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Homo Deus: A Brief History of Tomorrow

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Sapiens

A Brief History of Humankind

VINTAGE

History's Biggest Fraud

FOR 2.5 MILLION YEARS HUMANS FED themselves by gathering plants and hunting animals that lived and bred without their intervention. *Homo erectus*, *Homo ergaster* and the Neanderthals plucked wild figs and hunted wild sheep without deciding where fig trees would take root, in which meadow a herd of sheep should graze, or which billy goat would inseminate which nanny goat. *Homo sapiens* spread from East Africa to the Middle East, to Europe and Asia, and finally to Australia and America – but everywhere they went, Sapiens too continued to live by gathering wild plants and hunting wild animals. Why do anything else when your lifestyle feeds you amply and supports a rich world of social structures, religious beliefs and political dynamics?

All this changed about 10,000 years ago, when Sapiens began to devote almost all their time and effort to manipulating the lives of a few animal and plant species. From sunrise to sunset humans sowed seeds, watered plants, plucked weeds from the ground and led sheep to prime pastures. This work, they thought, would provide them with more fruit, grain and meat. It was a revolution in the way humans lived – the Agricultural Revolution.

The transition to agriculture began around 9500–8500 BC in the hill country of south-eastern Turkey, western Iran and the Levant. It began slowly and in a restricted geographical area. Wheat and goats were domesticated by approximately 9000 BC; peas and lentils

around 8000 BC; olive trees by 5000 BC; horses by 4000 BC; and grapevines by 3500 BC. Some animals and plants, such as camels and cashew nuts, were domesticated even later, but by 3500 BC the main wave of domestication was over. Even today, with all our advanced technologies, more than 90 per cent of the calories that feed humanity come from the handful of plants that our ancestors domesticated between 9500 and 3500 BC – wheat, rice, maize (called 'corn' in the US), potatoes, millet and barley. No noteworthy plant or animal has been domesticated in the last 2,000 years. If our minds are those of hunter-gatherers, our cuisine is that of ancient farmers.

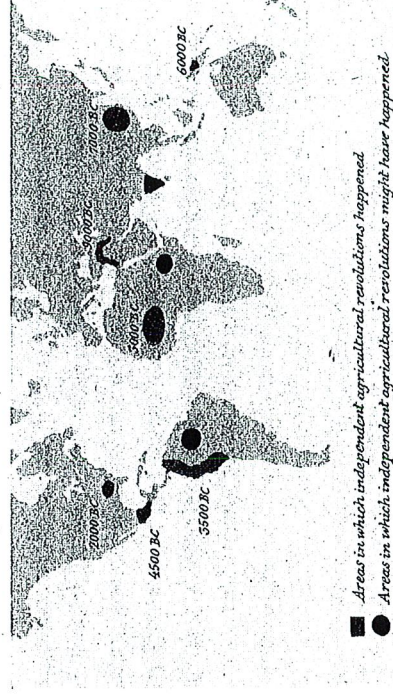
Scholars once believed that agriculture spread from a single Middle Eastern point of origin to the four corners of the world. Today, scholars agree that agriculture sprang up in other parts of the world, not by the action of Middle Eastern farmers exporting their revolution, but entirely independently. People in Central America domesticated maize and beans without knowing anything about wheat and pea cultivation in the Middle East. South Americans learned how to raise potatoes and llamas, unaware of what was going on in either Mexico or the Levant. China's first revolutionaries domesticated rice, millet and pigs. North America's first gardeners were those who got tired of combing the undergrowth for edible gourds and decided to cultivate pumpkins. New Guineans tamed sugar cane and bananas, while the first West African farmers made African millet, African rice, sorghum and wheat conform to their needs. From these initial focal points, agriculture spread far and wide. By the first century AD the vast majority of people throughout most of the world were agriculturists.

Why did agricultural revolutions erupt in the Middle East, China and Central America but not in Australia, Alaska or South Africa? The reason is simple: most species of plants and animals can't be domesticated. Sapiens could dig up delicious truffles and hunt down woolly mammoths, but domesticating either species was out of the question. The fungi were far too elusive, the giant beasts too fero-

cious. Of the thousands of species that our ancestors hunted and gathered, only a few were suitable candidates for farming and herding. Those few species lived in particular places, and those are the places where agricultural revolutions occurred.

Scholars once proclaimed that the agricultural revolution was a great leap forward for humanity. They told a tale of progress fuelled by human brain power. Evolution gradually produced ever more intelligent people. Eventually, people were so smart that they were able to decipher nature's secrets, enabling them to tame sheep and cultivate wheat. As soon as this happened, they cheerfully abandoned the gruelling, dangerous and often spartan life of hunter-gatherers, settling down to enjoy the pleasant, satiated life of farmers.

That tale is a fantasy. There is no evidence that people became more intelligent with time. Foragers knew the secrets of nature long before the Agricultural Revolution, since their survival depended on an intimate knowledge of the animals they hunted and the plants they gathered. Rather than heralding a new era of easy living, the



Map 2. Locations and dates of agricultural revolutions. The data is contentious, and the map is constantly being redrawn to incorporate the latest archaeological discoveries.¹

Agricultural Revolution left farmers with lives generally more difficult and less satisfying than those of foragers. Hunter-gatherers spent their time in more stimulating and varied ways, and were less in danger of starvation and disease. The Agricultural Revolution certainly enlarged the sum total of food at the disposal of humankind, but the extra food did not translate into a better diet or more leisure. Rather, it translated into population explosions and pampered elites. The average farmer worked harder than the average forager, and got a worse diet in return. The Agricultural Revolution was history's biggest fraud.²

Who was responsible? Neither kings, nor priests, nor merchants. The culprits were a handful of plant species, including wheat, rice and potatoes. These plants domesticated *Homo sapiens*, rather than vice versa.

Think for a moment about the Agricultural Revolution from the viewpoint of wheat. Ten thousand years ago wheat was just a wild grass, one of many, confined to a small range in the Middle East. Suddenly, within just a few short millennia, it was growing all over the world. According to the basic evolutionary criteria of survival and reproduction, wheat has become one of the most successful plants in the history of the earth. In areas such as the Great Plains of North America, where not a single wheat stalk grew 10,000 years ago, you can today walk for hundreds upon hundreds of kilometres without encountering any other plant. Worldwide, wheat covers about 2.25 million square kilometres of the globe's surface, almost ten times the size of Britain. How did this grass turn from insignificant to ubiquitous?

Wheat did it by manipulating *Homo sapiens* to its advantage. This ape had been living a fairly comfortable life hunting and gathering until about 10,000 years ago, but then began to invest more and more effort in cultivating wheat. Within a couple of millennia, humans in many parts of the world were doing little from dawn to dusk other than taking care of wheat plants. It wasn't easy. Wheat

demand a lot of them. Wheat didn't like rocks and pebbles, so Sapiens broke their backs clearing fields. Wheat didn't like sharing its space, water and nutrients with other plants, so men and women laboured long days weeding under the scorching sun. Wheat got sick, so Sapiens had to keep a watch out for worms and blight. Wheat was attacked by rabbits and locust swarms, so the farmers built fences and stood guard over the fields. Wheat was thirsty, so humans dug irrigation canals or lugged heavy buckets from the well to water it. Its hunger even impelled Sapiens to collect animal faeces to nourish the ground in which wheat grew.

The body of *Homo sapiens* had not evolved for such tasks. It was adapted to climbing apple trees and running after gazelles, not to clearing rocks and carrying water buckets. Human spines, knees, necks and arches paid the price. Studies of ancient skeletons indicate that the transition to agriculture brought about a plethora of ailments, such as slipped discs, arthritis and hernias. Moreover, the new agricultural tasks demanded so much time that people were forced to settle permanently next to their wheat fields. This completely changed their way of life. We did not domesticate wheat. It domesticated us. The word 'domesticate' comes from the Latin '*domus*', which means 'house'. Who's the one living in a house? Not the wheat. It's the Sapiens.

How did wheat convince *Homo sapiens* to exchange a rather good life for a more miserable existence? What did it offer in return? It did not offer a better diet. Remember, humans are omnivorous apes who thrive on a wide variety of foods. Grains made up only a small fraction of the human diet before the Agricultural Revolution. A diet based on cereals is poor in minerals and vitamins, hard to digest, and really bad for your teeth and gums.

Wheat did not give people economic security. The life of a peasant is less secure than that of a hunter-gatherer. Foragers relied on dozens of species to survive, and could therefore weather difficult years even without stocks of preserved food. If the availability of one species

was reduced, they could gather and hunt more of other species. Farming societies have, until very recently, relied for the great bulk of their calorie intake on a small variety of domesticated plants. In many areas, they relied on just a single staple, such as wheat, potatoes or rice. If the rains failed or clouds of locusts arrived or if a fungus infected that staple species, peasants died by the thousands and millions.

Nor could wheat offer security against human violence. The early farmers were at least as violent as their forager ancestors, if not more so. Farmers had more possessions and needed land for planting. The loss of pasture land to raiding neighbours could mean the difference between subsistence and starvation, so there was much less room for compromise. When a foraging band was hard-pressed by a stronger rival, it could usually move on. It was difficult and dangerous, but it was feasible. When a strong enemy threatened an agricultural village, retreat meant giving up fields, houses and granaries. In many



12. Tribal warfare in New Guinea between two farming communities (1960). Such scenes were probably widespread in the thousands of years following the Agricultural Revolution.

cases, this doomed the refugees to starvation. Farmers, therefore, tended to stay put and fight to the bitter end.

Many anthropological and archaeological studies indicate that in simple agricultural societies with no political frameworks beyond village and tribe, human violence was responsible for about 15 per cent of deaths, including 25 per cent of male deaths. In contemporary New Guinea, violence accounts for 30 per cent of male deaths in one agricultural tribal society, the Dani, and 35 per cent in another, the Enga. In Ecuador, perhaps 50 per cent of adult Waorani meet a violent death at the hands of another human!³ In time, human violence was brought under control through the development of larger social frameworks – cities, kingdoms and states. But it took thousands of years to build such huge and effective political structures.

Village life certainly brought the first farmers some immediate benefits, such as better protection against wild animals, rain and cold. Yet for the average person, the disadvantages probably outweighed the advantages. This is hard for people in today's prosperous societies to appreciate. Since we enjoy affluence and security, and since our affluence and security are built on foundations laid by the Agricultural Revolution, we assume that the Agricultural Revolution was a wonderful improvement. Yet it is wrong to judge thousands of years of history from the perspective of today. A much more representative viewpoint is that of a three-year-old girl dying from malnutrition in first-century China because her father's crops have failed. Would she say, 'I am dying from malnutrition, but in 2,000 years, people will have plenty to eat and live in big air-conditioned houses, so my suffering is a worthwhile sacrifice'?

What then did wheat offer agriculturists, including that malnourished Chinese girl? It offered nothing for people as individuals. Yet it did bestow something on *Homo sapiens* as a species. Cultivating wheat provided much more food per unit of territory, and thereby enabled *Homo sapiens* to multiply exponentially. Around 13,000 BC,

when people fed themselves by gathering wild plants and hunting wild animals, the area around the oasis of Jericho, in Palestine, could support at most one roaming band of about a hundred relatively healthy and well-nourished people. Around 8500 BC, when wild plants gave way to wheat fields, the oasis supported a large but cramped village of 1,000 people, who suffered far more from disease and malnourishment.

The currency of evolution is neither hunger nor pain, but rather copies of DNA helixes. Just as the economic success of a company is measured only by the number of dollars in its bank account, not by the happiness of its employees, so the evolutionary success of a species is measured by the number of copies of its DNA. If no more DNA copies remain, the species is extinct, just as a company without money is bankrupt. If a species boasts many DNA copies, it is a success, and the species flourishes. From such a perspective, 1,000 copies are always better than a hundred copies. This is the essence of the Agricultural Revolution: the ability to keep more people alive under worse conditions.

Yet why should individuals care about this evolutionary calculus? Why would any sane person lower his or her standard of living just to multiply the number of copies of the *Homo sapiens* genome? Nobody agreed to this deal: the Agricultural Revolution was a trap.

The Luxury Trap

The rise of farming was a very gradual affair spread over centuries and millennia. A band of *Homo sapiens* gathering mushrooms and nuts and hunting deer and rabbit did not all of a sudden settle in a permanent village, ploughing fields, sowing wheat and carrying water from the river. The change proceeded by stages, each of which involved just a small alteration in daily life.

Homo sapiens reached the Middle East around 70,000 years ago.

For the next 50,000 years our ancestors flourished there without agriculture. The natural resources of the area were enough to support its human population. In times of plenty people had a few more children, and in times of need a few less. Humans, like many mammals, have hormonal and genetic mechanisms that help control procreation. In good times females reach puberty earlier, and their chances of getting pregnant are a bit higher. In bad times puberty is late and fertility decreases.

To these natural population controls were added cultural mechanisms. Babies and small children, who move slowly and demand much attention, were a burden on nomadic foragers. People tried to space their children three to four years apart. Women did so by nursing their children around the clock and until a late age (around-the-clock suckling significantly decreases the chances of getting pregnant). Other methods included full or partial sexual abstinence (backed perhaps by cultural taboos), abortions and occasionally infanticide.⁴

During these long millennia people occasionally ate wheat grain, but this was a marginal part of their diet. About 18,000 years ago, the last ice age gave way to a period of global warming. As temperatures rose, so did rainfall. The new climate was ideal for Middle Eastern wheat and other cereals, which multiplied and spread. People began eating more wheat, and in exchange they inadvertently spread its growth. Since it was impossible to eat wild grains without first winnowing, grinding and cooking them, people who gathered these grains carried them back to their temporary campsites for processing. Wheat grains are small and numerous, so some of them inevitably fell on the way to the campsite and were lost. Over time, more and more wheat grew along favourite human trails and near campsites.

When humans burned down forests and thickets, this also helped wheat. Fire cleared away trees and shrubs, allowing wheat and other grasses to monopolise the sunlight, water and nutrients. Where wheat became particularly abundant, and game and other food sources were also plentiful, human bands could gradually give up

their nomadic lifestyle and settle down in seasonal and even permanent camps.

At first they might have camped for four weeks during the harvest. A generation later, as wheat plants multiplied and spread, the harvest camp might have lasted for five weeks, then six, and finally it became a permanent village. Evidence of such settlements has been discovered throughout the Middle East, particularly in the Levant, where the Natufian culture flourished from 12,500 BC to 9500 BC. The Natufians were hunter-gatherers who subsisted on dozens of wild species, but they lived in permanent villages and devoted much of their time to the intensive gathering and processing of wild cereals. They built stone houses and granaries. They stored grain for times of need. They invented new tools such as stone scythes for harvesting wild wheat, and stone pestles and mortars to grind it.

In the years following 9500 BC, the descendants of the Natufians continued to gather and process cereals, but they also began to cultivate them in more and more elaborate ways. When gathering wild grains, they took care to lay aside part of the harvest to sow the fields next season. They discovered that they could achieve much better results by sowing the grains deep in the ground rather than haphazardly scattering them on the surface. So they began to hoe and plough. Gradually they also started to weed the fields, to guard them against parasites, and to water and fertilise them. As more effort was directed towards cereal cultivation, there was less time to gather and hunt wild species. The foragers became farmers.

No single step separated the woman gathering wild wheat from the woman farming domesticated wheat, so it's hard to say exactly when the decisive transition to agriculture took place. But, by 8500 BC, the Middle East was peppered with permanent villages such as Jericho, whose inhabitants spent most of their time cultivating a few domesticated species.

With the move to permanent villages and the increase in food supply, the population began to grow. Giving up the nomadic

lifestyle enabled women to have a child every year. Babies were weaned at an earlier age – they could be fed on porridge and gruel. The extra hands were sorely needed in the fields. But the extra mouths quickly wiped out the food surpluses, so even more fields had to be planted. As people began living in disease-ridden settlements, as children fed more on cereals and less on mother's milk, and as each child competed for his or her porridge with more and more siblings, child mortality soared. In most agricultural societies at least one out of every three children died before reaching twenty.⁵ Yet the increase in births still outpaced the increase in deaths; humans kept having larger numbers of children.

With time, the 'wheat bargain' became more and more burdensome. Children died in droves, and adults ate bread by the sweat of their brows. The average person in Jericho of 8500 BC lived a harder life than the average person in Jericho of 9500 BC or 13,000 BC. But nobody realised what was happening. Every generation continued to live like the previous generation, making only small improvements here and there in the way things were done. Paradoxically, a series of 'improvements', each of which was meant to make life easier, added up to a millstone around the necks of these farmers.

Why did people make such a fateful miscalculation? For the same reason that people throughout history have miscalculated. People were unable to fathom the full consequences of their decisions. Whenever they decided to do a bit of extra work – say, to hoe the fields instead of scattering seeds on the surface – people thought, 'Yes, we will have to work harder. But the harvest will be so bountiful! We won't have to worry any more about lean years. Our children will never go to sleep hungry.' It made sense. If you worked harder, you would have a better life. That was the plan.

The first part of the plan went smoothly. People indeed worked harder. But people did not foresee that the number of children would increase, meaning that the extra wheat would have to be shared between more children. Neither did the early farmers understand

that feeding children with more porridge and less breast milk would weaken their immune system, and that permanent settlements would be hotbeds for infectious diseases. They did not foresee that by increasing their dependence on a single source of food, they were actually exposing themselves even more to the depredations of drought. Nor did the farmers foresee that in good years their bulging granaries would tempt thieves and enemies, compelling them to start building walls and doing guard duty.

Then why didn't humans abandon farming when the plan backfired? Partly because it took generations for the small changes to accumulate and transform society and, by then, nobody remembered that they had ever lived differently. And partly because population growth burned humanity's boats. If the adoption of ploughing increased a village's population from 100 to 110, which ten people would have volunteered to starve so that the others could go back to the good old times? There was no going back. The trap snapped shut.

The pursuit of an easier life resulted in much hardship, and not for the last time. It happens to us today. How many young college graduates have taken demanding jobs in high-powered firms, vowing that they will work hard to earn money that will enable them to retire and pursue their real interests when they are thirty-five? But by the time they reach that age, they have large mortgages, children to school, houses in the suburbs that necessitate at least two cars per family, and a sense that life is not worth living without really good wine and expensive holidays abroad. What are they supposed to do, go back to digging up roots? No, they double their efforts and keep slaving away.

One of history's few iron laws is that luxuries tend to become necessities and to spawn new obligations. Once people get used to a certain luxury, they take it for granted. Then they begin to count on it. Finally they reach a point where they can't live without it. Let's take another familiar example from our own time. Over the

last few decades, we have invented countless time-saving devices that are supposed to make life more relaxed – washing machines, vacuum cleaners, dishwashers, telephones, mobile phones, computers, email. Previously it took a lot of work to write a letter, address and stamp an envelope, and take it to the mailbox. It took days or weeks, maybe even months, to get a reply. Nowadays I can dash off an email, send it halfway around the globe, and (if my addressee is online) receive a reply a minute later. I've saved all that trouble and time, but do I live a more relaxed life?

Sadly not. Back in the snail-mail era, people usually only wrote letters when they had something important to relate. Rather than writing the first thing that came into their heads, they considered carefully what they wanted to say and how to phrase it. They expected to receive a similarly considered answer. Most people wrote and received no more than a handful of letters a month and seldom felt compelled to reply immediately. Today I receive dozens of emails each day, all from people who expect a prompt reply. We thought we were saving time; instead we revved up the treadmill of life to ten times its former speed and made our days more anxious and agitated.

Here and there a Luddite holdout refuses to open an email account, just as thousands of years ago some human bands refused to take up farming and so escaped the luxury trap. But the Agricultural Revolution didn't need every band in a given region to join up. It only took one. Once one band settled down and started tilling, whether in the Middle East or Central America, agriculture was irresistible. Since farming created the conditions for swift demographic growth, farmers could usually overcome foragers by sheer weight of numbers. The foragers could either run away, abandoning their hunting grounds to field and pasture, or take up the plough-share themselves. Either way, the old life was doomed.

The story of the luxury trap carries with it an important lesson. Humanity's search for an easier life released immense forces of change that transformed the world in ways nobody envisioned or wanted.

Nobody plotted the Agricultural Revolution or sought human dependence on cereal cultivation. A series of trivial decisions aimed mostly at filling a few stomachs and gaining a little security had the cumulative effect of forcing ancient foragers to spend their days carrying water buckets under a scorching sun.

1. Describe the effects of the agricultural revolution on humans. Consider the following:

- Effects on the body
- Social effects
- Economic effects
- Conflicts

2. Why does Harari describe the agricultural revolution as a "fraud"?

6

Building Pyramids

developed a very strong attachment to this structure. This was a far-reaching revolution, whose impact was psychological as much as architectural. Henceforth, attachment to 'my house' and separation from the neighbours became the psychological hallmark of a much more self-centred creature.

The new agricultural territories were not only far smaller than those of ancient foragers, but also far more artificial. Aside from the use of fire, hunter-gatherers made few deliberate changes to the lands in which they roamed. Farmers, on the other hand, lived in artificial human islands that they laboriously carved out of the surrounding wilds. They cut down forests, dug canals, cleared fields, built houses, ploughed furrows, and planted fruit trees in tidy rows. The resulting artificial habitat was meant only for humans and 'their' plants and animals, and was often fenced off by walls and hedges. Farmer families did all they could to keep out wayward weeds and wild animals. If such interlopers made their way in, they were driven out. If they persisted, their human antagonists sought ways to exterminate them. Particularly strong defences were erected around the home. From the dawn of agriculture until this very day, billions of humans armed with branches, swatters, shoes and poison sprays have waged relentless war against the diligent ants, furtive roaches, adventurous spiders and misguided beetles that constantly infiltrate the human domicile.

For most of history these man-made enclaves remained very small, surrounded by expanses of untamed nature. The earth's surface measures about 510 million square kilometres, of which 155 million is land. As late as AD 1400, the vast majority of farmers, along with their plants and animals, clustered together in an area of just 11 million square kilometres – 2 per cent of the planet's surface.² Everywhere else was too cold, too hot, too dry, too wet, or otherwise unsuited for cultivation. This minuscule 2 per cent of the earth's surface constituted the stage on which history unfolded.

People found it difficult to leave their artificial islands. They could not abandon their houses, fields and granaries without grave

THE AGRICULTURAL REVOLUTION IS ONE of the most controversial events in history. Some partisans proclaim that it set humankind on the road to prosperity and progress. Others insist that it led to perdition. This was the turning point, they say, where Sapiens cast off its intimate symbiosis with nature and sprinted towards greed and alienation. Whichever direction the road led, there was no going back. Farming enabled populations to increase so radically and rapidly that no complex agricultural society could ever again sustain itself if it returned to hunting and gathering. Around 10,000 BC, before the transition to agriculture, earth was home to about 5–8 million nomadic foragers. By the first century AD, only 1–2 million foragers remained (mainly in Australia, America and Africa), but their numbers were dwarfed by the world's 250 million farmers.¹

The vast majority of farmers lived in permanent settlements; only a few were nomadic shepherds. Settling down caused most people's turf to shrink dramatically. Ancient hunter-gatherers usually lived in territories covering many dozens and even hundreds of square kilometres. 'Home' was the entire territory, with its hills, streams, woods and open sky. Peasants, on the other hand, spent most of their days working a small field or orchard, and their domestic lives centred on a cramped structure of wood, stone or mud, measuring no more than a few dozen metres – the house. The typical peasant

risk of loss. Furthermore, as time went on they accumulated more and more things – objects, not easily transportable, that tied them down. Ancient farmers might seem to us dirt poor, but a typical family possessed more artefacts than an entire forager tribe.

The Coming of the Future

While agricultural space shrank, agricultural time expanded. Foragers usually didn't waste much time thinking about next month or next summer. Farmers sailed in their imagination years and decades into the future.

Foragers discounted the future because they lived from hand to mouth and could only preserve food or accumulate possessions with difficulty. Of course, they clearly engaged in some advanced planning. The creators of the cave paintings of Chauvet, Lascaux and Altamira almost certainly intended them to last for generations. Social alliances and political rivalries were long-term affairs. It often took years to repay a favour or to avenge a wrong. Nevertheless, in the subsistence economy of hunting and gathering, there was an obvious limit to such long-term planning. Paradoxically, it saved foragers a lot of anxieties. There was no sense in worrying about things that they could not influence.

The Agricultural Revolution made the future far more important than it had ever been before. Farmers must always keep the future in mind and must work in its service. The agricultural economy was based on a seasonal cycle of production, comprising long months of cultivation followed by short peak periods of harvest. On the night following the end of a plentiful harvest the peasants might celebrate for all they were worth, but within a week or so they were again up at dawn for a long day in the field. Although there was enough food for today, next week and even next month, they had to worry about next year and the year after that.

Concern about the future was rooted not only in seasonal cycles of production, but also in the fundamental uncertainty of agriculture. Since most villages lived by cultivating a very limited variety of domesticated plants and animals, they were at the mercy of droughts, floods and pestilence. Peasants were obliged to produce more than they consumed so that they could build up reserves. Without grain in the silo, jars of olive oil in the cellar, cheese in the pantry and sausages hanging from the rafters, they would starve in bad years. And bad years were bound to come, sooner or later. A peasant living on the assumption that bad years would not come didn't live long.

Consequently, from the very advent of agriculture, worries about the future became major players in the theatre of the human mind. Where farmers depended on rains to water their fields, the onset of the rainy season meant that each morning the farmers gazed towards the horizon, sniffing the wind and straining their eyes. Is that a cloud? Would the rains come on time? Would there be enough? Would violent storms wash the seeds from the fields and batter down seedlings? Meanwhile, in the valleys of the Euphrates, Indus and Yellow rivers, other peasants monitored, with no less trepidation, the height of the water. They needed the rivers to rise in order to spread the fertile topsoil washed down from the highlands, and to enable their vast irrigation systems to fill with water. But floods that surged too high or came at the wrong time could destroy their fields as much as a drought.

Peasants were worried about the future not just because they had more cause for worry, but also because they could do something about it. They could clear another field, dig another irrigation canal, sow more crops. The anxious peasant was as frenetic and hard-working as a harvester ant in the summer, sweating to plant olive trees whose oil would be pressed by his children and grandchildren, putting off until the winter or the following year the eating of the food he craved today.

The stress of farming had far-reaching consequences. It was the

foundation of large-scale political and social systems. Sadly, the diligent peasants almost never achieved the future economic security they so craved through their hard work in the present. Everywhere, rulers and elites sprang up, living off the peasants' surplus food and leaving them with only a bare subsistence.

These forfeited food surpluses fuelled politics, wars, art and philosophy. They built palaces, forts, monuments and temples. Until the late modern era, more than 90 per cent of humans were peasants who rose each morning to till the land by the sweat of their brows. The extra they produced fed the tiny minority of elites – kings, government officials, soldiers, priests, artists and thinkers – who fill the history books. History is something that very few people have been doing while everyone else was ploughing fields and carrying water buckets.

An Imagined Order

The food surpluses produced by peasants, coupled with new transportation technology, eventually enabled more and more people to cram together first into large villages, then into towns, and finally into cities, all of them joined together by new kingdoms and commercial networks.

Yet in order to take advantage of these new opportunities, food surpluses and improved transportation were not enough. The mere fact that one can feed a thousand people in the same town or a million people in the same kingdom does not guarantee that they can agree how to divide the land and water, how to settle disputes and conflicts, and how to act in times of drought or war. And if no agreement can be reached, strife spreads, even if the storehouses are bulging. It was not food shortages that caused most of history's wars and revolutions. The French Revolution was spearheaded by affluent lawyers, not by famished peasants. The Roman Republic

reached the height of its power in the first century BC, when treasure fleets from throughout the Mediterranean enriched the Romans beyond their ancestors' wildest dreams. Yet it was at that moment of maximum affluence that the Roman political order collapsed into a series of deadly civil wars. Yugoslavia in 1991 had more than enough resources to feed all its inhabitants, and still disintegrated into a terrible bloodbath.

The problem at the root of such calamities is that humans evolved for millions of years in small bands of a few dozen individuals. The handful of millennia separating the Agricultural Revolution from the appearance of cities, kingdoms and empires was not enough time to allow an instinct for mass cooperation to evolve.

Despite the lack of such biological instincts, during the foraging era, hundreds of strangers were able to cooperate thanks to their shared myths. However, this cooperation was loose and limited. Every Sapiens band continued to run its life independently and to provide for most of its own needs. An archaic sociologist living 20,000 years ago, who had no knowledge of events following the Agricultural Revolution, might well have concluded that mythology had a fairly limited scope. Stories about ancestral spirits and tribal totems were strong enough to enable 500 people to trade seashells, celebrate the odd festival, and join forces to wipe out a Neanderthal band, but no more than that. Mythology, the ancient sociologist would have thought, could not possibly enable millions of strangers to cooperate on a daily basis.

But that turned out to be wrong. Myths, it transpired, *are* stronger than anyone could have imagined. When the Agricultural Revolution opened opportunities for the creation of crowded cities and mighty empires, people invented stories about great gods, motherlands and joint stock companies to provide the needed social links. While human evolution was crawling at its usual snail's pace, the human imagination was building astounding networks of mass cooperation, unlike any other ever seen on earth.

3. What is the purpose of myths in a society?

4. What information in this reading did you find particularly surprising or interesting? Why?