

The Foreseeable Future

The present situation

In 1933 H.G. Wells wrote a book called "The shape of things to come". In it he correctly predicted the Second World War (not a particularly difficult thing to do) and the 'Cold War' which followed it dominated by superpowers wielding weapons of mass destruction. But what he did not foresee was that these two wars, far from reducing mankind to a new 'Dark Ages' dominated by crime, unemployment, piracy on the high seas and the decay of transport and communications links, would in fact stimulate the most rapid technological advance in history and propel a minority of the world's population to undreamt-of heights of material luxury. He also predicted the breakup of education for the masses, the decline of scientific research and the demise of organised religion – none of which came to pass. And not only did he fail to predict the coming of television, he proposed that radios would disappear, photography would be wiped, electric lights would be replaced by candles and cars by horses. (Of course, he predicted these things, not because he was incapable of imagining how the technology of the day could be extended – after all, he was one of the greatest scientific fiction writers of the day, but because of his assumptions about the future course of world history.) Ultimately, however, Wells' new world is saved by a World Council which first takes over the control of global transport, imposes a universal Lingua Franca (English) and eventually manages to persuade everyone to abandon their nationalistic and religious prejudices in favour of a global utopia.

While I am glad that his 'Age of Frustration' never came about, I see little hope in the petty squabbles between men of different states and creeds that persist to this day of building his utopian 'Modern State' in the foreseeable future. Indeed, it is quite possible that even if we manage to avoid a Third World War, we are actually about to enter Wells' 'Age of Frustration' but a hundred years later than he predicted. Let me explain what I mean by examining a number of propositions.

1. The world is a more 'civilized' place now than it was 100 years ago

In the early 20th century the population of the world was 1.6 billion of which it is probable that less than 30% were literate. A recent estimate of global literacy in the CIA World Factbook rate is now 82%. Similar dramatic improvements can be seen in statistics for the standard of living, infant mortality rates and other indications of material comfort. And for a privileged but substantial minority, life is incomparably more secure and comfortable than it was 100 years ago. It is true that material comforts are not the whole story and it is debatable whether today's modern businessman is any *happier* than a Victorian merchant or an African tribesman living in the bush 100 years ago, but it cannot be denied that the businessman is more *civilized*.

2. Scientific knowledge has increased more in the last 100 years than ever before

The twentieth century has witnessed a number of major scientific discoveries of which the most fundamental and far-reaching were the discovery of the theories of Relativity and Quantum Mechanics, the discovery of DNA and the elucidation of the history of our planet within the cosmos. I will not argue that these discoveries are greater than those of the pioneers Archimedes, Galileo, Newton and Darwin etc. but it is true that working out the consequences of these discoveries has kept more scientists in fruitful employment and has led to the development of more practical technologies than ever before. Indeed it is largely because of these discoveries and the work of the scientists who developed them that our current technological world has come about.

3. The world is a more peaceful and secure than it has ever been

In the wake of atrocities like 9/11 and wars going on all around the globe this may seem ludicrously naïve statement to make but let us remember a few things. The horrific events which occurred on September 11 2001 killed some 3,000 people. At the battle of the Somme the same number British

soldiers were killed in the *first hour*. And as the death toll of soldiers and civilians killed in Afghanistan and other theatres of war grows steadily higher, let us not forget that laser-guided bombs do immeasurably less damage than 1000 bomber raids over civilian targets and that helicopters and better medical treatment in the field prevent many a wounded soldier from becoming a serious casualty.

More importantly, I believe our attitude to war has changed radically over the past century. In 1914, our young men could not wait to 'have a bash at the hun'. That attitude did not survive the first Christmas. Even so, there were political leaders – and willing followers – who wanted to have another go 25 years later with even more catastrophic consequences which only ended with the explosion of the atomic bomb in 1945. History could have repeated itself a third time in 1962 but – at last – sanity prevailed in the face of the appalling possible consequences and the two superpowers withdrew from open conflict. Since then, the prospect of a Third World War has receded to the point where it is virtually unthinkable that any major nuclear power could consider a pre-emptive nuclear strike on another. The reason for this is simple – no such action could guarantee to knock out all of the opponents defences and therefore the lack of massive retaliation could not be guaranteed. This policy of Mutually Assured Destruction, though appearing MAD to many people, has kept the world free of major conflict for the last 50 years and, providing that we all maintain our nuclear arsenals in good shape and in sufficient numbers, I see no reason why it should not go on doing so for the foreseeable future. It is for that reason that I cautiously welcome nations like India and Pakistan into the nuclear club; for it is only when a nation knows that it can defend itself that it becomes secure enough to behave responsibly on the world stage. Nations are like children and there comes a time when every child has to be given the keys to the house.

This does not, of course, eliminate the possibility of a rogue state or a terrorist organisation from getting hold of a nuclear weapon and holding the world to ransom. In fact, I do not see how the world can stop this from happening some time in the future and very possibly sometime in the very near future. To a certain extent, I agree with Wells that before we can enter an era of true global peace, we must pass through some kind of terrible catharsis. Suppose, for example, that a militant Islamist managed to explode a nuclear device in Tel Aviv which killed 50,000 people and rendered an area of 1000 square miles uninhabitable. I do not know if Israel would respond in kind (Israel has never admitted to possessing a nuclear device though it seems very likely that she does) but even if she did, would a Third World War inevitably ensue with the consequent destruction of most of the human race? I think not. I incline to believe that, faced with the overwhelming horror of the event, the nations of the world – both Islamic and non-Islamic – would finally get together to sort out the mess and militant Islam (and other form of extremism too) would be crushed for ever. There were signs of this happening after 9/11 but unfortunately the event was not quite horrific enough and the appetite for a full scale 'war on terror' has waned.

The next century

The time has come to ask ourselves: 'Can we sustain these improvements over the next century?' and I am afraid that the answer is probably 'No.'

With regard to raising the standard of living, Africa is the continent with the most potential for improvement and I sincerely hope that we can do something about that in the decades ahead. But the plight of poor Kenya shows that progress is far from inevitable and I believe that it will take at least two or three generations before Africa reaches anything like parity with the rest of the world.

More generally, there is another serious impediment to the inexorable rise in standards of living and that is the limitation of the Earth's natural resources. We are not even beginning to feel the pinch yet but when the oil runs out and when more and more people compete for less and less water and when polluted seas and the rape of the land make the production of food more and more difficult, none of us will escape the consequences. I predict that the best that we can hope for is that in 100 years time the population of the world will have stabilized at around double the present figure; that essential

services such as food, water, energy and travel will be strictly rationed, quite possibly at an individual level; that while nations will still have governments which make local laws, there will be global organizations (successors to organization like the UN and WHO) which have the power to make all nations abide by certain rules in the interests of global harmony. Perhaps this vision is not so far from Wells' 'World Council' after all. (Wells goes on to predict that 100 years later, the World Council disbands itself because the world is running so smoothly, its services are no longer needed. I can't see that happening!)

What about the future of Science? Will we be able to solve all our environmental problems by simply developing new and better technologies all the time? Again, my answer is 'probably not'.

In the first place, while it is true that the last century was the most productive in terms of scientific discoveries and inventions than ever before, I think it very unlikely that this trend will continue. Recent advances in science and technology have come only because of the immense amount of effort and talent that has gone into the endeavour. Gone are the days when you could make earth-changing discoveries by looking through a couple of spectacle lenses; or even when the application of some simple algebra could help you design a machine that would fly. These days, any advance in medicine or any application of a new technology such as genetic engineering takes many scientists and engineers many years and a lot of money. There is a law of diminishing returns here as more and more effort is needed to generate less and less of practical value. It is impossible to tell exactly when the 'break even' point will be reached but the cancellation of the Super-collider project in 1993 was perhaps the first of an increasingly large number of high profile scientific projects which are deemed to be 'not worth the candle'.

There is another point to consider. As technological solutions become ever more complex we may be in danger of creating more problems than we solve. New, more productive strains of wheat for example, whether produced by genetic engineering or by traditional breeding methods is immaterial, may put unsustainable strain on other environmental resources such as the supply of water or the ability of the soil to maintain its fertility.

As time goes on, people will increasingly ask whether the development of new technologies is cost effective and whether we really need these technologies at all when our existing technologies, if deployed properly, can provide us with all of our reasonable needs anyway.

Undoubtedly the greatest technological challenge facing the world today is the problem of providing food, water and energy to an ever-growing population without causing runaway global warming and its appalling consequences. Much irreversible damage has already been done to our rainforests and our oceans. Whatever the politicians and scientists say they can do, nothing is going to stop the world becoming significantly warmer and the sea levels from rising. The best we can hope for is a damage limitation exercise in which global carbon emissions are stabilised at something like double the present levels in 50 years time. To achieve even this modest target we will have to bury our prejudices about nuclear power and on-shore wind farms and we must seriously address ourselves to the technological problems of extracting useful energy from our deserts and oceans.

Looking beyond

And what will life be like in the year 2106, the year in which Wells' 'History of the World' was supposed to have been written? Will the differences between 2106 and 2006 be as great as those between 2006 and 1906? On the face of it, I rather think not. The invention of the car, the aeroplane, television, the computer; then advances made in medicine and the social upheavals brought about by two catastrophic wars made the twenty-first century one of unprecedented change. For similar changes to occur in the twenty-second century we would have to invent teleportation, instantaneous thought transfer, package holidays to the moon and DIY surgery. None of these are going to happen. There is, however, one foreseeable development. Electronic devices are going to become so small

and ubiquitous we shall not notice them at all. Almost everything we buy will have a chip in it – and not just electronic goods. The cabbage that we put in the fridge will have an edible chip in it which will tell the fridge to flag up a warning message if it starts to go mouldy. Our clothes will have a chip in it which will record how many times we have worn the article. And, of course, everyone will have a EPI (Electronic Personal Identity) chip implanted into them at birth. This last development will be fiercely opposed by 'human rights' activists – probably successfully for a while – but eventually even they will realise that the most precious right a human being has is the right to a personal identity.

The one major technological advance that really will happen in the next 100 years will be the ability to marry living nervous tissue with electronics in such a way that we shall be able to control our home environment and other devices by thought alone. This will have untold benefits for disabled people but whether the majority of the population will either want or afford to have the necessary implants made is another matter.

The rationing of food, water and energy resources will not seriously curtail what we do and how we live except in one respect. Travel – and particularly air travel – will become much less common than it is now. Aircraft need chemical fuels to power their engines and the best chemical to use on the basis of energy output per kilogram is paraffin. I see absolutely no prospect of any other practical source of energy and when the oil runs out, we shall have to manufacture – or grow – the necessary fuels. But the real reason for the decline of the aviation will be that it will increasingly be seen as unnecessary. There is not a shadow of doubt that our ability to communicate with one another across the globe will continue to increase to an extent that we can hardly imagine today. Whether or not we shall be able to beam holographic images or ourselves to the living rooms or our relative on the other side of the world, I do not know but it is absolutely certain that trips across the globe for purely business reasons will be rendered totally pointless by advances in teleconferencing. Even travel for recreation will become a bit pointless when you can conjure up the sights and sounds of a Mediterranean beach in your own living room any time you like.

I do not, however, subscribe to E. M. Forster's vision – described in his short story 'The Machine Stops' published in 1928 – of a society who live in isolated cells and whose every whim is catered for by the Machine. Human beings will still be human beings in the twenty second century and will still have the same needs for other human company, for fresh air, for physical activity, for work; we will still live in the houses we build today; we will still wear clothes; we will still use cars to travel to work and for local recreation (though they will probably look rather different and may use a different source of energy); we will still send our children to school (though probably only up to the age of about 14. thereafter, teaching will probably take place entirely via telecommunication); we will still go to the pub for a drink and watch football on the TV.

I hope that by 2106, all electricity in the UK will be produced either from renewable sources or from nuclear power stations (but I am not very optimistic about the commercial possibilities of nuclear fusion power) and that the transport network will be almost completely electrified. Long distance road haulage will be banned. All goods will have to be transported by ultra-efficient electric trains with automatic routing of containers to a network of distribution centres feeding customers directly via electric lorries.

Nearly all shopping will be done online. Towns will still exist, of course, but the need for traditional town centres will diminish and many modern town centres and out-of-town shopping centres will wither away. Only those town centres with vision and perhaps a good sprinkling of attractive buildings will flourish as tourist and entertainment centres with pubs, restaurants, clothes shops, bookshops and the like. Banks and Building Societies will disappear completely (hooray!).

One of the most important services that will be provided by the local council will be a comprehensive waste recycling system. It will be illegal to throw anything away. Every single item that we buy will have to be made in such a way that it can be dismantled into recyclable components which will have to be separated either by the consumer or by machine. Consumers will

probably be paid for (or given tax relief on) the items they recycle.

In most other respects, I don't think life in the UK in 2106 will be very different from what it is today. This is not just a lack of imagination. The material and social changes which came about in the last century were the result of unprecedented advances in technology which are not going to be repeated. If we are wise, we may hope to look back on the twenty first century as the 'Age of Consolidation' – the century when the advanced Nations of the world came of age and, for the first time in history realized that it was not only their duty but it was in their vital interests to help the less advantaged nations aspire to the same levels of material prosperity which they had already achieved. In order to bring this about, we in the UK may have to accept that may have to abandon certain freedoms which we have up to now assumed are our God-given rights. The right to travel anywhere we want; the right to throw away any amount of rubbish we like; the right to indulge in excessive consumption if we want to.

One nightmare above all haunts me. There is one scientific discovery which I pray to God (if there is one) that will not come about in this century or any other. It is the discovery of the secret of ageing and with it the nightmarish possibility that medical science can prevent us from dying. If that came about we would also have to abandon our right to live as long as we want to and as long as Fate allows.

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