Of Lost Freedoms and Non-Revolutions

Chapter One

In earlier books I used comparative mythology and the Electric Star hypothesis to ask whether the archaic gods might preserve memories of a primordial sun and a sky quite unlike our own. I shall return to my reasons for entertaining that hypothesis in the next book. Here I want to pick up a question we can investigate with evidence much closer to home. People have experimented with a great variety of ways of living together. How did so many of us come to feel that we were stuck with the arrangements we have, and that 'human nature' was what kept us there?

Our Widely Travelled Ancestors

As we saw in *Forgive Us Our Debts*, Book Six in this series, we ought to be wary of assuming that people have always known exactly what nation they belonged to. Ask somebody today where one country ends and another begins and they can point to a line on a map. Ask where an Upper Palaeolithic society ended and the archaeologist has a rather different job on their hands. A tool can be carried across a river. A story can cross it without leaving the archaeologist anything to find.

David Graeber and David Wengrow draw attention to resemblances in tools, ornaments and ceremonial practices over great stretches of Eurasia. Some resemblances have fairly straightforward explanations. Give two inventive people a hollow bird bone and either might hit on the idea of making a flute. Yet the bone and ivory flutes found in the Swabian Jura more than 35,000 years ago bear witness to an accomplished tradition. The range of objects those musicians could make was hardly dictated by the poverty of their technology. And why should the particular ornament you chose to wear, or the gifts you put in a grave, be dictated by its practical merits at all? Shared fashions and customs give us good reason to consider the movement of people and ideas. [1,2]

We have clues to local differences, too. Jack Baker and colleagues compared ornaments worn by Europeans associated with the Gravettian archaeological tradition, roughly 34,000 to 24,000 years ago. Within that one broad tradition they identified nine distinctive patterns. I would be as reluctant to give each of those patterns a frontier as I would be to call everyone from the Alps to Mongolia members of one society. It is quite possible for a traveller to recognise the way people hunt, hear a familiar tune and still be struck by the unfamiliar things they wear. [3]

What might have made movement possible? The usual picture of a little band of foragers amounts to an extended family on the move. Kim Hill and his colleagues looked at the living arrangements of more than 5,000 people across 32 foraging societies. On average, about 7 per cent of an adult's fellow adult camp members were their parents, children or siblings. Among the others might be a spouse, an in-law, a more distant relative or somebody with no known family connection. Counting relatives tells us nothing by itself about anyone's birthplace or first language. It does tell us that people who live and work together need not all belong to one close-knit biological family. [4]

That observation opens up a possibility that is easy to miss if we picture everyone jealously guarding the family hunting ground. If people could have obligations to one another across camps, what prevented those obligations from extending across languages, too? In parts of Aboriginal Australia a visitor could arrive among people who spoke a different language and still be placed within a familiar system of kinship. One way this could work was through moieties, a division into two named social groupings that helped determine how people were to treat one another. A visitor had to know whom to approach and what obligations a welcome entailed. Precisely because these were recognised obligations, a welcome could mean considerably more than a stranger's momentary goodwill. [1]

Graeber and Wengrow offer a North American parallel. They describe how, some five hundred years ago, a traveller between the Great Lakes and the Louisiana bayous might find members of a familiar Bear, Elk or Beaver clan who owed a fellow member food and shelter. The striking thing about that picture is how much difference it leaves intact. A host might speak a language the visitor could scarcely understand and still know why a place ought to be found for them. Historical examples such as this give us a way of imagining what long-distance ties could accomplish. A prehistoric bead cannot tell us whom its owner was obliged to put up for the night. [1]

Growing Populations and Shrinking Societies

Here is the paradox I have in mind. We tend to measure the size of a person's world by the distance they can cover. Before horses, you had your own two feet. Harness a horse to a wagon and surely your world grew larger. Yet even the order in which we picture the inventions can lead us astray. Tens of thousands of years before there were wheeled vehicles, people reached the Ice Age landmass that included Australia and New Guinea. Getting there required several sea crossings. Even at low sea level, one stretch approached a hundred kilometres. At the water's edge, those travellers did rather more than turn back. [5]

Now suppose you have the means to travel twice as fast as your grandparents, but nowhere at the end of the journey where you have a claim to a meal or a bed. In one quite ordinary sense, their world was bigger than yours. Graeber and Wengrow suggest that, in some places, the geographical reach of a person's obligations and friendships contracted even as the population grew. Nobody has a census of distances travelled in prehistory. What interests me is how a shrinking social world could emerge without a single road becoming harder to travel. [1]

As the last glacial period drew to a close, changing coastlines, forests and animal populations altered the living that could be made in particular places. In parts of Europe, archaeologists call the postglacial foraging period the Mesolithic. A household that regularly fished a stretch of river faced different problems from people who followed big game or depended on nuts and berries from a woodland. Where did the fish run at a particular time of year? How did you cure them so there would be something left to eat when the run was over? How did you make a crop of bitter acorns fit for the pot? A great deal of human ingenuity goes into an unremarkable breakfast.

Such questions did not suddenly occur to people at the end of the Ice Age. At Ohalo II, beside the Sea of Galilee, traces on a grinding stone show that foragers processed wild cereals roughly 23,000 years ago. At poorly preserved sites, stone and bone may be all we see.

Elsewhere, plants, ornaments, burials, musical instruments and art give us a richer picture. What changed in particular regions was the weight placed on different foods and the ways of life built around them. Cuisine itself was already old. [2,6]

A way of cooking can be a way of recognising one another. Graeber and Wengrow invite us to imagine neighbours who regularly start the day with fish stew looking across at those who breakfast on berries and porridge. Both might know perfectly well how to make either dish. Indeed, they have to know something about the people on the other bank before it occurs to them that their breakfasts are worth making jokes about. A recipe can travel, and its travellers can still take considerable pride in the way it tastes at home. [1]

Over time, a single river valley might come to contain people who spoke different languages, organised their work differently and disagreed about the proper way to bring up a child. We can identify regional differences long before the Mesolithic, and local identities have often flourished alongside far-reaching connections. The relevant change comes when a distinction is made into a condition of admission. If my accent identifies me as a stranger, what follows? Am I invited in to tell the news, or informed that this is where my welcome ends?

That difference matters politically. Suppose the chief is making life miserable and you have relatives in the next valley who are bound to take you in. You can laugh and say, 'Enough of you, mate. I'm off.' Your neighbours may say much the same thing, in which case the chief has a problem. Now suppose the next valley is closed to you, or the people there will let you visit but will never let you settle. You can still laugh. You may have rather less to laugh about the following morning.

I take this to be one route by which authority could harden into domination. A leader needs fewer means of holding people in place when they have nowhere else to go. Population growth by itself does not close the valley. That takes people making and enforcing decisions about whom they will receive. The point of looking at hospitality is that it brings one of those decisions, and one of our lost freedoms, into view.

Chapter Two

The last chapter left us with a chief who could be laughed at and a rather more troublesome chief who could afford to ignore the laughter. We might call the first community more egalitarian than the second. But what exactly do we mean by 'equal'?

The Many Ways of Being Equal

You can pick a friend out in a crowd because she doesn't look, sound or act quite like anybody else. Yet she has innumerable things in common with the rest of the crowd. She may speak the same language as some, live in the same street as others, and have exactly the same right to cast a vote as somebody who disagrees with her about practically everything. When we say two people are equal there is always a question worth asking. Equal in what respect?

There is nothing vague about two people having one vote apiece. The difficulty comes when we try to turn an answer about one particular thing into a verdict on their lives as a whole. A vote each tells us nothing about whether one controls the other's pay, can have the other turned out of their home, or must defer to the other in council. What goes missing if we group all those relationships under the heading 'inequality' and then set about counting votes alone?

Anthropologists run into this problem when they use the expression 'egalitarian society'. It is tempting to define one by the absence of hierarchies. But shall we count the authority of the best navigator while everyone is at sea? Does its being confined to the voyage make a difference? It is equally tempting to define an egalitarian people as a people who agree on what matters. The most thoroughly ranked society could meet that test if everybody agreed on the proper order of precedence. We need to know what people have an equal claim to, who counts as a member, and what happens to someone who insists on exercising that claim.

One community may pride itself on seeing that everyone has food when a hunt succeeds. Another may value everybody's right to speak in council. In either place there may be distinctions of age or prestige, and in either place some people may be excluded. If the question is who goes hungry, it would be peculiar to answer it with the seating plan of the council. Rather than abandon a serviceable word, I would like to keep the object of comparison in sight.

Private property has long offered an apparently convenient measure. In *The Wealth of Nations*, Adam Smith associated what he took to be the small accumulations of property among hunting peoples with the limited role of magistrates. From there it is a short step to the familiar picture of a people whose members are roughly equal because none possesses very much. But notice the change in the question. The quantity of property in a community tells us one thing. How it is distributed tells us another. A small stockpile under one person's exclusive control can give its owner considerable leverage, especially when everyone is hungry. [7]

In the conventional story, foragers are prevented from dominating one another by the sheer difficulty of keeping anything worth seizing. A technical improvement makes a surplus possible. Full-time specialists, priests and warriors lay claim to it. Merchants, lawyers and politicians soon follow, turning an improvised claim into a rightful one and seeing to it that officials enforce the rules. By the end of the story we find ourselves living in the shadow of the state. The trouble is all the work being done by that innocent word 'soon'. Who put the store under guard? Who agreed to do the guarding? Why did the people who filled the store go on delivering their grain to it?

Cereal farming and storage helped support scribes, officials and other specialists in pharaonic Egypt. That tells us something important about how the arrangement could be sustained. To appreciate what it still leaves to explain, consider an analogy from Graeber and Wengrow. In the twelfth century the Persian mathematician Sharaf al-Din al-Tusi investigated cubic equations, including the conditions under which they have positive solutions. Some of his techniques addressed questions that we can now solve by differentiation. It would be an anachronism to credit him with having developed modern calculus. And even a flawless history of all the mathematics used to build an atomic bomb would scarcely explain the decision to destroy Hiroshima. The relevant question in Egypt is how particular people gained the right to collect someone else's grain and keep it. Farmers elsewhere planted and harvested for generations without acquiring a pharaoh. [1,8]

Equality Through Freedom

A second look at 'surplus' is in order. Are we the only animals that put anything aside? A squirrel burying nuts against the winter makes short work of that idea. What seems remarkable about us is the variety of ends to which we can put the things we accumulate. The same grain can see a family through a bad winter, be owed to a neighbour, or be demanded as tribute by somebody who has never planted a seed. A society can produce more than it immediately consumes while leaving a great deal to be decided about what the extra is for.

Humans also acquire wants their grandparents could scarcely have imagined. I can see a blessing and a curse in that capacity. It allows us to invent things worth wanting and to undertake works no household could manage alone. It allows us to exhaust the ground, and ourselves, in pursuit of things we have only recently come to think indispensable. Whether the wish for more obliges us to accept a permanent chain of command is another matter.

Marx envisaged a society in which the means of production were held in common and a far greater productive capacity helped make distribution according to need possible. That required a transformation in who controlled production. Nothing in the mere ease of producing goods would hand the factory over to its workers. A different answer to the problem is to prevent anyone from accumulating enough to make others dependent. Rules of sharing might accomplish that even where food is plentiful. The two arguments point to different ways of managing a surplus, and neither can be settled by asking how large the surplus is. [9]

Eleanor Leacock (1922–87) approached equality from a different direction. In her studies of Indigenous communities described in older records as Montagnais-Naskapi, she asked who actually took decisions about the work people did. Her reading of early accounts, together with her field research, led her to emphasise women's autonomy and the changes that missionary activity and the fur trade brought to it. Suppose the women who carry out an undertaking can decide among themselves when and how to do it. What would we learn about their standing from a scale which measured only how nearly their titles matched the men's? [10]

It is a modest change of emphasis with quite far-reaching consequences. We can speak of a freedom that people enjoy equally while allowing that they will use it to live quite different lives. And we can ask a much better question of a chief than how high he stands in the ceremonial order. What is he entitled to do if people decline to follow him?

Consider the world of Kandiaronk, the late seventeenth-century Wendat leader and diplomat. There were councils, recognised offices and leaders with real responsibilities. A chief who

could persuade others in council might have an influence a mediocre speaker could only envy. His powers of persuasion mattered precisely because holding the office did not give him a general licence to compel obedience. There was nothing make-believe about the diplomacy. The Europeans negotiating with Kandiaronk had very good reason to take him seriously. Nor did all who came within reach of Wendat power enjoy the same freedom. A captive in war was in a decidedly different position from a member who could disagree in council. The example lets us distinguish the authority to speak for others from the power to dictate to them. [1,11]

Lost Freedoms

No human being can be free of every constraint. We have to eat, and we have to find some way of living with other people who have ideas of their own. But we can ask which liberties people actually have the means to exercise. In *The Dawn of Everything*, Graeber and Wengrow distinguish three. We have encountered the freedom to leave and settle elsewhere. Then there is the freedom to decline an order, and the collective freedom to remake the arrangements under which we live. The three belong together. If I can refuse an instruction only by leaving, it matters a great deal who will take me in. [1]

How far could you travel today if you had no money? How long before somebody asked for a document you could not produce? A wealthy traveller might cross an ocean in a day and be welcomed at the other end. A refugee making a much shorter journey can find a border closed or be admitted on terms that leave the family's future in somebody else's hands. That ancient visitor with a clan connection was in a fortunate position. Had the same traveller arrived as an enemy, the outcome might have been quite different. To ask who was entitled to a welcome, then as now, is to ask who could afford to leave.

Then there is the freedom to disobey. People can issue instructions in any number of ways. A language need not even have a special imperative verb form for a speaker to make their wishes perfectly clear. The point is what the other person can do about it. Think of the difference between 'Pass me the salt' at the dinner table and an order to stay late at work when the rent falls due tomorrow. It is entirely possible to resent both and to laugh at only one. [12]

How often are we in a position to laugh? Faced with some jobsworth enforcing a rule that defeats the very purpose of the office, I may deliver a splendid speech about personal liberty on the way home and still find myself back in the queue on Monday. My irritation tells me something about how poorly that arrangement suits me. It cannot tell us under which sort of constitution *Homo sapiens* evolved. What the historical examples do establish is that people have managed quite important affairs while leaving a good deal of room to say no.

The third freedom goes further. A community may choose someone to direct a hunt and then resume making decisions together once everyone is home. The real test comes when the leader thinks the arrangement should continue and everyone else would like to end it. If they can change their institutions by agreement, they retain a freedom that casting a vote for the next director of an interminable hunt would hardly replace. Graeber and Wengrow's question about the rise of rulers is worth keeping in that form. At what point did people lose the practical ability to dispense with them? [1]

What We Are Good At

We are accustomed to calling ourselves a free people. In matters such as elections, speech and association the word names hard-won freedoms that people have good reason to defend. Yet many of us spend much of our waking day in places organised around efficiency, where decisions run down a fairly strict chain of command. An employer may have excellent grounds for deciding how a particular job should be done. It is still worth asking why owning the building and the machinery so often gives one person the right to direct another person's time. Paid employment is a good place to look if we want to know how control over property becomes power over people.

Eighteenth-century European thinkers such as Turgot and Adam Smith had good reason to be interested in the productivity of labour. Europe's supposed superiority was a much less obvious proposition if one began with the health of its cities, its religious persecutions or the limited political voice of much of its population. People elsewhere had ample grounds to make unfavourable comparisons. Yet the picture changes as soon as we ask which European cities, which people elsewhere, and which measure of prosperity we have in mind.

Take wages. One reconstruction by Robert Allen and his colleagues places the purchasing power of eighteenth-century building workers in London and Amsterdam well above that of comparable workers in several Chinese cities. The comparison with some other European cities looks quite different. The wage of a builder is no more a measure of everything people value than the output of a pin factory. It will not support a league table with the whole of Europe, India, China and the Ottoman Empire each occupying a single place until some decisive year. [13]

Smith's pin factory tells us something we really do want to know. Divide the making of a pin into tasks and a group can make far more pins than the same number of people working separately. Smith also worried about the consequences for somebody who spent a lifetime performing a few simple operations. We would do him little justice if we remembered the pins and forgot the pin-maker. What happens to the worker's time, pay and opportunities depends partly on who commands the extra output. [7]

In 1848, John Stuart Mill doubted whether the machines invented up to his day had 'lightened the day's toil of any human being'. The wording matters. Mill was asking where the benefits had gone and expressing a hope that better institutions could turn inventions into leisure. Just the year before, Britain's Ten Hours Act had set in motion a reduction of hours for women and young people in textile factories covered by the law. Their working day became shorter because people made a political issue of its length. The machine was quite capable of being kept running. [14,15]

There is an ingenious rejoinder to all such complaints. However grim the Dickensian factory might look, imagine what came before it. Picture our earliest ancestors searching for food from dawn to dusk, with scarcely an idle hour between the cradle and the grave. Set the factory against that backdrop and even a modest improvement looks like a step along the road from subsistence to freedom. One can quarrel about the rate of improvement and still leave the whole story intact.

Unless, of course, the picture of our ancestors is wrong. How much of the day did people actually have to spend getting their dinner? And what would happen to the argument for progress if the answer, in at least some places, turned out to be 'rather less than you think'?

In 1968, a short contribution to the collection *Man the Hunter* took up just that question.

Chapter Three

The anthropologist I had in mind at the close of the last chapter was Marshall Sahlins (1930–2021). His 1968 contribution was called 'Notes on the Original Affluent Society'. In 1972 he published an expanded version as 'The Original Affluent Society'. Either title gives some idea of the trouble he meant to cause. If civilisation had relieved us of the burden of having to find dinner every day, surely modern workers ought to have more time to themselves than people who hunted and gathered for a living. Had anyone actually counted the hours? [16]

Sahlins looked at studies in which someone had. Some foragers in Arnhem Land in northern Australia, and some of the Ju/'hoansi in the Dobe area of southern Africa, spent surprisingly few hours obtaining food during the periods in which they were observed. Historians do not have anything like an unbroken record of the hours most people worked from the Stone Age to the present. What Sahlins had was enough to put an awkward question to the champions of progress. How could they be so sure of the direction of travel? [16,17]

Living in Abundance

A good deal of the work we do is a means to an end. If the end is to have fish for dinner, a good morning's catch may leave the rest of the day free for something else. If the end is to sell as many fish as possible, the very same catch is an excellent reason to stay out on the water. Whatever drives a person to seek out more, it is worth asking more of what, and to what end.

'Affluence' sounds like a quantity of goods. In Sahlins' hands it becomes a relation between what people want and what they can get. There are two obvious ways to close the gap. You can bring more things within reach, or you can live in circumstances in which a smaller assortment of things answers your purposes quite well. Having enough need not involve comparing yourself with anybody else. Envy can, of course, alter the calculation. A billionaire comparing fortunes with Jeff Bezos or Elon Musk could feel relatively poor without experiencing the slightest difficulty paying for dinner. A hungry family's shortage of food is a rather different matter.

What would count as affluence to a family in the Mesolithic? An inventory drawn up in our own century might give them dismally low marks. They possessed none of the electrical appliances that make life so much easier for us. They might have asked why we preferred a houseful of possessions to the freedom to move camp when the fishing was good elsewhere. A pot that will last for years is an asset in a settled household. If you must carry it every time you move, its weight enters the reckoning. It would be a curious economics that took account of the price of acquiring the pot and none of the trouble of owning it.

One can take hunger, disease or exposure seriously while still asking how a people judged a comfortable life. For Sahlins, the striking possibility was that a group with comparatively few possessions could meet its ordinary wants with time to spare. In describing Dobe, he reported a food quest of roughly fifteen hours a week during the period observed. About two and a half outings of six hours each come to fifteen hours. Spread across a seven-day week, that averages a little over two hours a day. It does not follow that any individual worked for two hours every morning and then knocked off, or that fifteen hours covered all the work of the household. The original count concerned the time adults went out to obtain food. Time spent processing it, fetching fuel, repairing equipment or looking after small children can make a

busy day of somebody's supposed leisure. In Arnhem Land the estimates Sahlins discussed used somewhat different definitions. Even the figures in the same essay cannot simply be put in adjacent columns and compared. [16,17]

The roboticist Hans Moravec, contemplating a future in which machines did most of our work, had fun with this picture. An afternoon spent picking berries or catching fish, he observed, is the sort of thing people with a job might look forward to doing on their day off. Under favourable conditions such an outing could provide several meals. That leaves room for socialising, making things for pleasure or simply resting. I like the comparison, especially as an answer to the fear that we should all be at a loss if we had no boss to report to in the morning. I suspect it looks rather different to the person who must find the fish in bad weather, or keep the children fed until the berries ripen. [18]

As I argued in Book Two, our dextrous hands and our conspicuous delight in solving problems make it hard to picture a healthy human life from which purposeful activity has been removed. What form that activity takes is quite another question. A ripe crop of wild berries calls for intense work. Once the crop is in, it may be sensible to slow down. Why assume the person who sets the pace can never be trusted to decide when enough is enough? An employer paying by the hour may have a reason for expecting an employee to look busy all afternoon. The forager with a basketful of berries has no corresponding obligation to the bush.

Here is where my quarrel with the work ethic begins. There is something suspect about an exhortation to ceaseless labour when it comes from somebody in a position to pass the labour on. Nor is the boss the only interested party. A business that sells unnecessary goods has a practical interest in enlarging our idea of what is necessary. By Sahlins' reckoning, a person whose wants expand faster than the means of satisfying them can grow richer and feel that abundance is moving further away. That is the sense in which I find the 'original affluent society' worth thinking about. It invites a comparison with our own arrangements even if the Purple Dawn or Golden Age considered in Book Nine remains a matter of speculation.

Sahlins' Fall

In Genesis the serpent holds out the prospect of knowledge. Adam's punishment includes the prospect of earning his food by the sweat of his brow. It is easy to retell Sahlins' argument in something like those terms. Foragers could often make their living without submitting to a fixed round of labour. People who depended on a planted field had to be there when it was time to sow, weed and reap. The common-sense history in which farming brought immediate relief from drudgery begins to look decidedly shaky. In a study of Agta communities in the Philippines, for example, greater involvement in agriculture was associated with less leisure. Much of the difference fell on women. That is evidence about a particular set of communities, but what a difference it makes to ask whose time we are counting. [19]

I am supplying the serpent in that reading. Sahlins did not observe the first adoption of farming, and an essay about affluence can hardly tell us what went through the minds of the first cultivators. There is, all the same, a point of contact here with Rousseau. If a practice eventually helped to bind people to the land, how far could they see what they were doing when they took it up? It is a mistake to suppose a forager had to wait for a farmer to explain that seeds grow into plants. Quite a few people who knew farmers had ample opportunity to

compare the two livelihoods. Some found no very good reason to exchange their own for their neighbours'.

Even so, knowing how to encourage the plants you like does not amount to having in your head the instructions for running a farm that can feed a village year after year. And deciding to sow a few seeds in a good spot scarcely amounts to choosing, on behalf of your descendants, to live under a landlord. A string of quite sensible decisions can produce a result nobody intended. In the next chapter I shall come back to what it took for a grass to become a crop. In this one I want to ask how much of our social history can possibly hang on that change.

The Flaw

If the first affluent society is to stand for the whole of prehistoric humanity, where would we look to find out how its members lived? One cannot time a hunting trip from a scatter of flint. Sahlins drew on observed communities in Australia and Africa, among other places. None could have been observed under precisely the conditions in which our Palaeolithic ancestors lived. People had neighbours, histories of their own, and experiences of trade and displacement. The seasons in which an observer happened to be present mattered. So did whether the observer followed a hunter out of camp or stayed behind with the people whose day's work had hardly begun. [16,17]

There is a more elementary difficulty. We already know that foraging peoples have arranged their lives very differently. In north-western California, among the Yurok and some of their neighbours, the acquisition of shell valuables could command a great deal of sustained effort and earn a person considerable standing. Further north along the Pacific coast, some fishing peoples maintained hereditary ranks and held captives in slavery. One would expect to get rather different answers to a question about leisure from a great householder and from a captive obliged to work in that household. What those people had in common with the Ju/'hoansi or Hadza was a broad way of obtaining food. That tells us surprisingly little about who was at liberty to stop working. [1]

Does this dispose of Sahlins? Only if his point requires us to believe in a single original society where everyone prized leisure above everything else. There may be more than one way of enjoying abundance, just as the last chapter found more than one way of being equal. There may equally be people with a good supply of food who can see little point in describing themselves as affluent because they lack something else they value. The more interesting question is how far they were free to do anything about it. Could they leave? Could they disobey? Could they take part in changing the rules? Our evidence will not let us award all three freedoms to every early forager. It does give us good reason to doubt that the three were surrendered, all at once, for the first sack of grain.

Land Management Through the Eyes of the Colonists

It is worth asking why the familiar procession from hunters to farmers to civilisation has been so easy to remember and so difficult to dislodge. On one influential version, people who have yet to discover agriculture must spend nearly all their time in search of food. Where would they find the surplus to feed people who specialised in a craft or the spare hands to build a monument? But that question admits a perfectly good answer in places with neither fields nor

herds. A river full of fish at the right season can feed a surprising number of builders. At Poverty Point in present-day Louisiana, hunter-fisher-gatherers built immense earthworks between about 1700 and 1100 BCE. Whatever difficulties they faced, waiting for the invention of a local farming economy was evidently not one of them. [20]

Europeans who came to occupy land in the Americas had a practical interest in drawing a sharp line between those who cultivated land and those who merely lived on it. Of course, many Americans were already farmers, sometimes on a considerable scale. The proposition that an unploughed tract was going to waste offered a particularly convenient justification where the newcomers wanted meadow, forest or hunting grounds. They could look upon an inhabited countryside and tell themselves that the land was still available for somebody willing to improve it.

Readers of Book Five may remember John Locke's *Second Treatise of Government*. Its publication in 1689 came nearly two centuries after Columbus's first voyage. The earliest colonisers could hardly have consulted it before deciding what to do. Locke gave a particularly influential philosophical expression to an argument that suited colonial expansion. He began with things held in common and asked how any one person could come to own one of them. A person owned his own labour, Locke reasoned. When he put that labour into something held in common he could acquire it, subject to leaving enough and as good for others. Among Locke's own examples were gathering acorns and pursuing a hare. By his own account a person did not have to plough to acquire a right in the product of labour. [21]

The slide comes when we move from a right in the thing gathered to a right in the territory where people gathered it. Locke assigned extraordinary value to the increased yield he attributed to enclosed, cultivated land. Readers who shared his estimates could readily treat an English field as an improvement and overlook the work of the family using the neighbouring woodland. As James Tully argued, the political consequences could be severe. Once the newcomers took their own account of title for granted, an Indigenous people defending its territory could be cast as the aggressor. Different empires invoked different doctrines, made treaties, bought land or took it by force. A philosophical justification tells us how one such claim could be defended. It neither gave the newcomers universal legal title nor extinguished the laws of the people already there. [21,22]

What, after all, did a colonist suppose an improved landscape ought to look like? One bounded by a hedge, perhaps, with neat rows of plants all of one kind. Now picture someone selectively burning undergrowth to encourage food plants, or cutting back shoots so that next year's regrowth will furnish long, straight basketry stems. Success may look, to the eye of a passer-by, very much like nature proceeding without assistance. What apparently grew wild might owe precisely its abundance, its location or its quality to generations of care. M. Kat Anderson documented such practices in California, including pruning, harvesting, planting and burning, drawing in part on the testimony of Indigenous people themselves. An observer who recognised the labour only after it produced something that resembled an English farm had chosen a remarkably poor instrument for detecting it. [23]

There was a second mistake bundled up with the first. One cannot tell from looking across a meadow whether anybody is entitled to enter it, who may harvest there at a particular season, or who is responsible for tending it. Rights exercised by a family, a community or a visitor with permission can all be quite definite. To an outsider they may leave no visible trace.

Admitting that the occupants had rules of their own is not a claim that those rules always produced equality. They could make some people very powerful indeed.

King Carlos

Contrast the political liberties reported among the Wendat with the reception the Spanish governor Pedro Menéndez de Avilés received in south-west Florida in 1566. At the capital of the Calusa, identified by archaeologists with Mound Key, Menéndez was brought before a ruler the Spanish called Carlos, also rendered Caalus. Carlos sat on a raised seat in a great house with an assembly of people in attendance. Visitors did not just walk up to him as if he were the fellow who happened to live at the end of the village. Here was a court, complete with officers, ceremony and an expectation of deference. The ruler could call for tribute from communities at a considerable distance. [24]

Was Carlos a king or a paramount chief? The latter term may do a better job of reminding us that his office had a local history, but nobody watching the audience would have found the word 'king' altogether mysterious. Rank had public consequences. Labour went into erecting a house fit to receive an assembly, moving tribute about and maintaining the channels that connected the capital to the waters outside. It is harder to say how completely the ruler's instructions were obeyed at a distance. A foreign envoy sees people on their best court behaviour. What they do when he and the ruler have gone home is rather less likely to find its way into his report. [24]

So where were the royal granaries? The Calusa supported a substantial part of their economy through estuarine fisheries. At Mound Key, archaeologists have investigated great enclosed basins called watercourts, connected with a canal. The excavators argue that fish could be brought in and held alive for later harvest. A shoal of mullet can supply a considerable surplus, provided you have a way of keeping the catch until you want it. Here the storage problem was solved in water. Once we know what to look for, we can see the engineering, the skill, the labour and the potential to control access to food. [25]

The important claim concerns dependence on staple crops. An archaeologist need not prove that no Calusa ever planted a seed, kept a garden or obtained food in trade. There was enough of a fishing economy to support a court, tribute and marked differences of rank without local staple farming furnishing the basis for them. If the proposition under test is that hereditary rulers require just such a farming base, one genuine counterexample is enough. It does not follow that farming never contributed to the power of rulers anywhere else. That would be a very odd use to make of the Calusa. [24,25]

Suppose, instead, that we met the objection by deciding that a people with a court, tribute and extensive public works could not have been foragers in the first place. We could then go on maintaining indefinitely that no foragers ever developed these institutions. There would simply be no possible discovery that could count against the proposition. It is the familiar 'no true Scotsman' manoeuvre, equally available to the champion of communism or capitalism who repudiates every embarrassing example as soon as it is produced. The trouble lies in changing the qualification after the example has turned up.

There is no similar objection to the useful practice of distinguishing between kinds of foragers. A people who store the proceeds of the fishing season face quite different possibilities from a group who expect to consume what they obtain within a day or two. An expensive fish trap

may need repair and someone may assert a right to decide who uses it. 'Delayed return' draws attention to features like that. It becomes a trick only if a description of how people obtain their food is made to include the very political conclusion we set out to test.

An 'Atypical' Environment?

A second way of setting aside the Calusa is to declare their environment atypical. It was certainly a particularly productive one. If the question were how many people a patch of arid country could support, an estimate based on the mullet fisheries of Florida would be of very little use. But what is the typical environment for people who live by fishing, hunting and gathering? How would we even go about drawing a representative sample of the places available to them before farmers, empires and modern states claimed so much of the land?

Consider what happens if we simply colour in a map showing where ethnographers found foraging communities in the twentieth century. It will include some dry country, some tropical forest and more than one stretch of Arctic coast. Some groups had been pushed out of productive places by settlement, violence or restrictions on access to land. Others had long histories in the environments where they lived and considerable expertise in making a livelihood there. The Inuit, to take the most obvious case, include highly accomplished maritime hunters. A supposedly typical Arctic forager and a supposedly exceptional aquatic one may turn out to be the same person.

One is entitled to ask whether a place was chosen freely. One is not entitled to answer the question for everybody who lived in a desert, a forest or on a coast. Coasts can be dangerous, a river can fail to bring its expected run of fish, and a newcomer might find an excellent fishing station already claimed. What made Florida's estuaries inviting to the Calusa was the conjunction of the local ecology and a remarkable body of human knowledge. The watercourts are rather good evidence of what the inhabitants added to the equation. A landscape rich enough to support a court is part of the range the theory has to explain. Calling it unusual leaves it just where we found it.

Did They Come by Boat?

How did people whose remote ancestors lived in Asia reach the Americas in the first place? For a long time a familiar account had people crossing the Bering land bridge and then walking south through an ice-free corridor between the great North American ice sheets. Other researchers have argued for migration along the Pacific coast, potentially with the aid of watercraft. These ideas are often made to sound like competing answers to precisely the same question. Beringia was a broad region connecting north-east Asia and Alaska at times of lower sea level. It was possible to cross parts of Beringia and later travel south along a coast. One route concerns getting to Alaska, the other concerns how to get beyond the ice. [26]

What has changed most strikingly is the timetable. At Page-Ladson in Florida, stone tools in association with mastodon remains document human presence about 14,550 years ago, well before the roughly 13,000-year-old Clovis tradition. In New Mexico, dating work at White Sands places human footprints roughly 23,000 to 21,000 years ago. Both discoveries give us a place where people had already arrived by a certain time. Neither identifies where the travellers first stepped ashore, whether they used boats along the way, or how their

communities were governed. The people who left footprints in New Mexico cannot tell us by that means whether there was a king in Florida. [27,28]

I find it perfectly plausible that some early travellers made use of boats and took a lively interest in good fishing grounds. Part of the difficulty of testing the idea is that rising seas after the last glacial maximum submerged great stretches of the former coast. The people who lived there could leave a substantial record and we might still find very little of it on dry land. An understandable gap in the evidence is a reason to keep looking. It cannot identify the precise route, number or dates of the migrations. [26]

And what became of the Calusa? Their history belongs to a far later period. Their polity endured long after the first encounters with the Spanish. In the centuries that followed, introduced diseases, warfare, slave raiding and displacement devastated communities. Some survivors joined other Indigenous peoples in Florida, and some went to Cuba. It was not postglacial sea-level rise that put an end to the political world described by Menéndez. We still have both written accounts and the considerable physical remains which its inhabitants left behind. That is how we know about the watercourts. [24,29]

We have, then, evidence for early human settlement, evidence for varied ways of using aquatic environments and evidence for kingship among certain much later fishers. They belong on the same continent, but they do not all belong to the same century, or even the same millennium. What binds the cases together for my purposes is the poverty of a category that makes no room for life by the water except as an odd little departure from the 'normal' business of hunting on land.

Where Might Private Property Have Begun?

If a rich fishery could support a court, did such a court arise wherever a rich fishery was to be found? The Jōmon sites of northern Japan record thousands of years of settlement, hunting, fishing and gathering. People made elaborate pottery, raised earthworks and built stone circles. An excavation may disclose what went into a grave or the skill required to place stones in a particular arrangement. It is a much more difficult business to prove from this evidence that an aristocracy owned all the best things, or, for that matter, that there was no inequality of any kind. What we can see is an investment in building and craft that would once have seemed hard to credit among people who did comparatively little farming. The Natchez of the lower Mississippi Valley, by contrast, did cultivate staple crops, maize among them. Their rulers supply a comparison in kingship, not a second example of the Calusa subsistence economy. [30,31]

A fishery, a cultivated field or a storehouse can all give somebody an opportunity to make others dependent. Yet it takes more than a valuable thing, or a technology for building one, to establish anyone's right to control it. Why should the other people concerned acknowledge the claim? Particularly intriguing are the cases in which people who are ordinarily adept at fending off such claims make an exception in a sphere where one might not have thought to look.

The anthropologist James Woodburn (1934–2022) conducted fieldwork among the Hadza in Tanzania and compared their arrangements with published accounts of other peoples, including the Hill Pandaram of southern India and the Batek of Malaysia. He wanted to understand how equality was achieved in practice. People could change their camping

companions. They could get access to the means of making a living without putting themselves permanently in anybody's debt. A hunter could own a bow without thereby acquiring authority over everybody who ate a share of the meat. What struck Woodburn was how effectively these arrangements discouraged the formation of lasting relations of dependence. He was quite explicit about the limits of the argument. Gender relations varied, and general statements in his 1982 article applied principally to relations among adult men. It would be a mistake to turn his findings into a declaration that men and women, elders and children, exercised identical rights. [32]

What happens when a people with a strong preference for personal independence set about organising a ceremony? In later work Woodburn drew attention to exclusive ritual privileges. As Graeber and Wengrow note, he described cases among central African forest peoples in which initiated men kept sacred trumpets hidden. Who might see the instruments, who might sound them and who could learn what lay behind the voices heard in the forest were matters of real consequence. Threats of violence could enforce the rules. There is a world of difference between being obliged to share food with a neighbour and being entitled to bar that neighbour from seeing the object that produced a sacred sound. It is the coexistence of the two arrangements that needs explaining. [1,33]

What did those excluded from a ceremony actually believe? Perhaps some recognised their neighbours' handiwork perfectly well and observed the conventions all the same. Perhaps others understood the ceremony in terms quite foreign to an outsider choosing between a 'real spirit' and a man playing an instrument. We cannot interview the participants described in old accounts to find out what each privately thought. Nor do threats against someone who breaks a rule establish that everybody consented to it. In any case, the important fact about a secret may be who is *allowed* to know it. A person can guess what is in a locked room and still have no right to open the door.

Absolute Property and Private Property

Émile Durkheim described sacred things as things 'set apart and forbidden'. The restriction need not put them beyond all human contact. An object may be handled by a particular person on a particular occasion, while everyone else is forbidden so much as a glance. It need not represent a particular god, either. What marks it off is the boundary people recognise and the practices by which they maintain it. The English 'taboo', borrowed from Polynesian usage, gives some idea of the force of the prohibition. [34]

Here Graeber and Wengrow discern a resemblance to private property. If I have a right to keep everyone else out of a room, people who have never met me may still be expected to respect the door. If initiates have exclusive custody of an object, a person who played no part in the ceremony may be obliged to respect that boundary too. Both arrangements can make a demand on outsiders. An important difference is what happens on the inside. The keeper of a sacred object may be obliged to preserve it for others, forbidden to sell it and unable to pass custody to an heir of his choosing. An owner under a modern system of law may have powers of sale or inheritance as well as a right to exclude, each subject to limits. Calling both claims 'absolute' helps us notice the strength of the exclusion. It can obscure everything else the parties are entitled, or obliged, to do. [1]

How might a people usually disinclined to take orders come to recognise so exacting a rule? T. G. H. Strehlow (1908–1978) described a contrast among the Arrernte of central Australia, whose name he wrote ‘Aranda’. In his account, adults often allowed young children a considerable degree of latitude, whereas boys undergoing initiation encountered ordeals and the authority of senior men who held particular knowledge. Strehlow understood the contrast as a deliberate lesson in obedience. That was his interpretation of accounts he recorded, shaped by the particular rites, places and period he knew. The same material also describes initiates eventually acquiring ritual standing themselves. A person could thus pass from one relation of authority to another over a lifetime. To say simply that ‘the Arrernte obeyed their elders’ would miss most of what makes the account interesting. [35]

Something like that contrast may help explain why people who built a monument together might have accepted restrictions on what took place there. Excavators can sometimes identify spaces that had special uses or received unusual deposits. A carefully planned enclosure or a burial with exceptional goods gives us reason to ask who entered, who officiated and who might have been turned away. Geometry alone will not answer any of those questions. Nobody can excavate a prohibition in the same way one can excavate a wall. Nor does evidence for someone directing a ceremony establish that the same person could command the other participants while they were fishing the following day. [1,30]

That leaves an interesting problem for anyone who thinks that greed or the desire to give orders fully explains the arrival of class society. People could imagine an exclusive claim, teach others to recognise it and sometimes punish an infringement. Yet the claim might remain confined to the custody of a trumpet, an inherited office or the duration of an initiation. If making people obey in one setting automatically made them obedient in all others, how were such boundaries maintained? The Calusa court shows that durable worldly authority was one possible outcome. The variety of other arrangements gives us good reason to ask what kept powers apart, and under what circumstances someone succeeded in joining them together.

I should not like to exchange a universal economic origin of property for a universal religious one. We have no record of the first person to claim a fishing place, much less of the first person to declare an object holy. We do have evidence that people can learn the duties and exclusions associated with ownership in the course of defending something they regard as sacred. That makes the search for the holy a credible part of the history of property. Anyone who tells the story entirely in terms of what became profitable when people took up farming still owes us an account of the keeper of the trumpet.

Chapter Four

The Agricultural Revolution

Readers may disagree with me about the Purple Dawn or the Saturnian Golden Age. Archaeologists have independent ways of dating a village, identifying what its inhabitants ate and examining what they left behind. If I put a proposed reading of a myth alongside their findings, it is up to me to show what the comparison adds. There is another story, however, that enjoys far more credit than the Golden Age. It tells how our ancestors gave up hunting and gathering, settled down to farm, and set civilisation in motion. How well does that story stand up when we look at the plants themselves?

The change we call the Agricultural Revolution was real enough. The difficulty comes when we try to picture the occasion. Was it the day somebody first sowed a handful of wild seeds? The year a village first got most of its food from a crop? Or the much later moment when the inhabitants of a particular place could no longer feed themselves if the harvest failed? Those are three different events. Add a fourth, the appearance of inherited changes that make a plant easier to harvest, and it is far from obvious which one should count as the revolution. Nor did all these things happen together across the world. I shall stay chiefly in Southwest Asia, where the archaeology of wheat and barley gives us a particularly good chance of picking the events apart. [36]

Herding adds a further complication. Keeping animals for milk, managing a herd for meat and raising cereals each call for different skills. Even within the Fertile Crescent, the sequence and importance of these activities varied from place to place. And the changes worked in both directions. As people changed the conditions under which plants and animals reproduced, they changed the conditions under which their own descendants would live. Milk supplies a genuine example of biological change, though its history contains a surprise. In most mammals, including many humans, production of lactase, the enzyme that digests the sugar in milk, declines after weaning. Some human populations came to have a high frequency of inherited variants that sustain lactase production into adulthood. Yet residues in ancient European pottery show that people used animal milk thousands of years before lactase persistence became common there. People can also make foods, such as hard cheese, containing far less lactose than fresh milk. A dairy tradition could therefore precede widespread adult lactase persistence. [37]

The comparison with wheat goes only so far. A grinding stone from Ohalo II, on the shore of the Sea of Galilee, carries starch from wild grasses, including barley. The site is about 23,000 years old. Long before anyone depended on a wheat field, people knew that the seeds of grasses were food and had found ways of preparing them. Nor can we put lactose intolerance, wheat allergy and coeliac disease into a single ancestral category. Lactose intolerance concerns the digestion of a sugar, wheat allergy is an allergic reaction to wheat proteins, and coeliac disease is an autoimmune response triggered by gluten. It would be a mistake to read the food of a person's remote ancestors straight off a modern diagnosis. [38,39]

What might the social change have felt like? In *Sapiens*, Yuval Noah Harari asks us to imagine a forager living fairly comfortably who begins to invest more and more work in cultivating wheat. Readers of Book Eight will recognise my objection to explanations that pass too quickly from the fact that humans are apes to a conclusion about what early humans could

imagine. Still, Harari has given us a good question. If the forager was comfortable, what was in it for the forager? [40]

Wheat, the Serpent in Eden

Try asking the question from the opposite end. What was in it for the wheat? An undistinguished-looking grass that once grew wild in a limited part of the world now occupies fields on several continents. People carry its seed farther than the wind could ever have carried it, store it safely through winter and clear away its competitors. To anyone measuring success by the number and geographical reach of a plant's descendants, wheat has done extraordinarily well out of the arrangement. Harari's joke is that wheat domesticated us. [40]

Spend a day tending a crop without machinery and the joke begins to bite. Is the ground too stony? Somebody has to move the stones. Do other plants shade the young wheat? The farmer has now acquired weeds and may have to pull them. In dry country somebody may have to carry water or maintain a channel, although a farmer with dependable rainfall can dispense with that job. A stand of ripe grain cannot wait indefinitely for the people who sowed it to finish something else. Come harvest, the wheat can exert a remarkable influence over the household calendar for a plant without a brain.

Nature offers precedents. A bee visits a flower for food and carries pollen away on its body. Over many generations, flowers that attract useful pollinators may leave more offspring. Neither partner has to understand the arrangement for both to benefit. The association of bees with flowering plants goes back roughly 120 million years. There is nothing absurd about looking at a human partnership from the other species' side, too. It helps us see a result that the people concerned had no need to intend. [41]

The part I question is the ease with which we can slip from that observation to a conclusion about what was going through a cultivator's head. In Book Eight I called the capacity to imagine a future possibility and adjust one's conduct accordingly 'actuarial intelligence'. Other animals show elements of foresight. Bonobos and orangutans, for instance, have saved tools for a task they would face later. What matters here is something our ancestors could do on a considerable scale. They could discuss next year's work, remember an experiment that went badly in their grandparents' day and decide together whether a little more grain was worth a great deal more weeding. They had no need to foresee the rise of cities to notice that a particular patch took more effort than it yielded. [42]

Harari's argument deserves its strongest form. A household might repeatedly make a choice that paid off that year. As the stores grew, more children could be fed. More mouths would make it harder to abandon the field. A series of individually sensible decisions could narrow the choices open to later generations without anybody deciding to give up a freedom. That is a recognisable mechanism. To establish that it happened in a particular place, however, we would want to know when people began to depend on grain, what else they ate, whether other resources remained accessible and how long their mixed way of life persisted. The mere fact that wheat prospered supplies none of those dates.

The story has an old attraction. Imagine Eden as a comfortable life of hunting and gathering. You can write the serpent out of the tale and give his part to wheat. Here is grain enough for a feast, next year's seed and a store against a hungry winter. Who would refuse it? Only when

the bargain has been struck do the people discover how many days they must give up to secure the next harvest. The ground that promised abundance now demands work by the sweat of their brows. It makes a splendid latter-day Fall. The question is whether our ancestors experienced the bargain at anything like that speed.

The Revolution That Never Was

Our own dependence gives the story a persuasive ending. Billions of us rely on a small number of staples, and vast systems of labour, machinery, fertiliser, storage and transport keep them coming. A failed grain harvest can have consequences half a world away. But the circumstances of a family sowing an early patch of wheat and those of a city awaiting a grain ship are so different that I hesitate to read one backwards from the other. Between the two lies practically the whole history we are trying to explain.

Usually the actors in a prehistoric drama leave us only fragments to question. Here one of the protagonists is still available. Wild relatives of our wheats and barley still grow in the Fertile Crescent. We can visit a stand, wait for the ears to ripen, cut some stalks with a flint sickle and see what actually falls into the basket. While we are in the neighbourhood of the biblical rivers, let us give the supposed serpent a hearing.

Look closely at an ear of wild wheat. Its central axis, the rachis, carries little units called spikelets, each bearing one or more florets from which grains can develop. At maturity the ear of a typical wild plant breaks apart at natural joints. The spikelets, with their grains, can then fall and disperse. In a non-shattering plant the joints hold more firmly. Its ripe ear is much easier for a harvester to carry away intact. There is a price for the plant. It has lost much of its ordinary means of dispersal. A person who threshes the ear and sows some of its grains can do very well by it. Non-shattering is one particularly informative domestication trait in these cereals. Wild wheat, meanwhile, was perfectly capable of being gathered, eaten and sown before this trait became common. [43]

Now imagine harvesting when some ears have shed their grain and others still hold it. The basket is likely to contain a higher proportion of seeds from the ears that held together. Sow from that basket and repeat. Provided the difference is heritable, the proportion of plants with tough ears can rise without anybody deciding to breed a new variety. Harvest earlier, while even brittle ears remain on their stems, or replenish the seed each year from wild stands, and the advantage can diminish. These differences turn out to matter rather more than the bare presence of a sickle.

In 1990 Gordon Hillman and Stuart Davies published a study combining field measurements with a mathematical model. They estimated how strongly particular harvesting practices favoured non-shattering plants and projected the effect of repeatedly sowing the harvested seed. Under the specified conditions, a crop might become domesticated in this respect within 200 years, perhaps as few as 20 to 30. The researchers did not grow successive crops for two centuries. They measured part of the process and calculated where it might lead, assuming that the plants, harvests and seed supply continued to meet their conditions. [43]

How does that compare with prehistory? One influential study by Ken-ichi Tanno and George Willcox found that shattering wheat remained common in samples long after the first non-shattering examples appeared. Assemblages across Southwest Asia show different mixtures and different trajectories. In some reconstructions the broader passage from gathering or early

cultivation to widespread reliance on domestic cereals spans several millennia. That regional passage and the change in a single continuously cultivated plot measure different things. A rapid change in one community and a slow spread across many communities can both be true. [44,45]

Still, the difference in scale is worth getting right. Compare an illustrative span of 3,000 years with a modelled 200 years and the ratio is fifteen to one. Compare 3,000 with thirty and it is a hundred to one. At twenty-five years to a human generation, 3,000 years is about 120 generations. For a sense of the distance involved, start around 1200 BCE, roughly the era traditionally associated with the Trojan War. Three thousand years bring us to about 1800 CE. One can put the whole of classical Athens, the Roman Empire and the Middle Ages into that interval and still have time to spare. No single cultivator, however observant, lived through anything like it.

'Revolution' can be a fair description of the eventual consequences. What I doubt is the familiar picture that the word calls up, of a foraging people hitting on an invention and crossing a threshold together, with no time to reconsider. The field experiments give one possible speed of change under specified conditions. The ancient plant remains give us a much messier history. I would like to know what people were doing during that interval before declaring what they ought to have accomplished by the end of it.

Grass as Building Material

What did a harvester bring home besides dinner? A bundle of stems. Straw is only a by-product if the grain was what you went out for. To somebody making an earthen wall, the stems may have been worth carrying home in their own right. Mixed into suitable mud, chopped straw or chaff can control cracking as it dries. Builders could adapt the mixture to a wall, an oven or a storage bin. Stems could be woven into mats and baskets, or burned for kindling. Anyone who had spent the morning looking for material for a roof would have had good reason to take an interest in a stand of grass.

Excavation gives this suggestion substance. In Neolithic Southwest Asia, researchers have identified vegetal temper in earthen building materials. Experimental reconstructions help explain what the builders could achieve with local sediment, water and plant fibres. Earlier still, at Ohalo II, grasses lined the floor of a brush hut. At the very same site people processed wild grain. Later, at Shubayqa 1 in what is now Jordan, foragers made a flatbread-like food about 14,400 years ago. The tempting story that people first discovered straw as builders and only later recognised grain as food goes beyond the evidence. What these sites give us is more interesting. A single patch of grasses offered raw material to a builder, a weaver and a cook. [38,46,47,48]

Some communities built substantial dwellings and returned to them or stayed for long periods before domesticated cereals became staples. A house, a sickle and a grinding stone can therefore coexist in a settlement whose inhabitants still obtain much of their food from the wild. Imagine that archaeologists have found all three. How much farther can they take us? A sickle used to cut straw tells us somebody wanted stems. Even if grain came home in the bundle, selection for a tougher ear depends on what the harvesters subsequently sowed. Those who ate all the grain or went back to gather next year's seed from a wild stand interrupted the very sequence the model requires. [36,43]

Lessons Easily Learned

How difficult would it have been to learn when a stand was worth cutting? I doubt people who made their living from plants needed lessons from us on that score. But there is a world of difference between knowing the right moment to harvest for your own purposes and managing a plot so as to maximise the chance that a future archaeologist will find domestic-looking grain. If you wait for every wild ear to ripen fully, much of the grain may already be on the ground. Reap a little early and you may feed your household better, even if the tough-eared plants gain little advantage. Top up next year's seed from a good wild patch and you may ensure your next meal while slowing the very change by which we later measure progress.

Do such people count as unsuccessful farmers? They were not candidates in a race to invent agriculture. Someone after spring greens, midsummer straw and autumn game might have made exactly the right calculation. Nor do we have to assume that anyone examined ears and made a deliberate decision against domestication. The aim might have been to obtain food or good stalks that year, with the proportion of tough ears an incidental consequence. The same archaeological outcome might be produced by different intentions. A slow regional transition is reason enough to reconsider a headlong rush into farming. It cannot by itself tell us who preferred leisure, who faced a shortage of seed and who was simply making the best of a poor season.

Archaeobotany

How, then, can we recognise early cultivation when the plant in question still looks wild? One answer lies in the rubbish that accumulated around houses, hearths and stores. A few grains or bits of chaff might fall into a fire, char and survive where an unburnt stalk would decay. Archaeobotanists recover these fragments and examine them under magnification. Breakage scars on the base of a spikelet can indicate whether the joint came apart naturally or had to be broken during processing. Grain dimensions can add information. Seeds of plants that thrive on disturbed ground may turn up with the cereals. Each sort of evidence tells us something different, and each has to be interpreted in the setting where it was found. [44,45]

Suppose a deposit contains wild-looking cereal grains and the seeds of what farmers today would call weeds. Was the grain sown? Quite possibly. A nearby wild stand or a patch disturbed by activity around the houses could also have supplied some of the material. Larger grains might reflect growing conditions, a difference in species or selection over time. Charred fragments in one deposit can derive from several distinct harvests or activities. Once domesticated plants appear, mixtures of wild and domestic forms might reflect exchange, harvesting from more than one source or weeds growing among the crop. It matters whether we are dating the first occurrence of a trait at one settlement, its predominance there, or the point when it becomes widespread across a region.

Willcox himself revisited the evidence from northern Syria in 2024. He concluded that some deposits once used to infer cultivation could not securely distinguish harvesting a planted plot from gathering a wild stand. He also noted that non-shattering emmer and barley occur elsewhere in Southwest Asia by about 8300 BCE. That is already well before 7000 BCE. The dates for first cultivation remain debated, and there was no single year when the whole Fertile Crescent switched from brittle to tough ears. Earlier studies also document regional

differences in which plants communities used. We can describe those differences with some confidence while admitting how difficult it is to reconstruct the work behind each early harvest. [45,49]

A Misunderstanding of Evolution

Would we think a fish was late in getting onto land? Suppose we worked out that a particular change in a fin could have occurred in a hundred generations under conditions of our own devising, and that it appeared much later in the fossil record. What would that tell us about the ambitions of the fish? Precisely nothing. Only because we ourselves are land animals can the fin look like an unfinished limb waiting to become useful. The fin was already useful in water.

Natural selection has no picture of a future *Homo sapiens* towards which it is working. Heritable differences can affect how many descendants organisms leave in their present surroundings. An existing trait may persist for a very long time, and shifts in the surroundings or the population can alter which variants prosper. Neither survival of the species nor the arrival of a new species is an aim an organism must entertain. We can investigate the actual conditions under which a change occurred without imagining a timetable it failed to meet.

It is curious how readily the old timetable reappears when the subject turns to human affairs. We take our commercial cities as the destination, work backwards through farms and villages to mobile foragers, and then wonder what held everybody up. What if a settlement combining a little cultivation with hunting and gathering was a satisfactory place to live for reasons of its own? The interesting question would then be what sustained that arrangement, and what eventually made it harder or less attractive to maintain.

Playful Preagricultural Scientists

Here the comparison with fish breaks down in an important respect. Natural selection cannot sit round a fire and debate how things turned out last year. People can. They can be wrong about the future and still be good judges of the costs and pleasures of the work immediately before them. A family need not understand crop genetics to recognise that gathering from a well-stocked riverbank leaves more time for fishing than digging a field from scratch. Nor did anyone have to decide on behalf of a whole society, once for all time, whether to fish or sow.

Graeber and Wengrow invite us to look at some early cultivation in that light, as people playing with farming. ‘Playing’ can sound as though nobody gave the work serious thought. Picture someone who sows in two places, tries cutting one patch early, and keeps enough seed to repeat the trial. The experiment can be undertaken in earnest without committing a family to living by wheat for the rest of its days. A hunter might welcome the extra stores and still prefer to join the next hunt. Somebody preparing for a daughter’s marriage ceremony might quite reasonably have a different use in mind for the week a larger field would take to weed. There is nothing inherently irrational about declining the largest attainable harvest. It depends what else one would have to give up to obtain it.

Consider flood-recession cultivation. When a lake or river retreats at a suitable season, its margins can offer bare, moist ground on which to sow. Fine sediment can replenish the soil. The water has done some of the work of clearing and watering a plot before a cultivator sets

foot in it. A low earthen bank or bund may help direct or retain water where it is wanted. That still leaves the work of choosing the ground, timing the sowing, protecting the crop and bringing the harvest home. A second flood can drown the seedlings. A flood that fails to arrive can leave the plot dry. Knowledge of a particular river, gathered over many returns to its banks, might be worth more here than a willingness to undertake backbreaking labour.

What would a fixed boundary mean in such a place? The strip that produced the best crop this year may be under water next year. Neighbours who allocate plots anew as the water falls have one intelligible answer. Others might recognise a household's customary right to a stretch of bank even though the water's edge shifts. A river that makes a surveyor's job difficult leaves scope for both arrangements. It does not decide whether one family can exclude another. That remains a question of what claims the people along the river recognise and enforce.

Flood-recession farming is a possibility to test site by site. At Neolithic Çatalhöyük, in present-day Türkiye, a recent study found that crops were routinely autumn-sown on land with differing levels of moisture. The results challenge a once influential picture of routine spring sowing after the flood there. We would recreate the error of the old story if we simply replaced a universal march towards the plough with a universal preference for easy riverbank cultivation. What I want to rescue is the opportunity to choose. A household could value grain, use the land skilfully and still have reasons for keeping more than one way of making a living. Once we take that possibility seriously, it is worth asking whose knowledge made the choice possible. [50]

A Scientist Called Eve

There is something odd about the picture of early Man arranging his work so he could do a bit less of it and have more time for company. What bothers me is that capital M. Who exactly do we imagine worked out what to plant when the river went down?

A flood can spare a gardener a good deal of watering. It cannot tell her which seeds will rot in sodden ground and which will germinate as the mud dries. If the water retreats a fortnight later this year, does she sow the same patch, move uphill or grow something else? Someone had to acquire that knowledge. Someone had to remember what happened the last time the water was this high, try something different and pass on what worked. What looks from a distance like an obligingly fertile landscape looks rather different when you have to decide where to put the seed.

And food was only part of the business. One plant yields a fibre that holds together when wet. Another makes a dye. A third has medicinal uses, though you had better know which part to use and how to prepare it. A history that counts the calories in the grain and passes over the basket that carried it away has missed a considerable part of the harvest.

In Book Nine I wondered whether some creation stories owed something to the experience of making a home at the edge of a wetland. People who had mixed chaff into earth, shaped a wall and watched it dry would know what it was to make something serviceable out of mud. They would also know how readily the next flood could undo their work. I can see why a struggle to impose order on the waters might have spoken to them. Whether any particular myth originated that way is a different question. Even the familiar biblical image deserves a second look. Genesis 2:7 describes the human being as formed from the dust of the ground.

The act of forming a person can itself evoke a potter. Isaiah 64 makes the comparison with clay explicit.

Clay also gave people a way to think with their hands. At early Southwest Asian sites we find small geometric objects as well as human and animal figurines. Denise Schmandt-Besserat has argued that some tokens were counters and that such practices contributed to the much later development of written accounts in Mesopotamia. A counter can stand for a quantity even when the thing counted is elsewhere. That is quite a feat of abstraction for something you can hold between finger and thumb. It is tempting to picture people using similar objects to weigh up plans for their own community. The surviving pieces cannot tell us what conversation took place over them. [51]

Return for a moment to the tale in which wheat domesticated us. The wily grass gets a starring role and the serpent is out of a job. Someone else disappears, too. Where is Eve? Where are the people who could tell a useful plant from its poisonous lookalike, knew which fibres to twist together, or could choose seed worth saving? If we leave the work itself out of the story, we need never ask who did it. We are then perfectly free to imagine a man scattering the first handful of seed and to give his ingenuity all the credit, or give it all to the wheat.

In many documented societies women have developed and transmitted detailed knowledge of plants. In one study in Bahia, Brazil, women proved more familiar than men with the medicinal uses of the local flora. How work is shared varies with the people, the plant and the task. [52] The evidence for prehistory is more indirect, and some of the most interesting clues come from things that are easily overlooked. Olga Soffer and her colleagues drew attention to what appear to be woven caps, belts and skirts on certain Upper Palaeolithic female figurines. Impressions in clay preserve evidence of sophisticated fibre work from a time when the fibres themselves scarcely survive. A carved cap shows us an accomplishment somebody considered worth representing. The wearer, the weaver and the carver need not have been the same person. Taken together, these finds give us good reason to take women's association with this expertise seriously, while leaving open just who did what. [53]

Readers of Book Eight may recall Claude Lévi-Strauss's account in *The Savage Mind* of a science of the concrete. If the word 'science' calls to mind a particle accelerator at CERN, it is worth asking what we recognise as an experiment once we take the accelerator away. Imagine dividing a batch of seed, sowing half on the exposed river margin and the rest a little higher up. Next year the river behaves differently. What survived in both years? Which result is worth passing on? The intellectual interest of those questions is quite independent of whether anyone has a laboratory coat or an equation. And a garden experiment, repeated and discussed among neighbours, can outlast the experimenter.

There is a linguistic trap here. 'Domestication' is a perfectly good term for inherited changes in plants and animals under human management. Its everyday associations with taming and mastery can nevertheless make a rather particular picture spring to mind. 'Agriculture' can do something similar. Picture a farmer and many of us see a man ploughing a field of grain. His crop will feed the household and the straw may feed the livestock. Yet in the gardens we have been considering, the stalk might be wanted for a roof and the plant we would pull up as a weed might be the very thing somebody came to collect.

Writing Eve back into the story begins there. Ask about gardens as well as fields, about tending a useful mixture of plants and about making habitats in which they could thrive side by side. Ask whose work in a household or a camp made those arrangements possible. We cannot name the first woman to recognise a promising variety of grass. We can at least credit her kind of knowledge with a place in the history of discovery.

When is the figure a ruler and when is it a goddess?

Imagine two objects coming out of the ground. On one, a man sits enthroned. On the other, a woman occupies much the same position. How readily would we describe the first as a king and the second as a goddess? Had someone written down their names and titles, the difference might be easy enough to establish. With only an image, we owe the two figures the same standard of proof. Scale or a seat of honour can mark a person of rank, a deity or an ancestor. A ruler can even be represented as a deity.

At the Neolithic settlement of Çatalhöyük in Anatolia, a few striking female figures made the place famous as a supposed centre of goddess worship. The excavation team's later cataloguing turned up a much less tidy collection. Many of the little objects represent animals, some are abbreviated almost beyond recognition, and their findspots vary. An interpretation built around a handful of arresting figures looks rather different when we ask what else people made and where they left it. There is no sound reason to turn every compelling female image into a goddess. There would be equally little warrant for recataloguing them all as portraits of botanists. [54]

A different kind of evidence lets us say something firmer about the place of women there. In a study of people buried beneath the settlement's houses, researchers found that genetic connections within buildings disproportionately followed maternal lines. The pattern of relatedness changed during the settlement's long occupation, but the emphasis on female lines persisted. That tells us something about whom people chose to bury together. It cannot tell us who gave orders, and it gives us no reason to assume that the political arrangements of every early farming settlement were alike. One good case for the importance of female kin ties is worth a shelf of guesses founded on the pose of a figurine. [55]

Here, too, the leisurely pace of cereal domestication matters. A period that runs to many generations and in some regions to millennia deserves a history of its own. It gives us time to ask how cultivators organised their work and with whom they shared its rewards. If we hurry from the first garden to the first palace, we have already decided which of those questions is worth asking.

Southwest Asia is an especially good place to look. The Fertile Crescent was one of several centres of domestication, and generations of excavation have given us settlements of different sizes, built in different landscapes, inhabited over very different spans of time. A matter sometimes offered as settled is whether the first farmers there lived at peace. The excavated bones at Çatalhöyük include healed cranial injuries consistent with assaults. A blow to the head is evidence of violence. It seldom tells us whether the assailant lived in the next house or came from a rival community. Conversely, at a site where we find few injured skeletons, much depends on who was buried, how well the bones survived and what kinds of wounds would have left a mark. The available evidence allows for considerable variation. It does not settle the incidence of organised warfare throughout the early farming world. [56]

Land tenure presents a similar temptation to supply the answer in advance. The familiar 'tragedy of the commons' supposes that each user gains by adding another animal to a pasture while everyone shares the cost of the damage. In a pasture with unrestricted access and no effective rules, that danger is real. But a community can limit the herd, agree who may graze it and require the users to maintain the pasture. Elinor Ostrom documented arrangements of just this sort. In parts of Europe, households cultivated separate strips while sharing rights over pasture or managing some activities together. A family might harvest its own grain and still have no right to fence off the common. Such arrangements could persist for centuries, complete with obligations, disputes and inequalities of their own. [57,58]

The point is quite modest. Wherever the only choices on offer appear to be private landlords, state officials or an exhausted pasture, we already know that the list is too short. Nor does a seed carry within it the claim of a future Assyrian ruler or imperial tax collector to a share of the harvest. Grain that can be stored and counted presents a tempting target for somebody who wants to tax it. That leaves the historical question of how that somebody acquired the means to collect.

People who gathered, fished and hunted alongside their gardens had choices about how far to commit themselves to cultivation. Some may have discussed quite explicitly the work that a bigger crop would entail. Some may have kept up a mixed livelihood because it was what their neighbours knew, or because last year's crop failed. I find the possibility of deliberate experiment more interesting than a story in which everybody steps blindly into the same trap. We can take that possibility seriously without pretending to have recovered the minutes of the meeting.

Ice Ages and Golden Ages

So far we have been looking at what I call actuarial intelligence, our capacity to imagine how today's choices might play out tomorrow. Nobody, however farsighted, can choose next summer's weather. What part did the changing climate play in the fortunes of the first cultivators?

Two warm periods are particularly relevant here. The last interglacial, often called the Eemian in Europe, lasted roughly from 129,000 to 116,000 years ago. The present interglacial, the Holocene, began about 11,700 years ago. These were not the only warm periods that members of our species experienced. Fossils attributed to early *Homo sapiens* at Jebel Irhoud in Morocco date to about 315,000 years ago, and the climate record extends through several glacial cycles over that span. Nor is a warm climate a requirement for human activity to leave an archaeological trace. What warmth, moisture and a predictable growing season affect is which crops a community can depend upon, and where. [59,60,61]

By the beginning of the Holocene, humans lived on every continent except Antarctica. They occupied far more diverse environments than they had in the last interglacial. A change in the timing of the rains could make an experiment worth trying in one valley and quite ruinous in the next. At the very moment when conditions favoured some early cultivators, they also offered opportunities to people who preferred to fish, gather or hunt. A river rich in fish had something with which a proposed field of grain would have to compete. In that sense at least, the opening of the Holocene could be a golden age for some foragers. Nobody was obliged to experience it as an invitation to become a farmer.

Readers of Book Nine will see a difficulty here. The 'Purple Dawn' scenario discussed there imagines a warmer Earth lit by a nearby Saturn. How, on that account, could there have been great sheets of ice? The proposed answer deserves to be stated clearly, since it makes claims about things we can actually investigate.

In the scenario, the Earth accompanied Saturn as it approached the Sun. An opaque ring associated with auroral activity cast a persistent shadow. Water arriving from Saturn froze under that shadow, building a ring of glacial ice, while light from Saturn kept the region inside it warm enough for herds of large animals. Later, an encounter with the Sun's heliosphere supposedly cleared a surrounding plasma sheath. Further changes in illumination and heat then melted the ice. This is the sequence proposed in the Saturnian story. Does the shape of the former ice sheets favour it?

Consider where a continental ice sheet gets its ice. Snow has to fall on land and enough of it has to survive the summer for successive layers to build up. The North Pole is in the Arctic Ocean. There is no reason for a continental ice sheet to start there and spread evenly towards the south. Elevation, snowfall, summer sunlight and the positions of the continents all matter. Studies of the last glacial inception in North America, for example, examine how snowfields could have persisted in the mountains of Baffin Island. The geological record shows separate centres of ice growth. It supplies no evidence of a continuous ring centred on a Saturnian shadow. [62]

What about the mammoths? Much of Beringia, including parts of Alaska and north-eastern Siberia, really did remain unglaciated while enormous ice sheets occupied other northern lands. The missing ingredient in much of Beringia was moisture. A place can be bitterly cold yet receive too little snow to build an ice sheet. Its open steppe and tundra vegetation could feed large grazing mammals. The mammoths are evidence of a productive grazing habitat, not a thermometer reading that requires subtropical warmth. [63]

The timing also matters. Ice sheets reached their great extent tens of thousands of years after the last glaciation began. Many remained near their maximum limits between about 26,500 and 19,000 years ago. Major Northern Hemisphere retreat began long before the boundary we use to date the Holocene. Changes in the Earth's orbit altered how much summer sunlight reached high northern latitudes, and feedbacks involving ice cover, greenhouse gases and ocean circulation amplified the changes. These processes can be tested against independently dated records. The chronology gives us no reason to place the arrival of another planetary system at the end of the last glacial period. [64,60]

There is a further difficulty quite apart from the ice. Saturn today has about 0.30 times Jupiter's mass. A commonly used benchmark for deuterium burning in a brown dwarf is roughly 13 Jupiter masses, with some dependence on composition. That is more than forty times Saturn's present mass. A proposal that Saturn had recently been such an object would have to explain the loss of that mass and the resulting orbital history. The established account places Saturn's formation in the solar system about 4.6 billion years ago. There is no substantiated observation of a recent passage from outside the heliosphere or of Saturn supplying the water for Earth's ice sheets. I am interested in why stories of a former sun recur. Their resemblance can prompt a question, but it cannot by itself answer a question about planetary mass or the age of a glacier. [65,66,67]

Back on the ground, retreating ice opened new territories, while changing sea levels submerged others. Many of the people moving into newly available landscapes made their living by hunting, fishing and gathering. They brought knowledge of what a shore, river or woodland could provide and sometimes improved the places they chose. It would be a mistake to reason backwards from the land available to displaced Indigenous peoples in recent centuries and assume that it represents the land foragers would always have chosen. Colonisation changed the map of who could live where.

It would be equally rash to conclude that the first farmers everywhere had to settle for leftovers. In many places the people trying out cultivation were themselves the local foragers. What counted as a good site depended on what the occupants wanted to do. A reed bed might be excellent for wildfowl, fish traps and basketry, poor for a field sown with wheat and very good for growing something else in the mud at its margin. Two households looking at the same stretch of river could quite reasonably come to different conclusions.

What I find worth keeping from the idea of an 'economy of deprivation' is a question about the return on work. A crop may yield more food per acre and still return fewer calories for each hour that somebody spends clearing, sowing, weeding, harvesting and grinding. A family short of land might welcome the first gain. One with a well-stocked fishery and ample alternatives might take a different view. Samuel Bowles's comparison of early cereal cultivation with foraging found no clear initial advantage in food energy per hour worked. The estimates have their uncertainties, but the distinction between yield per acre and yield per hour is real. Once we make it, there is nothing inherently perverse about keeping a garden small. [68]

Why does any of this matter if hierarchy had to triumph?

A reader might reasonably object that there is a limit to what you can do with a part-time garden. The great cities of later ages had to be fed. Billions of people alive today depend on food grown by people they have never met. If the early experiments eventually led to productive agriculture, great cities and the governments that ruled them, why not skip the long interval and get straight to the result?

For one thing, deciding what counts as 'the result' is a choice we make from this end of the story. Imagine approaching it from the other end. For a family deciding how much to sow, another thousand years is a remarkably long time to be told to wait for the real business of history to begin. The consequences that mattered to them came round sooner. Who would have time to fish if another patch were cleared? Who could call on the grain if a neighbouring settlement lost its crop? Who would be able to walk away from an overbearing relative when so much of the household's food lay in one place? Those are questions about producing food and about freedom at the same time.

For another, it matters which outcomes actually require which conditions. A city needs a dependable food supply and ways of bringing it in. A government that taxes grain needs some means of finding it, assessing it and enforcing its claim. It does not follow that the people who first grew grain thereby appointed tax collectors, any more than the Calusa needed wheat fields before they could have a king. The historian's work lies in the distance between those propositions. Who gained command of a storehouse? Who had the right to open it in a bad year? Could the people whose labour filled it take their allegiance elsewhere?

That is why I resist the simple succession of stages associated with Turgot. It costs us thousands of years of human decisions, including the ones people made and later reversed. It also makes the arrangements we happen to live under seem peculiarly immune to the imagination that helped bring them about. People have fished under rulers, farmed under a variety of tenures, worked hard for common purposes and kept leisure for purposes of their own. It is worth asking, in each case, which freedoms they could exercise and how they came to lose them.

In the next book I shall return to a far more speculative question. Why did people in different places tell of celestial powers that once stood close to the human world? I want to look again at the proposal that some of those stories preserve a memory of Saturn as a former sun. We have seen what difficulties that proposal faces as physical history. I shall set out the mythological evidence I think bears on that proposal and ask how well it stands up to those objections.

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