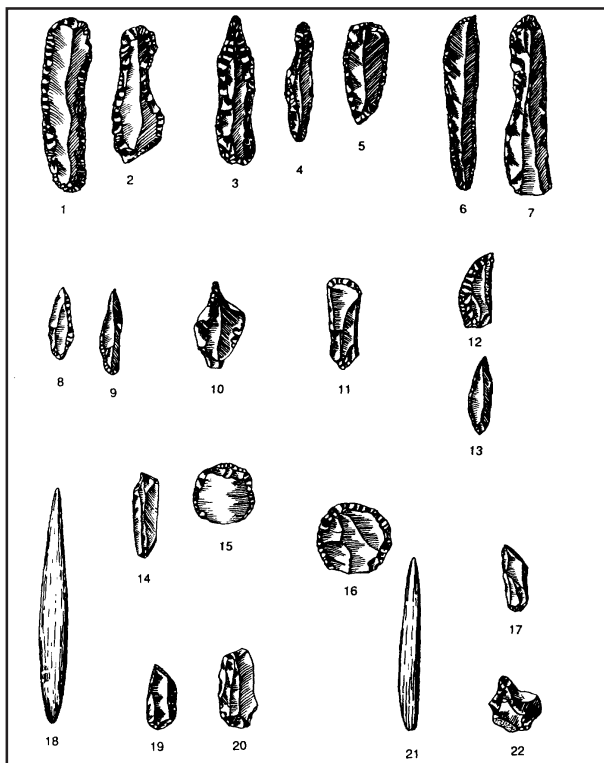
Most Neanderthal finds are the results of burials, often associated with tools and animal bones: one, poignantly has pollen suggesting flowers. Neanderthal sites tend to be small in area, with thick deposits split into individual horizons that suggest repeated occupation, perhaps on a seasonal basis. The overall pattern suggests a low population density. Neanderthal sites often show animal remains, some-

times in large quantities. The numbers of these remains and their restricted species and age distribution suggest that these are the result of systematic hunting. Tool kits were more complex than

those of the Middle Pleistocene. Most, but not quite all Neanderthal tools are Mousterian

Mousterian tools are followed by more refined Upper Palaeolithic types. These contain large numbers of blades and composite tools and are often associated with decorated art objects.

This was taken for many years to indicate the change over from the rather clumsy, perhaps shambling Neanderthals to modern, sensitive, sophisticated man..



In Europe the first Neanderthals were found at about 70-40,000ya. Dating is rather uncertain

because these were fossils unearthed early in the Victorian fossil hunting period and accurate dates were not obtained at the time.

Homo Neanderthalis

France:

Neanderthals 70,000 → 36,000ya

Moderns 34,000ya

Croatia:

Neanderthals 38-40,000ya

Moderns 34-36,000ya

Israel:

Neanderthals 95-100,000ya→40,000ya

Moderns 90,100,000ya

But if we go east we find a different story. We find good Neanderthals from Israel dated as early as 95-100,000 years ago and others down to 40,000 years ago. Also from Israel are modern **sapiens sapiens** aged around 90-100,000 years i.e. older than most Neanderthals. In Croatia we find coexistence at about 35,000ya.

So in Israel Neanderthals and **sapiens sapiens** apparently coexisted for 40,000 years with no evidence of transition or intermediate groups. In central Asia there seems to have been a gradual shift from Neanderthal to **sapiens sapiens** and on the Atlantic coast Neanderthals persist until 36,000 years bp, when they are suddenly replaced by **sapiens sapiens**.

Further spread of modern man

Australia

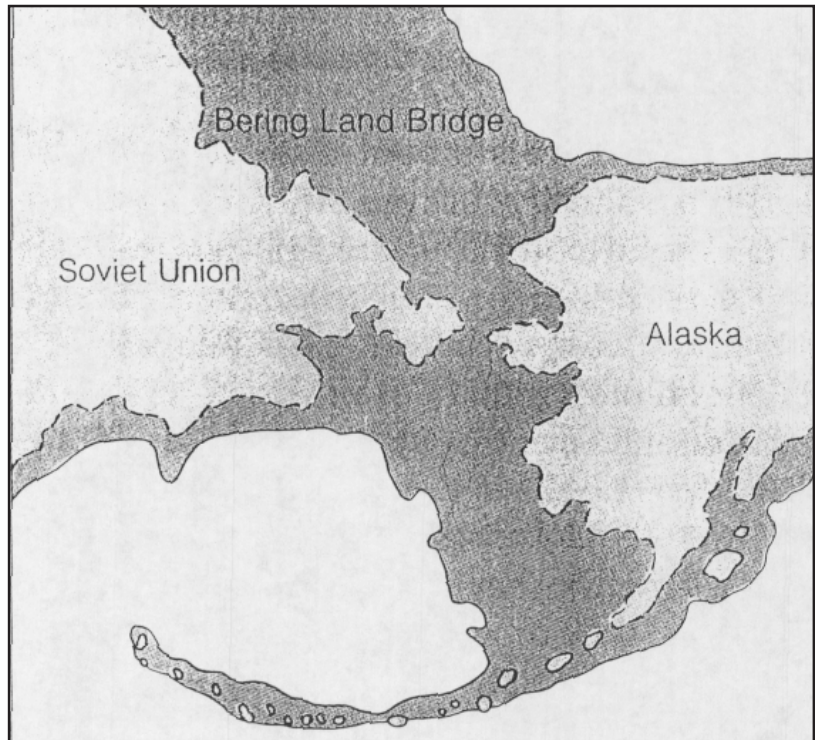
The fossil record from Australia is quite good. Australia and Papua New Guinea were definitely occupied 35,000 years, and probably 40-45,000 years ago. The lowest sea level at the last glaciation was not until well after 32,000 years ago when the Molucca Strait crossing between Sulawesi and Papua was at least 40 miles. The colonisers must therefore have been capable of building a boat and organising a sea voyage of 50 miles or more. The first Australians were also probably seafarers. The fossils come from the South East, around the Murray Darling basin suggesting that colonisation was along the coast and inroads made via major river systems. There is no evidence of a gradual occupation from Papua to North Australia.

The Earliest Australians had relatively simple tool kits, but displayed many innovations. They

cremated their dead, painted on rock, and practised co-operative fishing which involved the construction of creeks, dams and large nets.

The Americas

Human entry to the New World seems to have been in the Late Pleistocene, coinciding with the lowest sea levels. A land bridge probably connected Russia to America across the Bering Strait. We know that Mousterian man exploited the megafauna of the cold dry



Siberian tundra, especially Woolly Rhinoceros, Mammoth and bison: there are scattered settlement sites known from around Lake Baikal. These are Eastern outposts of a Mammoth hunting culture. These men were not amateurs. In what is now Eastern Czechoslovakia more than a hundred camps belonging to mammoth hunters have been found. In one, at Predmost, portions of no less than a thousand mammoths have been found. They also fought (and beat) cave bears, who stood about twelve feet high.

The Bering bridge was exposed by falling sea levels between 26,000 and 11,000 years ago and was known to be a migration route for caribou and other species. It seems likely that hunters were present in Alaska by 20,000 years ago, although hard evidence is scanty and dates from only 10,000 years ago. Once in America proper, however, further progress was blocked by the Wisconsin ice sheets which opened up only briefly around 12,000 years ago. Thereafter archaeological evidence suggests rapid colonisation, as far as S America by 11,000 years ago.

Skeletal material is virtually unknown, so debate continues as to whether man arrived before the

sapiens sapiens associated with the hunting sites at the very end of the Pleistocene.

Homo sapiens - modern man

The archaic - modern (**sapiens** → **sapiens sapiens**) transition marks the most recent major shift in the hominid fossil record, but not the last change: we haven't stood still anatomically since then. The general picture is one of decreasing robustness and size, in face, jaws, dentition and stature.

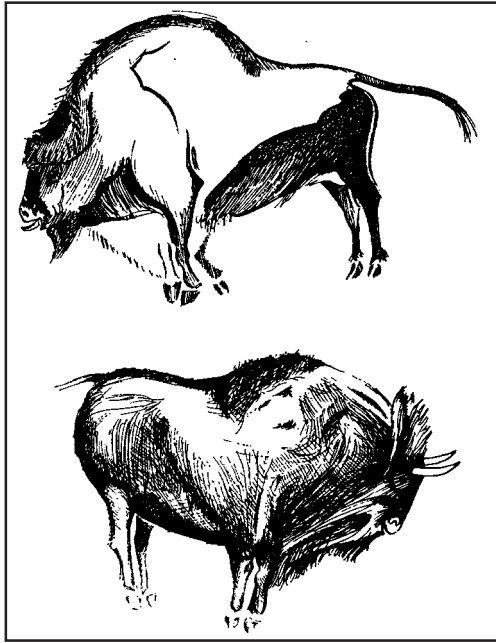
These changes have been interpreted as exemplifying the interaction between behaviour and morphology, especially in the areas of diet and food preparation. Interpretation is difficult, of course, but similar changes in diet have produced equally large changes in stature in the last 50 years. We are now beginning to pick up changes which reflect biochemical, nutritional or developmental (endocrine?) shifts in man which are largely non-genetic (insofar as they are based only on the genetical capacity to change) These are rapid, short term changes, unsustainable and undesirable over long periods of time - genetic drift?.

The Palaeolithic and Mesolithic periods represent the watershed between the different types of change. If Paleolithic/Mesolithic man has achieved a modern anatomy, then the rest of the story of mankind is about other aspects: this is not strictly physical anthropology, but I want to include it for completeness.

Art

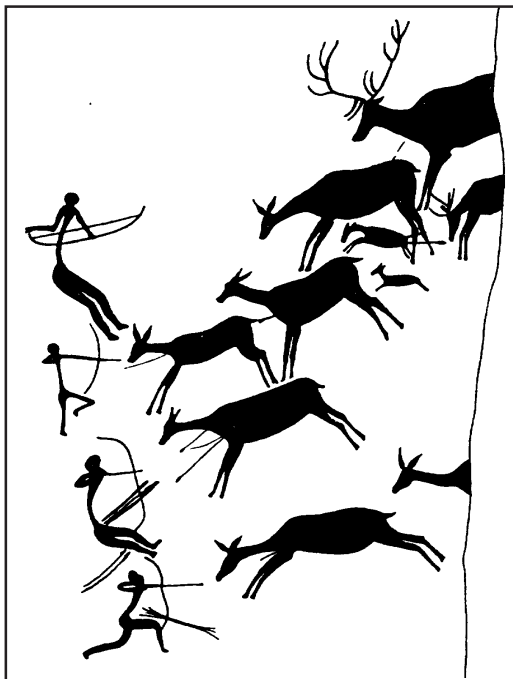
We tend to view man of this period, living in caves, as fairly brutish. One of the indications that this is not so, and that man was changing was the increasing presence of art. We find evidence of the use of white, red and yellow pigments from around 50 000 years ago, along with ivory beads and decorations applied to useful objects.

Ornamentation, embellishment of a useful object is something new and very human. Amerindians



decorated their moccasins with dyed porcupine quills, basket makers made elaborate designs with coloured reeds, potters discovered decoration and later glazing and colouring. The art produced was also startlingly good: One series was painted on the roof of a cave deep in the mountain and visible only by artificial light. Having passed from the figurative to the realistic art became impressionist.

Improved tools



At the same time we find refinements in the tools themselves as well as ornamentation. By the start of the Neolithic (10,000ya) arrowheads and axes were being ground from volcanic rock using wet sandstone rather than chipped from flint or quartz. This is an improvement, but a slow process, especially when a hole has to be made to attach a handle.

War clubs were now differentiated from axes used for working with wood. the bow and arrow became commonplace. The use of blade tools marked rapid

progress. A blade in a wooden handle can be used to make other tools from bone or ivory or antlers. Needles and harpoons start to appear. Eventually a whole tool kit of planes, choppers wedges and chisels was to be found .

Agriculture

But by far the most important discovery of the Neolithic was agriculture. This seems to have arisen in Asia minor in 11,000-10,000 bp: plants were grown and animals were domesticated.

Where this coincided with the great fertile river valleys of Mesopotamia and the Nile we start to

find larger and more permanent sites of settlement. - the first farming communities.

The first signs of agriculture are actually found amongst the Natufians. Now we have met these gentlemen and ladies before in a different context. They lived in caves on Mt. Carmel and were in fact Neanderthals. They had no pottery, no ground stone axes and kept no animals. But there is evidence that they were eating grain - because we find in their tool kits sickles made of mounted flints and polished by the silica of grass stems. In this area grow the wild ancestors of wheat and barley. We might suggest that the first stage was to collect wild grasses, then perhaps a little weeding, followed by planting seeds nearer home - or perhaps discarded seeds or seeds from their latrines germinated around their caves by accident.

This sort of agriculture was at worst accidental and at best predatory - no manuring, no rotation of crops. Either you exhausted the soil and moved on - slash and burn economy - or you were lucky and lived in a fertile river valley with annual flooding - like the Nile delta.

River cultures.

One of the earliest systematic agricultural sites is at Fayum on the shores of an ancient lake west of the Nile. The people who lived there in 8,000-6,000bp hunted game and speared fish, but also left straw lined pots for wheat and barley, sickles and flint hoes.

The Nile valley was a good place to live if you were an agriculturist and needed water and fertile mud. Similar developments were happening on the Tigris and Euphrates and in India and China.

We can speculate that growing your food rather than catching it led to a more settled and perhaps a less marginal existence. We see more pottery, more baskets, more hide and leather work, carpentry, boat making, fishing and, by implication and imagination, perhaps more politics and more religion. Things also increased in quality - more solid huts, better and more uniform tools etc.

Stock breeding

Giving up hunting for agriculture doesn't mean becoming vegetarian if you breed your own animals. Perhaps drying climatic conditions drove animals to the water around which villages were based. Perhaps stubble from gathered crops produced good grazing, but gradually half tamed herds of animals around the place became tamed flocks. And somehow tamed animals were improved. Take sheep for instance. The native Egyptian sheep (the mouflon) and the urial of India are hairy with big horns. By the time domestic sheep had reached Europe they were woolly - the golden fleece exported back to North Africa and Spain by the Phoenicians. Domestication of sheep seems to have happened around 11,000bp, goats and pigs 8,500bp.

There were two kinds of primitive Oxen. The longhorned **Bos primigenius** (with 3 feet horns, which survived in Germany until the middle ages) and the shorthorn type from Turkestan. Short-horns found their way to Switzerland and to other parts as Celtic Oxen. Cattle were domesticated around 7,000bp. As living larders and walking wardrobes they are obviously very valuable. Later it was found that milk cheese and butter were continuously available without killing the animals.

The agricultural life is philosophically different from that of the hunter. To a hunter animals and plants are prey, to be killed and eaten. Once dead they are gone, and this type of economy naturally diminishes the surroundings., Agriculture sees plants and animals not as capital but as stock, from which income is derived. Breeding stock and planting crops produces dividends of food without loss of the original resource.

The establishment of herds of any reasonably large domestic animal also had another benefit: the potential to use someone else's muscle power. A domestic ox could pull a sledge, and eventually, near Nineveh in 5,000bp a wheeled cart. A little later the ox was combined with the plough - which again brought gains in efficiency.

Textiles

Other great advantages that must have been empirical were made in textiles. We do not know who first had the idea of spinning wool or other hair or fibre to make a thread - perhaps some bored individual sitting by a fire playing with a chunk of fleece, trying to straighten out the tangles, and we don't know who invented the loom to deal with the resulting thread. We do know that both changed the world. Similarly we don't know who made the first non cracking pot - but someone, somewhere did.

Metals

The next great advance was the use of metals. The first use was probably the hammering of soft metals like copper. By in 5,000bp in the Nile valley, in Mesopotamia and in Syria they were casting copper as opposed to hammering it. By 3,500bp the Egyptians were using iron. The bronze age ended in Greece in 1200BC when the Dorians, with iron swords, wiped out the Mycaenians, equipped only with bronze.

The superiority of metal is in its fusibility: it can be cast and moulded when hot, and when cooled will take an edge. The use of copper and iron depended on smelting, that is extracting metals from their ores. Copper occurs rarely in the metallic state, as do silver and gold, and the first copper tools were probably made from this by simple hammering. But metallic ores vary in composition: all need heating to extract the metal, but some in oxidising and some in reducing conditions. And the temperatures needed are high - copper melts at 1200°C. This is beyond the range of an ordinary fire - a blast is needed. The metal has to be placed in something that will not melt at 1200° - a crucible. And the easiest way to make castings is in a two piece mould once you have discovered sand casting. Alloys such as bronze - a mixture of tin and copper - have different properties from those of their constituents: bronze is harder.

The concept of metalworking, once established, had far reaching consequences. Land can be cultivated or animals herded almost anywhere, but you can only make iron where there is suitable ore and wood. Metallic ores are distributed irregularly: consequently certain areas will make iron and others will not. Sophisticated alloys, such as bronze versus copper probably reflected simply

the content of the local ore, some being better at holding an edge than others. This opens up the concept of trade. Trade improved transport - boats came into regular long distance use, tradeable objects (weapons, glass beads, cloth) are found in archaeological sites far from their origin. A very seaworthy Egyptian reed boat, with a tall prow and upturned stern is depicted on an Egyptian pot (5,000bp) and an equally impressive wooden boat was given to the Pharaoh in the pyramid at Cheops for his journey to the land of spirits.

Writing

At the same time someone discovered writing. Writing is not necessarily a sign of civilisation.

Many highly civilised societies have an oral tradition, a rich mythology and a rich language but no written language. It is possible to provide a written language for them, and to give them books as the Christian missionaries did for many African civilisations, but this is merely adding to the civilisation, not improving it.

Writing is important to us because of the communication it provides with the dead. Writing was not at first literature: it was an aide memoir - laundry lists and stock lists for grain stores, lists of who owned what.



Writing has an early association with temples: not

because of religion but because of economics. Early priests accumulated power and property. In Egypt they organised schools which were equipped with scripts and copybooks. Gradually literacy spread from temples to commerce.

The earliest writings were strip cartoons - a series of frames each depicting a scene from an epic event, a battle, a journey. Once the story is forgotten no one knows what is depicted. The next stage is a series of fixed symbolic pictures, a man, a fish, a fire - we have to interpret the significance of the pictures: this is a pictogram. One stage beyond is the ideogram rather like a traffic sign or a pointing hand. An idealised and simplified leg now means stand, an eye with lines below

it weep etc. A goose represents a child (because both are valuable): a mouth with lines above it signifying hot air means words. Symbolic pictures soon become characters

The next stage is to transfer the picture to represent a sound. In Sumarian mouth is ka. So if we make the mouth sign mean ka we can use it to represent the ka sound in other words.

The logical next step was to supply a sign for each syllable in the language. These signs were probably originally pictograms. The only problem here is that syllables usually have both vowel and consonant sounds (in Sumarian anyway) but never a single consonant. It was therefore necessary, if you needed a consonant to choose a suitable syllable and make another sign discarding the unwanted bit. The invention of the sign for a single consonant led to the invention of the alphabet.

Or alphabets. In fact there were many slight variations, of which Phoenician is the most important. The oldest Semite alphabet found is at Byblos (hence bible = book) in Syria. The Semite names of the things depicted became the letters of the alphabet. Thus the Egyptian sign for an ox's head was called aleph: but each sign represented a letter not a syllable. Aleph was a, and each letter is based on a recognisable Egyptian picture. The picture of a fish for instance became the Phoenician s (samekh) and then the Greek xi.

Apart from the slight variations there was only one alphabet, on which are based Devanagari (Indian) script, Arabic, Hebrew, Persian and Greek. There were originally 32 signs with no vowels (aleph is technically a breathed consonant).

The Greeks modified this by adding a ph sound and modifying certain redundant symbols (for sounds not used) into vowels. Greek, like Hebrew was originally written from right to left, then boustrophadon, then left to right.

The actual techniques of writing are also of interest. The Egyptians wrote in hieroglyphics. The earliest documents as such too survive are names and titles on vases, notes of accounts and inventories and short records of events. The signs are recognisable pictures. The pictograms were carved on stone or wood or painted on walls (especially tombs). Later they were written with pen

and ink on papyrus, a paper made by felting the pith of the papyrus reed and pressing it flat.

The priests of Sumer kept records by scratches on clay tablets. Later they used soft clay tablets and made impressions with a wedge shaped piece of wood. This cuneiform writing was, of course, completely conventionalised - the triangular marks made by the wood were as near as possible to the picture they represented. Once finished the tablet was baked in the sun.

The diversity of writing is well illustrated by looking at an isolated group, the Amerindians. They never progressed beyond the pictogram stage, but we know of several practical developments. An Indian taking a message would be given an aide memoir in the form of a notched stick - like tying knots in a hanky - the notches being made as he was being told the message. In Dakota a chronological record of the years was formed by a series of pictures each representing a notable event in that year.

Writing and books were great assets in commerce, but also had more meaning. Modern students demand up to date text books: an Egyptian or Sumarian would be much more impressed by the age of his text. The older the book the more authoritative the message. This idea of the potency of old writings is still seen in reverence for the Koran, the Talmud or the Gospels.

So let's take an arbitrary date, say 4,000bp or 2,000BC and look at the state of the world. There were, at this time three foci of civilisation, or progress, the Mediterranean, India and China. A Cretan merchant could have written a fascinating anthropology book. Around the Mediterranean were cities using bronze and iron. In Greece and Asia minor tribes were using copper. Over the Northern European planes was a vast mixture of peoples, Mesolithic, battle axe warriors, Megalith builders, mariners fought and traded. Further north there were only hunters and fishermen, ignorant of farming and pottery making.