

## **Cities in 2050**

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Norman Foster September 2015

The future of the city is the future of our society. By 2050, it is predicted that 70 per cent of the world's population will be urban. In many countries the pace of change is extraordinary - what took Europe two-hundred years is now taking twenty years in China and India. Urbanisation has accelerated by a factor of ten and this has been accompanied by a shift of balance from the so-called 'developed' to 'developing' countries. London in 1939 was the world's most populous city with a population of 8.6 million. Ten years later it still stood in the big-league with cities such as Paris, Milan, New York and Moscow. Today such cities have receded into a mini-league, overtaken by a number of mega-cities around the world, with populations in excess of 15 million. However the qualities offered by the model of a smaller scale historic city still has valuable lessons for our global future.

Cities are a fusion of buildings and infrastructure. Think of the latter as the urban glue that binds the individual buildings together – the infrastructure of roads, connections, transport, parks and public spaces. In an industrialised society, buildings and the movement of goods and people between them account for two thirds of energy consumption.

The cities which are consistently rated high by the public in terms of quality of life are relatively compact and pedestrian friendly with good public transport and generous parks and civic spaces. In Spain, Madrid and Barcelona are excellent examples of this model. These more desirable cities are comparatively dense and have evolved historically from a traditional European concept. They consume less energy than the more recent suburban model of cities like Los Angeles with low density sprawl and a total dependence on car journeys. The social isolation of the suburbs and the stress of long commutes are also factors which tend to explain the greater popularity of more concentrated cities.

In summary it could be said that the more socially desirable cities, which offer a perceived better quality of life, are also more sustainable in that they consume less energy. This is important in a world where 18% of the population, or 1.3 billion, still have no access to electrical power. Statistically those communities are characterised by lower life expectancy, higher infant mortality and less political, educational and sexual freedom. It can therefore be argued that there is a moral imperative to provide more globally available energy at the same time as seeking to conserve its consumption.

The answer to this apparent paradox is to adopt a holistic approach to the design of sustainable communities in which the infrastructure and individual buildings are considered interactively. For example we know that

buildings can now be designed to harvest more energy than they consume so that collectively they can feed energy back into a National Grid instead of feeding off it. Similarly an energy and information grid could be physically combined with transportation networks and leisure routes incorporating landscape, cycle, and hiking paths. In 2011 we proposed a version of this concept which showed how a proposed high-speed train route in the United Kingdom could be the catalyst for unifying a wider range of services and leisure facilities - in a way that would beautify rather than scar the landscape<sup>1</sup>.

New communities offer designers the potential to create futuristic visions which combine the best of lessons from the past with the latest innovations in environmental technology. The ideal city, like the ideal building, will do more with less and be designed to accommodate change. It will offer the prospect of greater choice and social contact together with enhanced personal privacy. It could be cleaner, greener, and quieter. Without the benefit of having evolved over time it could encourage the random, almost accidental, quality of disorder which creates the buzz and vitality of different quarters in traditional cities – the combination of planning and anti-planning. Parts of Manhattan have some of these qualities as a consequence of the “as-of-right” legislation which safeguards health and safety but does not prescribe what is or is not visually acceptable. A more sophisticated version of such planning legislation for cities of the future would break down the present silo mentality which encourages a lack of integration between management of waste, (which could also be a source of power) the production and distribution of power, the provisions for highway and separately again for parks. It is the lack of co-design between these many different agencies that inhibits the creation of truly sustainable communities.

I have always said that to be an architect you have to be an optimist – to believe in a future which can be better. In conceiving a new city the approach is inevitably going to be utopian in its vision. But there is no reason why some of the same principles should not be applied to retrofitting existing cities and suburbs to make them more efficient, beautiful, and desirable.

For example, the railway routes in cities are of necessity relatively flat and permeate areas which are concentrated and well connected. The roads in the immediate vicinity will most likely have been created in an era of horse drawn transport and are ill adapted to the competing demands of vehicles, cyclists and pedestrians. This word picture could be applied to many cities worldwide and particularly to London where we proposed to use the space above the railway tracks for a network of decks as cycle lanes – a concept we termed Skycycle 2. We have developed the idea further to provide wider ranging facilities alongside the dedicated cycle routes. Beyond beautifying the city and creating valuable new real estate this concept is also life enhancing – since the beginning of last year cycling in London has already resulted in 21 deaths and untold numbers of injuries.

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See attached drawings 1 & 2

Earlier I mentioned the current divide between cities that are concentrated and those that sprawl. The advent of a new generation of driverless robotic vehicles combined with electric power transmissions could transform life for the better in both urban and suburban communities. The daily commute would be changed from a stressful drive interrupted by traffic jams and accidents to a period of safe and free flowing leisure time. Cars that can talk to each other could form train-like formations – like the peloton of cyclists in a race, or the formations of migrating birds. Existing road networks would have much increased capacity thus reducing the need to build new roads.

In the skies above our cities and countryside a similar system of overall traffic control governs the flow of aircraft across borders and nations. Outside of this controlled airspace a pilot is relatively free to follow visible routes – by the reading of maps or satnav. It is not difficult to envisage the equivalent of motoring in the future, with a distinction between interstate or international highways which would be robotic and local roads with the option of being manually driven. This technology has the power to transform the quality of life in the suburbs and enhance their attraction.

Traffic arteries which can now be seen as dangerous, noisy and polluting could become altered in the same way that many urban streets in a past age were malodorous before the birth of modern sewage systems. These innovations in automotive design, when fully developed, could likewise transform life in city centres – reducing noise and emissions to improve the quality of pedestrian life.

Much of the debate on the future of the city has tended to be pro public transport and anti-car. This has assumed that car design is relatively static and apart from niche manufacturers of luxury sports cars, is the prerogative of a handful of big manufacturers. If this monopoly is successfully challenged by Silicon Valley style innovators as I have suggested, then these distinctions between public and private transport systems become less polarised. This proposition in no way diminishes the powerful arguments in favour of well integrated systems of public transport offering increased levels of comfort safety and speed.

Almost 1 billion people in our global society live in what might be termed informal settlements or slums. More precisely 18% (1.3 billion) of the population have no access to power, 11% (750 million) no clean water, and 40% (2.5 billion) no modern sanitation. Conventional planning wisdom favour the bulldozing of such communities and their relocation to new settlements often in remote locations which cannot offer the opportunities provided by inner cities. In a recent study project for Dharavi, an informal settlement in the heart of Mumbai in India, we questioned that assumption. In an area of 1.75 square kilometres Dharavi houses an estimated population of 1 million and its principal livelihood is the recycling of 80% of Mumbai's

waste. Although considered prosperous by comparison with rural India, Dharavi lacks all the basic amenities of a modern city – particularly in terms of water, sanitation and public space.

One of the first priorities of our study team was to find out why new buildings created by the city authorities to replace a fringe area of Dharavi were empty and unused – even though they provided modern standards of sanitation. Their rejection by the residents was a symptom of the right questions not being asked before the tasks of designing and building. For example the recycling and other manufacturing activities of the community favoured high density low rise work cum living spaces, whereas the fourteen storey slab blocks that were provided were not appropriate to sustain the economy of the society they were supposed to serve.

Given the thriving social structure of this slum, we proposed an alternative to the bulldozer. Instead we suggested a series of phased upgrades that would combine self-help by the community, with a mixture of new and existing technologies. By threading a spine of pipes through the existing traffic routes as a platform, the needs of sanitation and clean water could be addressed. Removing a small proportion of buildings would provide much needed public space and rebuilding would follow the existing model of integrated workshops and dwellings as three to four storey walk-ups. Each residence would harvest energy to be independent of electrical grids – power needs would be reduced by a single mechanised unit which served the kitchen, bathroom and environmental functions. Industry in India, particularly in the automotive sector, has the skills to mass produce such heart units which also have the potential to transform the quality of life in rural areas – this in turn would help to stem the exodus to the cities.

Recent developments in the design of drones will, I suggest, also be an influence on urban developments. We are currently involved in a project which will leapfrog the needs of physical infrastructure such as roads and bridges in Africa to create an aerial network for drones to deliver medical supplies on a national level. Like other emerging technologies this could have a trickle-down effect on cities. For example the aerial delivery of goods, could bypass the congestion of roads and make more space available at ground level. The pavement or the park is the traditional civic realm and it is the one vital constant that determines the quality of life in a city.