

SUSTAINABILITY NEEDS DIRECTIONALITY

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We live in Barcombe, a small village near the county town of Lewes in Sussex. The village is populated by a closely-knit community of around 1,600 people. When we moved in fifty years ago, the village's economy and social fabric was dominated by agriculture – I vividly remember the farmer's surprise when we objected to him driving his sheep through our garden to reach the field behind our house.

Although our village may be a long way from the centre of the world, a recent small initiative offers us, I believe, a glimpse into the future and some insights into how we may re-order our communities so that they become better places to live. This concerns what I call Directionality.

With the decline and mechanisation of agriculture, the migration of the middle class from cities, the 'improvement' in the railway line between Lewes and Victoria and the spread of the internet, Barcombe is now increasingly a village of middle-class professional commuters and teleworkers. The school is highly-rated by Ofsted and the pockets of deprivation which exist (a number of families discretely use foodbanks in Lewes) are almost invisible. The only graffiti to be seen are those scrawled by bored teenagers on WW2 pillboxes during the covid lockdown.

Our village store is the centre of social interaction. It has a post office and sells basic products. Customers who want variety and lower cost need to drive five miles to Lewes to find a supermarket. Not everyone in the village has a car, and there is a large community of elderly people, many of whom have lived in the village for decades.

In 2016 the village encountered a major challenge. The village shopkeeper, having run the store for 16 years, wanted to retire. He had tried to sell the store as a going concern for some months, but without success. He announced that he was therefore going to seek planning permission to turn the premises into a residence. This would have been devastating for the community, and especially for the elderly.

We then set about raising the funds for the village to purchase the property and to rent out the store to anyone who wanted a reasonable and steady income. The upshot was that the community of 650 households raised a total of £388,000.

Two local residents, one with a Masters degree in archaeology and the other with a Masters degree in environmental management now run an improved shop as a commercial venture. The store provides a post office to the community, a depot for dry cleaning and processes e-commerce returns. But the truly impressive part of this story concerns the voting rights in the company which owns the property.

Although the minimum shareholding is £500 (which makes up the bulk of shareholders by number), a few of the more wealthy village inhabitants provided much larger sums, in one case, £50,000. The group of the largest contributors met and decided, without prompting, that all shareholders should have the same voting rights, irrespective of the size of their contributions.

The value of this community initiative surfaced during the Covid-19 pandemic in early 2020. The lockdown made it difficult to travel to the nearest supermarket, and many people, including the vulnerable aged, had little capacity to make this journey anyway. The turnover of the shop in the first three months of lockdown was double that of the previous year. A local shop and post office was a vital asset to the resilience of a village of 1,600 people and this outcome could not have been achieved without the participation of more than one-third of all households.

As an economic historian, I saw this tiny pebble of an event as one fragment in a socio-economic avalanche which is crashing through our communities. It seems to me that we are going through one of those historic cycles which the Austrian economist Schumpeter described as 'creative destruction'. The established order collapses under the weight of its own obsolescence and simultaneously a new order begins to emerge. To be trapped in this convulsion is painful and alarming and yet, even now with rubble and dust around us, we can see the shape of our future emerging in small developments whose significance is easy to miss.

There is a much bigger example just down the road in the county town of Lewes. Nestling in the South Downs, William Morris described Lewes as being '*like a box of toys under a great amphitheatre of chalk hills ... on the whole it is set down better than any town I have seen in England*'. Home to nearby Glyndebourne and Charleston, Lewes has a liberal history of progressive action. It is proud of its historical association with Tom Paine who lived in Lewes before moving to America in 1774; it has its own currency, the Lewes Pound, and is a member of the Transition Town movement; its football team was the first in the world to pay its female and male players equally. Less progressive, but

nevertheless distinctive is the annual Guy Fawkes celebration (marking the burning of 17 Protestant martyrs), regularly relayed on national TV screens.

Although Lewes has historical routes as a transport hub and a manufacturing town, the local economy is now dominated by the service sector, tourism and its links to Glyndebourne, Charleston and two neighbouring universities. London is an hour by (increasingly unreliable) rail and its attractions are evident in the stubborn stability of house prices in the midst of falling national house prices. But what sort of town will Lewes be in the future?

Left to market forces alone, it is in danger of becoming yet another commuting hub, attracting a growing number of DFLs ('down from London'). This is likely to exacerbate inequality in the town, to exclude the young and the less-wealthy from the housing market and to exacerbate environmental damage as commuters drive to the station, spew out emissions on the rail journey and make their way to offices dotted around the capital.

But there is an alternative vision which is being played out in an ongoing planning application before the South Downs National Park (which, based in Petersfield, 50 miles from Lewes, for some curious reason supervises planning applications in Lewes).

Some years ago the Lewes District Council, short of money in an era of austerity, entered a joint venture with a South African financial group (with offices in Manx) to allocate the unused river frontage to a large housing development. The plan consisted of bog-standard, environmentally unfriendly houses built largely for DFL commuters. In so doing, and with extraordinarily ignorance about the local economy, the District Council disrupted a locally rooted and diverse creative cluster of more than 400 craftspeople who were using the old warehouses fronting the river.

This act of planning vandalism undermined the very distinctiveness which has made Lewes such an unusual and creative town. Fortunately this market-driven profit-seeking initiative was not viable, although the South African venture capital firm walked away with many millions as a reward for its land-banking acumen.

A group of locally active citizens (one of whom had been a founder member of Greenpeace) has put in a transformative application which is a mirror image

of the previous application. Seven hundred units are planned with a total investment of £400m. It will include an Electric Vehicle car pool; open spaces and neighbourhood gardens designed to promote social interaction; roof-gardens; a variety of designs, including some self-build; provide 210 affordable houses (only 11 affordable houses were built in the whole of the planning area in 2022!); use local Sussex timber for building frames; provide 380 permanent jobs and train local artisans in construction; provide a mix of living and maker-spaces; and give priority access to people with local family connections. And it goes without saying, all homes will be energy efficient and the whole development will be net carbon zero.

This is an exciting and pioneering development. It offers a holistic and integrated approach towards constructing a more sustainable future addressing the economy (local jobs), society (local and citizen-led living; affordable housing) and the environment (net carbon zero; bringing living and working closer together).

A view through historical lens?

Economic growth is never smooth and uninterrupted. But some disruptions are particularly large and particularly long-lived. And because they are slow-rhythms, we often fail to recognise them, missing the wood for the trees.

Since the onset of the Industrial Revolution in the first half of the eighteenth century, the major industrialised economies have been through a series of 'long cycles', each of approximately 50-80 years duration. Each of these 'waves' is driven by what we refer to as a revolutionary 'heartland', general-purpose technology. These technologies offer major opportunities for reducing costs and producing new products and are themselves associated with a massive reduction in their cost; each of these revolutionary technologies has no technical limits to its availability; and, crucially, each of these heartland technologies is indeed 'general purpose' – it has application across the spectrum of economic and social activities.

Moreover, each requires an appropriate infrastructure to deliver the innovative and lower-cost products resulting from the application of the new heartland technology to ever-more distant markets. The transition between paradigms is a period of enormous economic and social disruption. This is the creative destruction which Schumpeter observed, as the old order is swept aside and the new order sweeps forward.

The long waves involve a characteristic cycle of infancy when the technology emerges. This is followed by a financial crisis and subsequent economic depression when the bubble of financial speculation bursts. Then comes the era of prosperity when the heartland technology is deployed throughout the economy and society. But good things come to an end and in time the paradigm passes through its high point and is succeeded by an era of decline and decay. It is during this phase of maturity and decline that the core inventions which will drive the new wave begin to emerge.

Economic historians refer to this historical phenomenon as comprising a series of 'techno-economic paradigms'. In fact they are more accurately described as '*socio*-techno-economic' paradigms since, crucially, each of the waves not only comprises the diffusion of new technologies and new forms of economic organisation, but also of complementary political systems, norms, attitudes, culture, life-styles, consumption patterns and interactions with the environment.

The first of these cycles (1750-1830) saw the spread of the factory system, the mechanisation of production through the exploitation of water-power, and the building of canals which allowed producers to reach more distant markets.

The second wave (between 1820 and 1870) was dominated by the introduction of steam power, the growth of manufacturing towns and cities (production no longer had to be located near sources of water-power) and the building of railroads which allowed markets to be penetrated which were beyond the reach of canals.

The third wave (1870-1920) saw the widespread deployment of steel, heavy engineering and electric-power which spread through the economic and social system. Ships, telegraphy and the further development of railroads allowed for even more distant markets to be reached, and for inputs to be sourced from around the globe.

The fourth wave, Mass Production, dominated the twentieth century. It originated with Henry Ford's Model T moving production line in 1912, with its full potential becoming obvious in the mass production of weaponry such as Liberty Ships during WW2. Mass production was complemented by mass consumption through the deployment of Keynesian demand management policies. During the Great Depression of the 1930s, Roosevelt's New Deal created employment, built infrastructure and sustained consumer confidence in the US.

After WW2 the welfare state supported demand in Europe and in both Europe and North America, governments invested in housing and a highway infrastructure which led to rapid suburbanisation and new consumer lifestyles. Automobalisation was extended not just by cheap oil but also by the strategies pursued by the private sector.

For example, in the US in the late 1930s a consortium of automobile manufacturing, tyre manufacturing and gasoline firms formed a company called National City Lines. This bought-up electric streetcar systems in 25 cities and replaced low cost and relatively non-polluting electric vehicles with gasoline powered buses. A rapidly-growing advertising industry greased the friction between supply and demand and throwaway, single use products and fashion did the job of underpinning demand. (Of course it also did 'the job' of polluting the environment). Mass Production's heyday in the decades after the war until the mid-1970s saw a period of historically unparalleled growth – the so-called '*Golden Age*'.

From the late 1970s, Mass Production began to lose its dynamism. Productivity growth and corporate profitability waned. But there was an escape route which delayed the demise of the Mass Production paradigm until the turn of the millennium. This was provided by cheap labour in the developing world in general, and China in particular.

Swathes of industry moved 'offshore' from North America and Europe to exploit low paid labour, helping to revive declining profitability. And consumers in the high income countries benefitted from cheap final products. However for many, what was gained on the 'consumption side' (low priced consumer goods), was lost on the 'production side' (stagnant and falling wages, increasing labour displacement).

From the early 1980s the plutocracy grabbed the reins of power. The Thatcher-Reagan neo-liberal era saw a sustained period of tax (and welfare) cuts and falling investment in infrastructure. And as for promoting consumption, instead of investing in innovation, training and infrastructure as occurred during the 1930s and between 1950 and 1980, money was pumped into the system through quantitative easing programmes. This both fuelled decades of unsustainable 'financialisation' and deepened inequalities.

As we know, this decaying edifice of Mass Production fell over with the Global Financial Crisis of 2008. Sticking plaster was used liberally. But the architects of 'revival' were the same people who had allowed the problems to be created in the first place, most notably the appointments made by Obama in the US. The sticking plaster sort-of worked (that is, the Great Depression was kept at

bay) but economic growth has been at historically low levels in the high income countries and especially in the UK where real incomes are still below the levels of 2008.

The Covid pandemic, simultaneously both masked and highlighted the rotten nature of the decaying Mass Production paradigm, but the fissures are opening on a day-to-day basis – massive debt piles, falling equity prices and large layoffs in the high-tech sector.

We are not however just experiencing a decay in the economy. We see a simultaneous degeneration in politics and in social solidarity with the rise of populist governments offering fantastic solutions and fuelled by xenophobia. Standing above it all is the burgeoning crisis in the environment. As in the decay of all paradigms, the problem is a systemic one. The economy, the polity, society and the environment are part of a system, and it is the system which is in crisis. ‘The centre can no longer hold’.

Is there hope for the future in the midst of this turmoil? Previous waves were succeeded by new ways of producing, new ways of living, new ways of trading and new social norms and value systems. Herein lies the hope, and herein, I think, lies the significance of parochial Barcombe village and Lewes Town - the ripples from a deploying fifth wave.

Reasons for Hope – Giving Directionality to the New Paradigm

As in previous paradigms, the seeds of the new heartland technology sprout during the transition from the heyday to the mature phase of the previous wave. So as Mass Production passed through its zenith, the core inventions powering the new paradigm began to emerge in the form of Information and Communications Technology (ICT). The electronic transistor was invented just after WW2, but it was the invention of the microprocessor in 1971 which provided the decisive technological advance to ICTs. Since then, the pace of technological change has been rapid and relentless.

The so-called ‘Moore’s Law’ documented a doubling of capacity on each silicon chip and a halving of its price every 18 month over a period of more than three decades. For example, the price of one gigabyte of memory fell from \$2m in 1956 to less than two cents in 2019; whereas the first chip in 1947 consisted of a single transistor, in 2020 a top range smart phone incorporated more than 9.5bn transistors.

So ICTs have collapsed in price and seen an exponential increase in efficiency. Made from silicon (which is essentially sand), the circuitry is in unlimited supply.

But crucially, a new heartland technology has application across the full range of economic and social activity. Do we need persuading of this today? Stop for a moment to reflect on what is not been affected in our everyday business and personal lives ... the challenge stumps me!

The consequent changes in our lives are increasingly evident, dramatic and pervasive. Our jobs; where we live and where and how we work; how we communicate and who we communicate with; our access to public services; our ability to hold pandemics at bay; how we order in restaurants; the use barcodes on our phones; online shopping, and now ChatGPT.... Virtually everything we do has been, is being and will continue to be radically transformed as transformative ICT based technologies are deployed across our economies. But remember, its not just the technologies which are changing; so too are our values, our attitudes and our lifestyles.

So back to the village and pillboxes of Barcombe and the county town of Lewes, *'like a box of toys under a great amphitheatre of chalk hills'*. Each of these cases reflects a world in transition, in which the future increasingly looks different to the past. At a 'niche level' (the phrase used by many historians of paradigm change), the village shops illustrates not just the social and economic importance of local action but the social solidarity which gave all shareholders the same voice irrespective of their financial contribution. Local shopping and local services reduce environmental footprints, and the post office queue has proved to be an important arena for gossip and discussion. (As the anthropologist Max Gluckman observed, only insiders are privy to gossip and scandal!)

The planned development of Lewes is of course a much bigger reflection of structural change. It brings production and consumption, living and working, closer together. Being carbon regenerative, it addresses the greatest challenge of our time, indeed of humankind's time.

In contrast to what the Canadian political scientist MacPherson referred to as the dominance of 'possessive individualism' in Mass Production, the EV car pool and design of living spaces in courtyard blocks with shared facilities promote social interaction and collective consumption, and of durable rather than throwaway products. Affordable housing and smaller units provide entry-points for local families.

Apprenticeships and training are part of the construction programme; local timber will be used. Maker-spaces provide the scope for decent local incomes (rather than the Costa Coffee and Starbucks cafes in the previous masterplan). And as in the case of Barcombe, there has been an extensive programme of

local consultation with thousands of members of the public offered the chance to influence the plans through design festivals, working groups, community meetings and more.

All of this brings us back to the question of Directionality. As I lay out in my book, *Sustainable Futures*, ICT technologies are essential if we are to build a more economically, socially, politically and environmentally sustainable world. But ICTs also provide the potential for enhanced surveillance, for facilitating tax avoidance, for the manipulation of values and voting and for increasingly destructive weaponry. Which direction will the future ICT techno-economic paradigm take?

To move to a more sustainable world we need a combination of individual action ('everyone should do their own little bit') and collective action ('if we all do our own little bit, we will only achieve a little'). We need a systemic response to a systemic transition – coordinated changes which reduce income and wealth inequalities; which erode the power of the plutocracy who fetter change and whose control over opinion forming shapes our values; to shift the balance of governance from the centre to the local; and to promote sustainable development in low and middle income countries which is essential for meeting climate change and global political stability. But most of all we urgently need a Green New Deal.

Big asks? Of course. But we live in a world facing perilous and existential challenges. Visionary political leadership and competent government are essential. So too are the incentives which induce the private sector to move in sustainable directions. Without an active citizenry holding governments and the private sector to account, the pace and direction of change are unlikely to meet the challenge of rebuilding a more sustainable world.