A History of Change

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As a historian, most of what I have to say about change over the last thousand years is quite uplifting on the social front but deeply depressing on the matter of sustainability. This is because it concerns how we got into the unsustainable mess we're in now. So I apologise for any glumness in what follows. Nevertheless, it is important that we understand the causes of change in the past because they are also the causes of change now and in the future. As I often tell people, you can't plan for the next fifty years simply looking back over the last fifty. You need to look back much further. You might think that plague and smallpox are dead and buried but you never know when the next pandemic will arise.

Historically, the root causes of change fall into three categories: factors external to society, social pressures *within* society, and discoveries that benefit society.

External factors include diseases, climate change, coastal erosion, the exhaustion of natural resources, and so forth. In general, the more widespread the impact, the more profound the change. In Europe, the Black Death of 1347-50 killed half the population. But it also led to the rise of wages; better living standards; religious changes and the emergence of capitalism. When smallpox arrived in America in the sixteenth century, it destroyed whole civilisations. As for the weather, short-term variations have always caused food shortages, resulting in rebellions, revolutions and diaspora. Long-term climate fluctuations have also had their impacts, both good and bad. The Medieval Warm Period, for example, which saw a rise in the average world temperature of about 1 degree Centigrade for two hundred years, led to agricultural surpluses, population growth, the establishment of many new markets, and ultimately the founding of monasteries, schools and the first universities. External factors continue to affect our lives in the most profound ways – and they always shall.

The pressures for change that arise within society, contrary to what many people suppose, are not normally caused by technological innovations. Take the magnetic compass for example: this was not employed by navigators to cross oceans

until the fifteenth century – at least five hundred years after it was invented in China and three hundred years after it was known in the West. Likewise, gunpowder was known about in China in the eleventh century and demonstrated in Europe in the thirteenth, but it only became a decisive factor in warfare in the sixteenth. If you want to change the world by inventing something, it has to be a tool that the world actually needs. There has to be a pre-existing social pressure for the change.

So where *do* social pressures come from?

Probably everyone has heard of the hierarchy of personal needs proposed by the psychologist Abraham Maslow in 1943. First, people require the basics of life: food, air, water, clothing and shelter. Then, after those needs are satisfied, they seek safety, then love, then personal esteem and finally, self-actualisation. Similar hierarchies of needs can be drawn up for social groups – for whole nations, towns, villages, businesses, religions, minority groups and like-minded individuals. All these needs are impulses or forces for change within society. Like gusts of wind, they act on each other, sometimes combining to become very strong. They are particularly powerful when a unifying national or international aim develops, such as when nations find themselves at war. The major conflicts of the twentieth century acted as catalysts for innovations as varied as the development of weapons, artificial fertilisers, the widening of the electoral franchise, mental health, occupational health, penicillin and radar.

In sustainability terms, the most important social pressure of all is probably the instinct to reproduce. You may think that this is a biological constant but, when combined with sufficient food and healthcare, it is the root cause of population growth, and that directly leads to the unsustainability of numerous traditional activities. Many people see nothing wrong in trawling for fish, clearing rainforests, cattle farming or discharging effluent into rivers because they have always done these things. But the world has changed with the number of people living in it. When was the halfway point of the last millennium? Chronologically it was five hundred years ago. But in terms of the number of person-years lived, it was in the 1870s. In terms of the amount of iron we have used, it was probably in the 1950s. As we all know,

population growth is having a concertina effect on history, increasing the intensity of everything we do.

The third category of causes of change is discoveries. A combination of social pressures and individual ambitions impelled Columbus and his fellow mariners to sail westwards looking for China in 1492, and although they miscalculated by about five thousand miles, their stumbling on the Americas led to changes on a tremendous scale. Imagine how different the world would be today had America not been there – and Columbus had just sailed on, into the Pacific! Discoveries constantly reshape the landscape of our lives in the same way that external forces do. Most inventions depend on them. Where a discovery allows us to fulfil a fundamental social need, it can be of world-changing significance – for instance, when Fritz Haber found out how to fix atmospheric dinitrogen in the form of ammonia, thereby enabling the mass-production of artificial fertilisers.

Those three categories describe the root causes of change. But how can understanding them help with sustainability?

Three hundred years ago, almost everyone in the world was living a sustainable lifestyle. Almost everything was locally produced, organic and biodegradable. Traditions – such as the annual rituals of sowing and harvesting – were valued by communities precisely because they guaranteed an ongoing positive relationship with the local environment. Even where effluent was poured into rivers and coal used for fuel, these were on a scale so small as to be environmentally insignificant. What disrupted this was the Industrial Revolution, starting in England in the eighteenth century. In the public mind this is characterised by steam engines and machinery. But as noted above, inventions don't change the world by themselves: they require pre-existing social pressures. In this case, the root cause was an increased desire for profit. But why did eighteenth-century Englishmen suddenly get so greedy? The answer is not actually greed but the desire for resilience. They wanted never to be hungry again.

To understand the connection between profit and resilience, you need to focus on the period just before the Industrial Revolution. In the years 1690-1710, a

succession of harvest failures struck Europe. In France they cost the lives of about two million people – one tenth of the population. Similar proportions died in Scotland, Scandinavia, the Baltic States, Finland, Prussia and Italy. In England, almost no one died. The reason was that the Agricultural Revolution was already underway. Farmers were adopting scientific ways of making their land more productive. Just as importantly, they were storing large surpluses of food, particularly grain and cheeses. They were prepared for just such a sequence of harvest failures. At the same time, English parishes were legally obliged to tax local people to pay for the sustenance of their poor neighbours. When the harvests failed, farmers released their supplies. The local taxes helped those who could not afford the higher prices. Communities proved resilient.

You can see the long-term trend here. Sustainability in itself was not enough to defend communities against external threats such as repeated harvest failures. People needed *resilient* sustainability. So a system developed whereby some landowners would specialise in maximising the productivity of the land and others would specialise in making enough money so that they could be sure of always being able to buy the surpluses they created. By the mid-eighteenth century, more food was being produced in England than ever before; the population was rising and in need of employment, and landowners started looking at other forms of industrial productivity. And that is when, for many manufacturers, profit became an end in itself. Thus we saw the introduction of machine-driven factories and better transport infrastructure. The rest of Europe and America swiftly followed the English example. Ever-larger economies of scale developed, reaching further and further afield. When steam engines became more efficient than horse and waterpower, the profit motive encouraged people to burn fossil fuels. Ever since then, there have been more and more economic incentives for rich countries to live unsustainably.

The rewards have been incredible. Just to look at the effects on Europe: income inequality is far less today than it was in 1700; we have seen life expectancy at birth more than double; our individual liberties have expanded, and our population has quintupled. Worldwide the population is twelve times greater. The only problem

is that, in our efforts to be resilient through specialisation, and then to use our wealth to secure greater health, personal freedom and equality, we forgot all about sustainability.

Obviously, we need to rebalance this trend. Even people who don't believe in climate change can see that the free market is beginning to deliver *less* resilience, not more, as supply lines prove vulnerable to external factors such as pandemic disease and extreme weather events. Clearly, locality is of fundamental importance. Just as clearly, we are going to have to give up some of our twenty-first-century privileges and renounce some of our unsustainable practices. This makes it sound like a huge challenge. But, actually, giving things up is not as much of a problem as you might think.

Throughout history, people have ceased practices that were initially acceptable but later were deemed socially undesirable or morally wrong. Between the eleventh and thirteenth centuries Western Europe renounced slavery, even though it had been justified by the Ancient Greeks, the Romans and the early Christian Church. The slave trade was renounced again in the nineteenth century, even though it was the foundation of considerable wealth. Since then we have seen many similar renunciations in Europe: the death penalty, public flogging, the persecution of minorities, cruelty to animals, the subjugation of women, and the exclusivity of male power. It is significant that the first renunciation of slavery coincided with the relative prosperity of the Medieval Warm Period. The second abolition of slavery and all these other renunciations similarly came about after the Agricultural Revolution, when, again, food became relatively more abundant. When a nation's food supply, health and security are broadly satisfactory, people look further up their collective hierarchy of needs and call on their contemporaries to renounce activities that they deem immoral or undesirable. Even though renunciations are difficult – because they are ongoing processes, not single acts – whole nations may choose to turn their backs on their past behaviour.

Does this awareness make me an optimist? Any historian who is optimistic about the future is either complacent or naïve. However, history also makes me

critical of pessimists. For the processes necessary for us to give up unsustainable practices are far from impossible. We *can* change people's fundamental thinking. For instance, two hundred years ago, barely 12 percent of the world's population could read and write. Today, 86 percent is literate. That almost complete reversal has nothing to do with technology but rather is the result of the collective needs of nations, individuals and interest groups all converging on the desirability of an ongoing process, namely education.

The example of literacy shows how worldwide social changes can be brought about entirely by social pressures. It also demonstrates that the small changes made in one age can have exponentially large consequences in another. Teaching an extra thousand people to read in the fifteenth century may well have resulted in a hundred thousand more literate people in the seventeenth century and a hundred million more in the nineteenth. It is the same with sustainability: every small gain is worthwhile for it has the potential to result in an exponentially larger gain in the centuries to come. Obviously, the reverse is also true. But if we were to educate everyone in the principles of sustainability and demonstrate that they can empower themselves through the application of those principles, sustainability could become as normal as literacy. After all, if people could live sustainably with seventeenth-century levels of technology, we should be able to do so in the twenty-first century with ours – despite the population of the world being ten times greater.

Over the next thousand years there are going to be wars, there are going to be pandemic diseases, there are going to be revolutions. We are likely to see a rise in inequality and a curbing of individual freedoms. But all of these are secondary to the most important fact of all: that we will always need a world in which these things can happen. It follows that sustainability, resilience and conservation are not merely comfort blankets. They are the unseen bedrock of our existence. Educating everyone in the world so that they realise this fact is the great challenge facing us all – now and for the foreseeable future.

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Points arising raised by panellists, which I picked up on:

The importance of municipalities

Locality is going to be ever-increasing in importance, as I mentioned in the speech, and there are advantages for municipalities and communities in this. Of course, this includes low transport miles, great food security and employment opportunities. I myself spent 14 years on a planning authority that did much to push the local-food agenda. Thus I find it astonishing that, after many millennia of communities priding themselves on being able to feed themselves *in times of want*, we have shifted to an economy where probably every community in Europe is dependent on transport infrastructure to feed its members. Almost nowhere is self-sufficient. And that is not only dangerous, it is damaging to the environment, unsustainable in the use of fuel, psychologically dislocating to many – both potential farmers and those who simply want to know where their food comes from – and wholly unnecessary. Local government can do much in this respect, and I know, many are already pushing this agenda.

The dangers of sustainability leading to great social inequality.

I allude in the talk to the near certainty that society will become more unequal again, whether or not it becomes more sustainable. This is based on the observation that in the UK, in 1688 and 1812, the average income of the upper classes (roughly 1.25% of the population) was 26 or 27 times the average income of the lowest-earning half of the population. At present, although inequality has been growing slowly since 1980 (according to Thomas Picketty's *Capitalism in the 21ˢᵗ Century*), we are still only looking at a difference of 6 or 7 times between the average income of the lowest-earning half and average of the highest-earning 1%. However, if we start to return to the

inequalities of the early 19th century, when the inequality was profound, people will simply have more pressing needs than sustainability. Someone who cannot feed their children today will not worry about the state of the world in 100 years' time.

As mentioned in my book on the history of change,* if we try to learn lessons from the last millennium to plan for the next millennium, one of our greatest challenges will be the sustainability of land use. We can make more energy; we can invent more ways of producing food; but we cannot make more land. If we have a greater proportion of people disenfranchised and disempowered by having to pay exorbitant amounts of money for a roof over their head – or, worse, cannot obtain shelter – they will hardly care for the collective good of society in the long run. And yet if we hand over all our land to accommodation, we will end up with the very opposite of the 'garden' the young folk want for their future. We need green spaces to feel positive about ourselves; a world of urban areas is not the solution. Thus over the next 200-300 years, land use will become the crunch issue. Provided we live that long.

* This is known by several titles: *Centuries of Change* in the UK in hardback and audiobook; *Human Race* in UK paperback; *Millennium* in the USA; *Zeiten der Erkenntnis* in German; *Il Libro dei Secoli* in Italian; among other languages.

Covid-19

The one great positive that has come out of Covid-19 (Corona/Coronavirus) is to demonstrate to everyone throughout the world that radical and sudden change across the whole of society is possible. That surely has to give everyone hope.

When people ask me as a historian how the Covid-19 compares with plague, smallpox and cholera, I tell them there is simply no comparison. Those diseases were far more deadly. But the real reason there is no comparison is that in those days, people simply got on with their business and left it to luck as to whether they contracted the disease – either that or god. Today, we expect our governments to look after us. A major change has taken place. Leaving everyone in society to take their chances is not something that any head of state sees as an option. Perhaps the

widespread notion that governments have a responsibility for the wellbeing of their citizens is perhaps further grounds for optimism that they will do more for their future wellbeing.

On the practical level, Covid-19 has allowed us any hardly any respite from environmental damage. For every plane that it is not flying there are buses and trains travelling with no one on board, as people minimise risk by eschewing public transport. It is probably obvious to all that Covid-19 presents us with threats to our past achievements as well as future opportunities.

Optimism

Pete said he started as an optimist and became increasingly pessimistic about our capacity to change. I understand that entirely. I replied that an earlier version of my speech was far more pessimistic about the lessons from history. This was a section that I cut from an earlier draft:

Giving things up is different from taking things up. Inventions enter our culture at specific points and cannot normally be un-invented. Renouncing things, however, is a continual process. If the sustainability of the world were finally to be achieved at noon on a certain day, would the afternoon of that day be glorious? No, not at all, because as soon as noon struck, the hour hand would move on. The achievement would start to fall apart. Historically, renunciations are hard because they are never-ending processes that have to be controlled and enforced, unlike the consequences of inventions or disasters.

This is an important distinction because, as far as I can see, no renunciation in our history has ever been the consequence of external pressures, such as the weather or a disease. People who lived in towns and villages that were being eroded by the sea frequently left it until too late to move away, and they lost everything in a final, dreadful storm. The port of Dunwich in 1286-7 is the classic English example. When syphilis came to Europe in the late fifteenth century, although most kingdoms tried to restrict the spread of the disease by prohibiting the bathhouses where prostitutes worked, many men still took the risk of seeking out available women. Even though we knew all about the dangers of plague and quarantine in 1665, in that year a London house that had been boarded up by the authorities because a person inside had plague, was opened by the mob and the inhabitants liberated, to general rejoicing. How many

would have died anyway we cannot say but, partly as a result of such behaviour, one fifth of the whole city died of plague, 12,000 of them in that same parish. People feel they can ignore external threats. What makes them change their behaviour is the pressure for change from *within* society, not from outside. As mentioned above, past renunciations such as slavery and cruelty have only taken place when a nation has felt secure enough in its basic requirements to turn its attention to moral issues. It doesn't matter how terrible the fate that awaits them: people have historically ignored the threat of natural disaster because it is just that, a threat, and they interpret that not as a clear and imminent danger but as an opportunity – for they might get away with it.

This is the frightening problem we face. The increasing environmental unsustainability of the world is not in itself a social pressure. It therefore does not in force change. For it to do so, it needs to manifest itself as a political pressure. To return to Hegel's contention – that people and governments never learn from history – although he is demonstrably wrong in respect of internal pressures, he is right when it comes to diseases and climate change. Unless they are forced to change by a calamity actually *happening*, people stick to the normality they know.

So, to answer the question, what historical principles should inform people hoping to bring about progress towards sustainability? First, technology does not in itself make things happen; it only provides us with tools when we have already decided to act. Second, what really makes things change are the external and internal pressures on society. However, external ones only force change when they actually have happened. The internal ones, social pressures, are what force us to give things up that are immoral or unsustainable. Third, social pressures are only effective when society's most basic needs have already been met. Fourth, these social pressures must be both consistent and permanent if they are to drive the long-term processes that underlie real change.

Finally,

Peter asked me for a single line that unpinned my optimism about the future. I replied that all human history is fundamentally the story of our imagination – and how we have overcome adversity. There will be casualties along the way, that is inevitable, but you would be very unwise to bet against the human imagination after all we have achieved over the millennia.