

A vision of the future

There is now enormous concern about how to shape our world as we emerge from the multiple enormities of Covid-19.¹ This has led to healthy debate in countries enjoying freedom of expression. The only peculiarity is that, due to the extremely severe restrictions imposed by governments on foreign travel, in each country debate has tended to develop in a somewhat isolated fashion, notwithstanding global interconnectedness via the Internet. Hopefully in due course we shall be able to more fully share the fruits of our thinking. This isolation is accentuated in island nations such as the UK, which this editorial is mainly about.

Here, there is a long tradition of expounding visionary ideas for the development of our civilization.² It might be interesting to review them and determine (for example) the most commonly addressed perceived threats, and the most-supported ideas for development. The most articulate visions appear to be those propounded by scientists. At the same time the visions appear to be largely impracticable, and indeed the purpose of expounding them seems to be to stimulate debate rather than address possible implementation.

Contemporary developed societies stand resolutely aside from the notion of “philosopher kings”. Implementation of any changes to our organization is left to politicians, even when the actual decisions to make the change have been made by referendum, as is common in Switzerland, and which occasionally happens in the UK (Brexit) and elsewhere.³ But these changes are nearly always lamentably incremental, and even then likely to be opposed by pressure groups.⁴ The incremental nature of change is presumed to be absolutely necessary because of the interconnectedness of society: politicians are afraid that radical action may prove to be unpopular, leading to them being voted out of office.⁵ Yet even incremental changes can have unpredictable results,⁶ making politicians even more hesitant.⁷

¹ The principal two apparent enormities are: (1) SARS-CoV-2 as an artificial construct released from a laboratory either through inadvertence or with deliberate intent; and (2) the shutting down of the economy, with devastating consequences in proportion to the degree of civilization, not so much as to protect people but to prevent public distress or outrage from hospitals being overwhelmed—fueled by very widely disseminated media coverage of overwhelmed hospitals in northern Italy, which was the initial epicentre of the epidemic in Europe.

² Typical is *Inventing the Future* by D. Gábor (London: Secker & Warburg, 1963), and *Innovations: Scientific, Technological and Social* by the same author (London: Oxford University Press, 1970).

³ According to Tolstoy’s theory of history, all change results from popular currents, of which a referendum is merely a formal expression. The corollary is that holding a referendum does not make much difference to the actual course of events.

⁴ For example, in most European countries the population is aging, which puts pressure on government finances because more is to be spent on old-age pensions, and at the same time there are fewer people of working age contributing taxes from income. Since governments have also spent large sums over the past decades on improving public health, with a consequent significant increase in life expectancy, it is not very daring to propose an increase in the age after achieving which a State pension is payable. Yet in all countries this measure is vigorously opposed.

⁵ This implies, of course, that the ruling desire of most politicians is simply to remain in office.

⁶ An example is the large-scale protest following a 4% increase in fares on the metropolitan railway in Santiago, Chile, in October 2019—admittedly about double the rate of inflation.

⁷ And likely to make them turn to measures as unnoticeable as possible. For example, in the 2021 UK Treasury budget, rather than increasing income tax rates, which would have been immediately

Nevertheless, radical changes are being proposed, above all due to the seemingly inescapable phenomena of population growth and climate change. A major consequence of population growth is a shortage of housing. It can, seemingly obviously, be remedied by building houses. Although this is seen as a responsibility of the State in many European countries,⁸ for the last 30 or more years in the UK it has been the responsibility of private companies. Their profitability and relation to State regulation has formed the subject of a number of investigations.^{9–11} The industry is highly profitable, one consequence of which has been its consolidation into a small number of very large construction firms. They are large enough to wield considerable influence on local authorities and even the central Government, and command sufficient resources to promptly quash legitimate protests from purchasers about shoddy workmanship. The architectural mediocrity of most large modern housing developments has been commented on elsewhere,¹² as has the dearth of trees in them. Both the implementation of existing laws and proposals for reform¹³ are extremely unpopular, both among existing residents neighbouring new developments and the hapless purchasers of houses within them. Clear evidence for the deep unpopularity was the dramatic defeat of the ruling (Conservative) party candidate at a recent Parliamentary by-election in Amersham and Chesham, considered to be a very safe seat, on 17 June 2021. Yet there is no shortage of sensible, albeit piecemeal, proposals to alleviate the housing shortage in a socially acceptable fashion. These include building on brownfield sites rather than good agricultural land, and converting newly redundant shops and offices in town centres to residential accommodation. I have not seen, nor attempted to make, quantitative estimates of what the latter might provide, but it would appear to be very considerable. Yet, there is very little movement in that direction—for the simple reason that it is far less profitable than new building. Unfortunately the relentless search for profitability led to widespread conduct that should be classed as criminal—the substitution of cheap flammable materials instead of fire-resistant ones for cladding blocks of flats, which has exacerbated the housing shortage by rendering many such blocks uninhabitable. Even when urban sites are chosen for development, there is a tendency for existing buildings—even when they are structurally sound and of architectural merit—to be demolished rather than renovated and reconstructed. Needless to say such demolition activity is a major cause of urban air pollution.

noticeable and doubtless unpopular, the Government simply froze the thresholds below which no tax is payable—when average annual wage growth is 4.5%.

⁸ Wartime destruction—for which the State ultimately bore responsibility—was a significant reason for State provision of houses. The destruction of civilian amenities by aerial bombing reached unprecedented heights in World War II. Furthermore (and also a consequence of World War II), until the early 1990s half of Europe was organized according to socialist principles, requiring all significant economic activity to be undertaken by the State.

⁹ A.S. Akintoye and M.R. Skitmore, Profitability of UK construction contractors. *Construction Management Economics* **9** (1991) 311–325.

¹⁰ J. Barlow and A. King, the state, the market, and competitive strategy: the housebuilding industry in the United Kingdom, France, and Sweden. *Environment Planning A* **24** (1992) 381–400.

¹¹ D. Adams, The changing regulatory environment for speculative housebuilding and the construction of core competencies for brownfield development. *Environment Planning A* **36** (2004) 601–624.

¹² J.J. Ramsden, “Build back better”—a commentary. *J. Biol. Phys. Chem.* **20** (2020) 91–99.

¹³ G.G. Grimwood, *Planning for the Future: Planning Policy Changes in England in 2020 and Future Reforms* (Briefing Paper No 8981). London: House of Commons Library (2021).

There is, however, among mankind a profound bias in favour of new construction. It is one of those social attributes that students of history endeavour to discern in the progression of events—one of the ruling currents that, according to Tolstoy, govern what actually happens regardless of the actions of individual politicians and others who, ostensibly, “govern”. Hence, we regularly see the dismantling of magnificent infrastructure (e.g., Figure 1) and its replacement by something new—in this case HS2, which will provide the same service¹⁴—a passenger route from London to Birmingham—but at enormous cost, both to the Exchequer and the landscape, the latter in particular also recognized as a factor leading to the Amersham and Chesham by-election result. Similarly, it is proposed to abandon the extensive piped natural gas infrastructure in the UK—almost 90% of households use natural gas (methane) for heating¹⁵—and replace it by electric heating (including heat pumps),¹⁶—in order to achieve “zero carbon” (dioxide emissions).¹⁷ Perhaps surprisingly it is from politicians that these bold proposals emanate. They are very far from incremental. Do they represent the current of history, in which case they will be fulfilled (and the politicians are merely mouthpieces of popular sentiment), or are they more akin to a remarkable hubris that will be quickly forgotten?¹⁸



Figure 1. The Birmingham Pullman at Birmingham Snow Hill station. These trains have since been scrapped and the entire station demolished.

¹⁴ Not exactly the same—the journey will be faster and almost certainly considerably less comfortable.

¹⁵ <https://www.statista.com/statistics/426988/united-kingdom-uk-heating-methods/>

¹⁶ *The Ten Point Plan for a Green Industrial Revolution*. London: HM Government (2020).

¹⁷ Admittedly, some consideration is being given to replacing natural gas—methane—by hydrogen,¹⁶ with the hope of using the same distribution network, just as 50 years ago town gas (mainly CO) was replaced by natural gas using essentially the same network. Hydrogen is, however, much more fugitive than methane and leakage may become an endemic problem.

¹⁸ Another example of the abandonment of infrastructure, under very different circumstances, is given by the fate of the district heating system in Tbilisi, which in Soviet times serviced most apartments in the city. After the collapse of government in 1991, the system abruptly ceased to operate. Hence,

It is pertinent to note that travel restrictions and lockdowns have compelled the vast majority of people to remain at home and within their neighbourhood for a prolonged period. This seems to have greatly heightened sensibility to our environment. Before the pandemic, the average UK household was taking almost ten holidays a year; and given that in the majority of families both parents were in employment outside the home (presumably not least in order to pay for all those holidays) and children were at school, it can be inferred that the average family spent relatively little time at home and was perhaps inclined to somewhat neglect and even disregard its immediate surroundings. It would, furthermore, have felt hypocritical to condemn the construction of new travel facilities (such as HS2 and airport extensions) when travel to holiday destinations required such or similar facilities. The pandemic has given the nation a unique opportunity to profoundly assess its vision for the future. This opportunity fits in very well with the current preoccupation with “green”.¹⁹

It is pointless to create plans (such as the *Ten Point Plan*¹⁶) without firstly deciding on the most fundamental choices that we are meaningfully able to make. For example, global warming depends on worldwide human activity,²¹ and “net zero” in Britain alone will achieve very little. Similarly, although it might be correct to identify an excessive population as the root of our ills,²² both nationally and globally, again this is something over which we have remarkably little control, even though most births are very much the result of a personal decision. What we can and should decide is the nature of our environment.

The UK Government is now preoccupied by “leveling up”—somehow making all parts of Britain more or less equally attractive.²³ Indeed, HS2 asserts that it is part of this programme,²⁴ an assertion that underpins the presumption that London is considered to be the most attractive city in the UK, and that other cities can enhance their own attractiveness by connecting themselves more effectively to London. It is certainly the largest and richest,²⁵ attributes which

supplying individual gas burners (the gas distribution network remained more or less intact; were that to have been abandoned conditions might have started to resemble those during the siege of Leningrad) and paraffin burners became profitable, along with the supply of paraffin. The electricity network also came perilously close to abandonment: supply became intermittent and anyone dependent on electricity was obliged to purchase a standalone generator.

¹⁹ The concept of “green” is of course derived from the preponderant colour of our natural environment, due to the dyestuff, chlorophyll, that is at the heart of photosynthesis. Consuming essentially only atmospheric CO₂ and N₂ (the latter via microorganism helpers), with water as a molecular lubricant, a vast array of versatile structures is fabricated, ranging in size from the nanoscale up to 100 m, with both passive and active functions, and on such a scale so as to determine the composition of our atmosphere, and all at room temperature and pressure. “Green” industrial processes attempt to mimic especially the latter. The overarching motivation is the desire to limit the impact of human activity on our natural environment, having recognized that we have come perilously close to irreversibly destroying it.²⁰

²⁰ J.J. Ramsden, Doomsday scenarios: an appraisal. *Nanotechnol. Perceptions* 12 (2016) 35–46 and references therein.

²¹ G.C. Holt and J.J. Ramsden, *Climate Change from First Principles*. Basel: Collegium Basilea (2019).

²² J.J. Ramsden, A.A. Mamali and N.T. Athanassoulis, A sustainable world population. *J. Biol. Phys. Chem.* 19 (2019) 11–21.

²³ <https://www.gov.uk/government/collections/new-levelling-up-and-community-investments>

²⁴ <https://www.hs2.org.uk/why/connectivity/>

²⁵ According to the Office for National Statistics (ONS) London had the highest GDP per head (in 2018) at £55,000, more than double that of north-east England (£24,000).

also make it by far the most diverse and interesting city, thus epitomizing urbanization, which is often considered to be almost synonymous with civilization. Urbanization—the grouping together of people—also enables a greater degree of specialization and hence division of labour than otherwise,²⁶ which is often thought to be a key factor for increasing productivity, hence prosperity.²⁷ Another advantage of urbanization is the facilitation of social intercourse, which is likely to promote the development of new ideas leading to technical innovation, another key factor for increasing productivity and prosperity.³⁰ But urbanization also has its disadvantages, and with the development of highly effective means of remote communication, which have made videoconferencing as routine as making a telephone call, it may seriously and legitimately be asked whether we still need cities in order to be civilized. Before answering this question, which is being asked much more insistently since the start of the pandemic, since the lockdowns imposed by legal force have imposed much more severe and intolerable burdens on those living in cities than those in more rural places, let us briefly look once more at the special position of London not only in Britain but also in the world. Figure 2 shows the cities of the world in about 1920 ranked in decreasing order of population size. A similar plot for the cities of the British Empire (inset) shows London (rank 1 in both plots)—to be disproportionately large, but among the cities of the world it preserves rectilinearity, a fact interpreted by George Zipf as showing “that ‘Greater London’ at that time was dynamically a world capital and not merely the capital of the British Empire”.³¹

This, then, is the question for our society: What degree of urbanization should we aim for? For now, let us merely look at what are more or less the extremes.

If we embrace urbanization—which is, after all, a worldwide trend—leveling up is impossible unless cities throughout the United Kingdom adopt a similar size. Let it be noted that countries that have come into being as accretions—federations or confederations—usually have several cities on a more or less equal footing—similar in size, the illustriousness of their history, cultural importance etc. Thus in Italy we find Milan, Naples, Palermo, Rome and Turin; in Switzerland Basle, Geneva and Zurich; in Germany Berlin, Düsseldorf, Frankfurt-am-Main, Hamburg, Leipzig, Munich, Stuttgart and countless others—even little Weimar was the capital of a jurisdiction in the first millennium (and, more recently, for a time capital of all Germany). A simple calculation shows that in the UK, we could have 5 or 6 more cities about the size of

²⁶ J.J. Ramsden and Gy. Kiss-Haypál, On a possible limit to economic progress. *Nanotechnol. Perceptions* 9 (2013) 71–81.

²⁷ This is the view conventionally ascribed to Adam Smith, who illustrated it with his well-known parable of the pin factory;²⁸ Robinson and Eatwell have given a rather more convincing explanation of the purpose of the division of labour:²⁹ “... to discipline and control the manner in which work was performed and, by ensuring the necessity of an organizer, to guarantee a position for the capitalist in the production process ... the capitalist must acquire a predominant role if accumulation is to proceed ... The contribution to technical efficiency came later.”

²⁸ A. Smith, *An Enquiry into the Nature and Causes of the Wealth of Nations*, bk I, ch. 1. Chicago: University of Chicago Press (1976) (first published in 1776).

²⁹ J. Robinson and J. Eatwell, *An Introduction to Modern Economics*, bk 1, ch. 2, §2(b). Maidenhead: McGraw-Hill (1973).

³⁰ J.J. Ramsden, The future of cities. *Nanotechnol. Perceptions* 12 (2016) 63–72.

³¹ G.K. Zipf, *Human Behaviour and the Principle of Least Effort. An Introduction to Human Ecology*, pp. 437–438. Cambridge, Mass.: Addison-Wesley (1949).

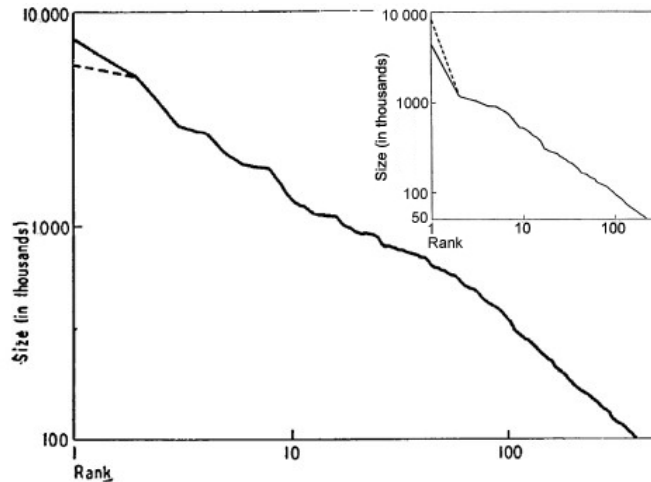


Figure 2. Cities of the world in about 1920 with at least 100,000 inhabitants, ranked in decreasing order of population size. Inset: cities of the British Empire with at least 50,000 inhabitants, similarly ranked (from, respectively, Figures 10-8 and 10-9 of ref. 31). The city of rank 1 is London (the dashed line indicates the difference between the official population and the size of “Greater London”).

London—perhaps Belfast, Birmingham, Bristol, Cardiff, Glasgow and Manchester—to accommodate almost the entire population. The rest would mostly be devoted to agriculture. But this implies that many other worthy places—think of Edinburgh, Huddersfield, Nottingham, Sheffield, Shrewsbury and York to name just a few—would have to shrink down to villages. Hence we should reflect on what is the minimum size a city can be to enjoy world-class amenities and, above all, to be sufficiently diverse to foster lambent innovation in ideas? Florence in its heyday (around the 16th century) had a population of about half a million; Basle had a mere one hundred thousand but some of the greatest figures of all time, especially mathematicians, emerged from, especially, its University. If you take the former figure then we could have about 140 cities in the UK, all well connected by road and rail, and the rest countryside. London would have to shrink rather drastically. This would be an unprecedented challenge. Some lessons might be learnt from Detroit, in which flourishing urban farms have emerged, but its population only needed to shrink by about two thirds to achieve the half-million mark and of course it has far less history than London. As a start, managing demographic urban adjustment could become a major topic in British universities, with the aim of generating as many novel ideas as possible, some of which could then be investigated more thoroughly.

Among other things, the pandemic (as well as some unrelated incidents, such as the Ever Given running aground and blocking the Suez Canal) has shown us the potential fragility of our supply lines. Achieving self-sufficiency—more or less—in a time of emergency has its attractions. Perhaps with urbanization along the lines adumbrated above, given that the population density in a city is much higher than in a rural setting, the freed-up land would enable Britain to become more or less self-sufficient in food. This implies, of course, that we also retain the ability to manufacture all that is needed for the efficient production of wholesome food. And there would be no more arguments about building on green belt land and the like.

The alternative to urbanization is to embrace the contrary—dispersing the entire population all over the country. In England the population density amounts to about 2300 m² per person on average—a 50 × 50 m plot. But if we take into account that the mean size of a UK household is 2.4 persons, this is equivalent to 180 households per square metre, or a little more than half a hectare per household (or 1.4 acres), equivalent to a 75 × 75 m plot. Regarding food production, we then have a choice. Either we all become minifarmers, part-time, with the help of novel, high-tech miniscale food production, or we develop vertical farms in skyscrapers and cellars.

High-tech miniscale food production never seems to have been investigated—hitherto there was no interest in the topic. Much of it would be automated, and those parts still requiring manual intervention would be made as enjoyable as possible. *Man ist was man isst*, and it seems sensible to devote time and energy to the matter, the idea being that there would still be plenty left over for other things.

High-tech vertical farms, on the other hand, are being vigorously developed.³² Adopting this technology would see towers sprouting up all over the country. They would, perhaps, be no less obtrusive than the electricity-generating wind turbines that have already sprouted up. Perhaps initially, at least, the vertical farms could be concentrated in the former cities, which would become gigantic brownfield sites, with just the most interesting and historically valuable buildings being retained and repurposed in one way or another.

These proposals sound like radical changes, but are they more radical than what is already being proposed, by Government at the highest level?¹⁶—albeit with little indication that the full implications have been understood or even thought about. Even worse, until now there has been no proper debate about the issue. Has the public given its assent to such far-reaching measures as erecting ubiquitous wind turbines, “gigafactories” for electric storage batteries (with the attendant grave risks of heavy metal pollution), intrusive domestic heat pumps and so forth?³³ Even the framework for such debate is hitherto lacking. In the *Ten Point Plan* document,¹⁶ the word “green” is used more than a hundred times, but never once defined. What exactly are “green recovery”, “green finance” and “green skills”?¹⁹ Officials mumble that “they are something to do with sustainability”, local climate change groups zealously organize litter picking drives, and waste disposal companies exhort citizens to sort their garbage. COP26 (31 October–12 November 2021 in Glasgow) would be a splendid opportunity to have the debate, in which the thousands of delegates expected from countries all around the world could participate. Without getting the fundamentals right, the entire programme is likely to run into the sand.

Above all, whither goeth the great current of history, in the Tolstoyan sense? It may be flowing in an entirely different direction from that of “green”.

J.J. RAMSDEN

³² E.g., <https://www.intelligentgrowth.io/technology/our-technology>

³³ Including, perhaps, further draconian restrictions on our freedom.