Bristol Festival of Ideas/

CATAPULT
Future Cities

2017 Festival of the Future City/

By Andrew Kelly and
Melanie Kelly

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An initiative of Bristol Cultural Development Partnership

2017 Festival of the Future City/

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Future Cities Catapult is delighted to present the Festival of the Future City in collaboration with the Bristol Festival of Ideas, in what promises to be an exciting, thought-provoking and participatory series of events for anyone interested in the future of cities.

At our core, we work to advance innovation and grow UK companies, to make cities better for all. Urban problems, such as inequality and climate change, are often multifaceted challenges. There is no single, definitive answer and the problems are almost impossible to solve because of incomplete, contradictory and changing requirements. Communication and stakeholder involvement are key. This is why our remit is to bring together businesses, universities, city leaders and citizens to work with each other to solve the challenges that cities face. We are very excited about the opportunity to do this in Bristol, joining forces with some of the best thinkers and doers in the field of cities and urbanism.

Bristol is a natural base for the festival which aims to be the largest public debate about the future of cities, since the city has an impressive track record in innovation. It has been named as the leading Smart City outside of London (UK City Index, 2016); SETsquared, based in the city's Engine Shed, has won the title of the Global Number 1 University Business Incubator (UBI Global, 2015); and *The Sunday Times* ranked Bristol as the best place to live in the UK in 2017.

For Future Cities Catapult, it seems very fitting to call this wonderful city our home for the festival, as some of our earliest work was based here, such as the Data Devolution project which looked at how council and other services could be delivered more efficiently and effectively with greater access to public data held by national government.

So, if you're interested in integrated urban infrastructure, healthy cities and urban mobility, or you want to learn how we can help grow UK business, then come along to one of our events while you are visiting the festival. They will showcase the best in the advanced urban services sector, feeding the already growing momentum of innovations on how we live in, navigate and do business in cities.

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Introduction/

The first Festival of the Future City was one of six cultural projects supported by an Arts Council England Exceptional Award that took place during Bristol's year as European Green Capital in 2015. It was initiated and led by Bristol Cultural Development Partnership (BCDP: Bristol City Council, Business West, University of Bristol, University of the West of England), an Arts Council England National Portfolio Organisation.

The city and the future of cities have been important to the work of BCDP since it was founded in 1993. It has sought inspiration from cities around the world; looked at what can be learnt from cities of the past, as well as cities of the imagination; and been as keen to be involved in debates about transport, planning, leadership and governance as it has been in developing arts programmes.

The core activity for the 2015 Festival of the Future City took place 17-20 November with 69 sessions held over the four-day period featuring over 200 speakers and attracting over 7,400 audience members. There had also been an 18-month build-up programme that explored sustainable, resilient city futures and many aspects of future city life. The build-up involved over 350 speakers with a total audience of nearly 13,000. The audience figures are in addition to the many people who have since listened to the audio recordings or watched the films of the events.

Panel session on New Thinking About Cities (1) chaired by Simon Cooper, Watershed, 18 November 2015 (@JonCraig_photos).

The main festival partners were Arts Council England, Bristol 2015 European Green Capital, Bristol City Council, Business West, Innovate UK, University of Bristol and University of the West of England. The festival was run in association with BCDP's existing year-round Festival of Ideas. Established in 2005, the Festival of Ideas emerged out of Bristol's bid to be European Capital of Culture in 2008. It was inspired by a wish to expand the level of debate in the city and to celebrate the work of great writers, commentators and thinkers in and outside Bristol.

With the Festival of the Future City BCDP aims to:

• Promote comprehensive thinking and discussion about the future of cities.

• Look at examples of good practice in cities that could help promote a better and more prosperous future for all.

• Examine models for future city development from around the world.

• Provide a public platform for existing programmes of work, such as Centre for Cities, Foresight and Future Cities Catapult.

• Ensure Bristol is seen as a good example of where future cities work is taking place and a natural location for debate about future cities.

In programming the 2015 sessions BCDP had wanted to bring a diversity of voices to the cities debate, mixing established names with newer and younger speakers. It also sought to complement what had already taken place in the Green Capital year and to put the arts and creativity at the heart of debates on city-making. Though sustainable cities were important, that topic had been covered widely in previous events. The festival allowed BCDP to look at other issues including: fairness and equity; overcoming inequality; improving housing; immigration and refugees; devolution; and the future of work.

The 2015 festival was officially opened with an event in the Great Hall of the University of Bristol's Wills Memorial Building, co-hosted with the Arts and Humanities Research Council (AHRC) as part of its tenth anniversary series The Way We Live Now. Other joint sessions during the course of the festival included Bristol Health Partners' day on healthy cities; the Wildlife Trusts' strand looking at nature in cities; and Innovate UK's showcase for its future cities work. The Danish government came to Bristol to hold a series of seminars on Liveable Cities that ran in parallel with the festival.

Other sessions included: *Guardian* journalists Gary Younge and John Harris on North American and English cities; various European speakers on the issue of resilience; an evening with the Assemble artists; Jonathan Meades, Gillian Darley and Miriam Fitzpatrick on city thinkers of the past; sessions on Detroit (Chris Dorle), Turkey (Elif Shafak) and Delhi (Rana Dasgupta);

Michael Marmot discussing health inequalities; Owen Hatherley and Stuart Jeffries on the Left and future cities; Lynsey Hanley, Gavin Kelly and Marvin Rees on social mobility; Bettany Hughes and Edith Hall on cities and ideas in the ancient world; Matthew Beaumont and Iain Sinclair on cities and walking; Darran Anderson, Douglas Murphy and Melissa Sterry on utopian cities; and Guy Standing on the emerging Precariat class and its impact on urban areas. There was a day on the Playable City; Mara Balestrini, Stephen Hilton and Evgeny Morozov were among the panellists discussing smart cities; and Will Self talked about JG Ballard and future cities and led a guided walk.

New research highlighting examples of good practice was disseminated through the festival blog and an online AHRC/YouGov survey on British attitudes to cities was commissioned. Researchers from the government's Foresight programme spent a day attending sessions.

The book produced about the festival – which is available as a downloadable PDF – includes chapters on the ancient cities of Greece and Rome; utopian cities; ambitious cities; cities of ideas; housing; immigration; nature-rich cities; the legacy of Kevin Lynch; and the continuing influence of Jane Jacobs. The case studies include Bradford, Bristol, Detroit, Delhi, Lagos, Manchester, Plymouth and Mexico City. Eugene Byrne offers a provocative contribution about how Bristol might be changed over the next 50 years and there is a report on Will Self's guided walk. The book includes images of some of the promotional posters designed for the festival by students at the University of the West of England, as well as fiction and poems from the festival's commissioned writers.

The 2015 Festival of the Future City was the largest and most successful themed season BCDP has run as part of the Festival of Ideas to date, as well as being the largest ever public debate about the city. Of those who responded to the audience survey, 81 per cent rated the festival as either 'very good' or 'good'. It was an excellent example of BCDP's approach to delivering projects: bringing together the arts and sciences; facilitating academic and professional debates with the general public; having artists at its centre; and challenging the views of thinkers, campaigners, politicians and spokespeople.

It was soon decided that the festival should be run every two years and so the second Festival of the Future City takes place 18-20 October 2017. At least 150 speakers will participate including writers, artists, scientists, change-makers, academics, journalists, students, economists, futurists, policy makers, roboticists, philosophers, film-makers, city-builders and representatives of think tanks, charities and social enterprises.

This book outlines some of the topics that will be debated and sets out some of the challenges that the festival aims to address.

The first chapter, Thinking About Cities, provides an overview of city thinking, past and present, and how this relates to likely future city issues.

The next three chapters are linked to three key themes identified by Future Cities Catapult, the festival's lead partner. The mission of Future Cities Catapult is to advance urban innovation, to grow UK companies and to make cities better. It brings together businesses, universities and city leaders so that they can work with each other to develop effective solutions to city problems. It is problem-led rather than technology-led, articulating the urban challenges and finding the best ways to respond to them.

The first theme, Integrated Urban Infrastructure, refers to harnessing the potential of new technologies – especially digital technologies – to manage the growth and complexity of cities better. This definition has been extended to encompass issues around city leadership, devolution, balancing the UK economy, housing and mega-cities, among other relevant topics.

The second theme, Healthy Cities, refers to using new technologies to improve the design and operation of cities to enhance health and well-being. BCDP has always been interested in the health of cities and quality of life. This includes: social isolation and mental health – particularly among the young; the role of the National Health Service (NHS); the contribution of medical institutes to future cities; social mobility and intergenerational conflict; migration and cities of refuge; race and cultural diversity; freedom and terrorism; the future of work; women and children in the city; green space; and the ageing population. Some of these are discussed in more detail in the chapter.

The final theme is Urban Mobility, in which new technologies can help to improve mobility and accessibility in cities, especially through integration with other city infrastructure and priorities. The chapter focuses mainly on the reduction of car dependency for urban journeys but also includes more general topics such as legibility.

The book concludes with suggestions for the top 20 questions we should be asking ourselves now about the future of cities; questions that will be raised and debated throughout the festival. You can join the debate on Twitter @festivalofideas #futurecity17

For the latest updates to the programme, please visit **www.futurecityfestival.co.uk**

Will Self Walking Tour of Harbourside, 19 November 2015 (@JonCraig_photos).

Thinking About Cities/

By 2050 there will be more than 800 cities in the world with populations over one million people; there will be two billion more people on the planet than there is today; and over two-thirds of the global population will be living in cities. Already around 80 per cent of the UK population lives in a city or urban area and this percentage is forecast to increase significantly in the coming decades.

In thinking about the city of tomorrow, we first want to explore city thinking of the past and of the present, and how these ideas might inform what is to come and how it might best be managed.

Over the last 5,000 years or more, cities have been created and shaped by a variety of forces including: topography and the natural environment; politics and war; economics on the local, national and international scale; altruistic and inspirational individuals and organisations, as well as self-serving, mediocre ones; and the day-to-day lives of citizens. They are often composed of a collection of smaller settlements that have come together over time in order to achieve greater self-sufficiency. There are cosmic cities whose origins lie in rituals and belief systems, such as those of the Mayans. There are practical cities, conceived like machines and driven by advances in technology, such as New York. There are organic cities whose complex patterns seem to have evolved over time like a living thing with little by way of overall planning.

Although some future cities may be built from scratch, most will grow from a physical, social and cultural form that is pre-existing. A city's historic legacy must inform the development of its future. A visionary city builds on successes; learns from mistakes; effects change where needed; preserves what is of most value; strives to work successfully within its limits; and understands the processes by which big ideas come to fruition.

The ancient world provides not only interesting examples of early town planning, but also demonstrates how the city soon came to be a centre of aspiration, culture, commerce and thought. The Greek philosopher Aristotle considered the city to be the means by which one could live well (by which Aristotle meant fulfil one's purpose), be fully human and work for the highest good, the shared pursuit of virtue and happiness.

Previous spread: Soldiers Carrying a Model of a City, Taddeo Zuccaro, c1548, pen and brown ink, brush with brown wash, over black chalk, white heightening, on blue paper (digital image courtesy of the Getty's Open Content Program, 96.GB.329).

Ancient Greece comprised hundreds of independent *poleis* (loosely translated as city-states) that had emerged with the process of urbanisation. People thought of themselves as citizens of their *polis*, Greece's largest political unit, rather than as Greeks, though they shared a common language, mythology and religion. At the heart of each *polis* was a compact, powerful, self-governing city that controlled the farmland around it and sometimes other smaller cities in the area. Although the mountainous terrain of much of Greece could make communications difficult, over time a *polis* might form strategic allegiances for trade, politics, festivals and defence while retaining its independence and physical isolation. A small *polis* would resist being absorbed into a larger one, much as smaller urban areas resist being wholly absorbed into the metro-cities, mega-cities and megalopolises of today, while acknowledging some of the benefits of collaboration and partnership.

A Greek city was experienced as a living community and the need to provide spaces for public and political engagement on the part of its citizens would come to have a profound influence upon the shaping of the city's physical form. Even as we increasingly move to a digital existence and physical city boundaries become blurred, this ages-old principle of civic engagement being fundamental to city life is still considered something worth pursuing.
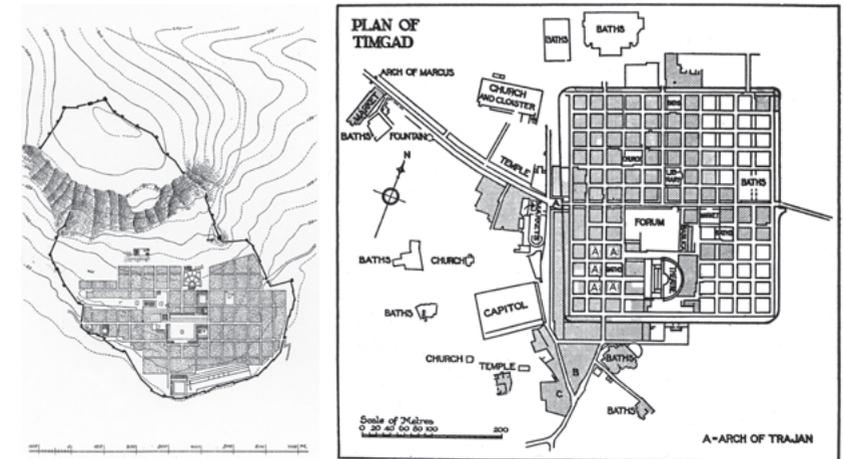
Above, left: Plan of Priene from A von Gerkan's *Griechische Stadteanlagen*, 1924. The grid usually ensures the most effective use of space. Here it has been laid out upon the site's steep slopes. Above, right: Plan of the Roman colonial town of Timgad from F Haverford's *Ancient Town Planning*, 1913 (both images copyrighted work available under Creative Commons Attribution only licence CC BY 4.0 from Wellcome Library, London).

Athens, one of the world's oldest cities, was a centre of Ancient Greek civilisation. Around 20 per cent of the population held democratic rights and every eligible citizen was expected to contribute to public life by voting and serving in government when required. Athens was a city of ideas, which supported the study of philosophy, science, the arts, literature, mathematics, logic, history and architecture. In addition to the magnificent Parthenon, it contained many smaller temples that demonstrated ideals of beauty and architectural order, as well as monumental secular buildings such as the theatre of Dionysus. Aristotle came to Athens to study at Plato's Academy and the city could be said to have laid the foundations for European intellectual and cultural life for the next 2000 years. It demonstrates how a surplus-over-subsistence economy can inform a city's structure and also provide the luxury of time in which to develop new creative ideas and innovative thinking about how people can best live together. It is how we at BCDP hope our cities of the future would function, though with far greater levels of inclusion and sharing of prosperity and opportunity than was experienced at that time or even in the present.

Having led the defeat of the Persians in 480BCE, Athens became a superpower, demanding tribute from other city-states and forming a defensive alliance, the Delian League, to deter further Persian aggression. Athens' main rival within Greece was Sparta, a militaristic society with little interest in intellectual achievements. Sparta defeated Athens in the Peloponnesian War (431-404BCE), but was itself defeated by Thebes in 371BCE. The power vacuum that resulted from the fall of Athens and Sparta was filled by Philip II of Macedon who united the Greek city-states under his rule. He was succeeded by his son Alexander in 336BCE. With the expansion of the Macedonian empire under Alexander and his successors the concept of the *polis* spread into Asia.

Defensive city walls and the agora – a large, open public assembly space for civic and commercial activity – became common features of *poleis* from the seventh century BCE. The agora came to eclipse the hill-top acropolis around which older cities had originally been formed as the main city streets converged in a loose, informal framework around it. Evidence of more deliberate town planning can be seen from the fifth century BCE onwards, in accordance with developing ideas of how the city needed to be managed and what the city should provide. It is likely that the Greeks took their lead from the plans of Ionian settlements on the west coast of Asia Minor. A plan is clearly apparent in the Greek colony cities, which required a rapid building of defences and the imposition of order and autonomy in a foreign land. The street-plans and architecture were driven by practicality.

By 146BCE Greece was under Roman rule. Much of the *poleis'* political power and independence was lost, though they could continue to be a source of civic pride for their citizens. For centuries Rome was little more than a cluster of farmers' huts built on the hills surrounding the east bank of the river Tiber in central Italy. When Athens was at its height in the fifth and fourth centuries BCE, Rome was still essentially a small town, overshadowed

culturally by the Greeks. A defensive wall was built around its centre as protection against the Gauls, but as the town grew with the expansion of Rome's military strength it stretched erratically beyond this boundary, growing rapidly into an extensive metropolis controlling a world empire.

A Roman city was part of a well-managed, centralised system of government and financial network. New settlements owed something to the design of the colonial Greek cities in southern Italy but also followed the layout of the Romans' military camps: a gridiron divided into regular rectangular blocks with the two major roads that ran from the city gates (east-west, north-south) crossing in the centre. The intersection was the location for the most important buildings. The orthogonal plan is an interchangeable form that was used to impose Roman imperial authority and it became common around the world. It is still seen today in the street-plans of many modern cities.

However, Rome did not lend itself easily to the gridiron because of its rapid, haphazard growth. While Rome's contribution to the development of Western civilisation through its engineering achievements, its administrative systems and its spreading of literature, philosophy and the arts was impressive, its record on social organisation was less so. By the third century CE social problems were rife and many people lived in overcrowded slums that were symptomatic of the failings of a deeply divided society. The water, sewage and road systems could not take the strain brought by the increase in population and housing density. Roman order broke down. Barbarian invasions in the fifth century hastened the city's decline.

Historians continue to argue about the relative merits of ancient Greece and Rome and each has its own champions, yet both can provide inspirational as well as cautionary tales for those looking at the future of cities. Cities can be well-planned, effectively managed places of ideas,


The Ideal City, attributed to Fra Carnevale, c1480-1484. The panel exemplifies Renaissance ideals of urban planning, respect for GrecoRoman antiquity and the mastery of central perspective (acquired by Henry Walters with the Massarenti Collection 1902; acquired by Walters Art Museum, Baltimore 1931 by bequest. Accession number 37.677. Public domain).

debate, community living and public engagement. They can also reach beyond the limit of their abilities to function and become places of self-destructive excess and inequality. If nothing else, the story of the ancient world perhaps shows that there is nothing fundamentally new under the sun when it comes to cities, however uncertain the future and however much the technology and political systems may change.

Those responsible for the development of ancient cities often aspired to utopian ideals of how people might come together collectively to create the very best possible society within a well-designed shared space. However, utopian planned cities and urban places seem to have been destined to always fail, at least in part (George Haussmann's modernisation of central Paris in the nineteenth century may be seen as being among the few notable exceptions to the rule and even the grid streets, redways and linear parks of 1970s Milton Keynes have their fans). Striving for perfectionism, order and predictability can preclude the happy accidents, discoveries, surprises and untamed places that bring a city to life. Humans cannot be readily moulded to fit a planner's idealised blueprint. And yet should utopia still always be an objective, in the hope that while falling short of expectations the end result is still the best that is possible? The egalitarian Ebenezer Howard may have only seen the completion of two garden cities in the UK, for example, but his thinking informed the worldwide garden city movement within town planning and the creation of the English Green Belt, both of which have been beneficial, some would argue.

One of the most ambitious and comprehensive masterplans of the early twentieth-century in North America was the 1909 Plan of Chicago. This can be seen as capturing the spirit of its time, striving to provide a clear sense of direction for the development of modern Chicago and the surrounding region over the next 100 years. The plan's driving force was architect Daniel Burnham, working with his associate Edward H Bennett, editor Charles Moore and the 334 individual subscribers to the Commercial Club of Chicago. In addition to conceiving the plan's content, they promoted it extensively to business, civic and government leaders and members of the general public, including schoolchildren. This approach ensured the proposals were understood and endorsed by a wide range of stakeholders, many of whom held power and considerable influence in the city. Grand in scale and bold in expectation, only parts of the plan were realised – with Burnham's death in 1912, the surge in private car ownership and the coming of the Great Depression among the factors that curbed its aspirations – but successful developments that can be attributed to it include Chicago's North Michigan Avenue and Wacker Drive, lakefront parks and regional forest reserves.

Burnham and his colleagues were savvy about the value of engaging stakeholder commitment to the marketing of their plan. However, their focus was on large-scale, physical improvements chosen by a self-appointed elite, rather than on social needs. By the mid-twentieth century many city thinkers had come to understand the need to involve everyone in
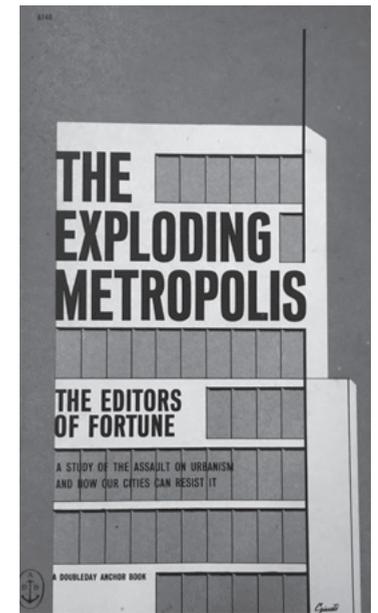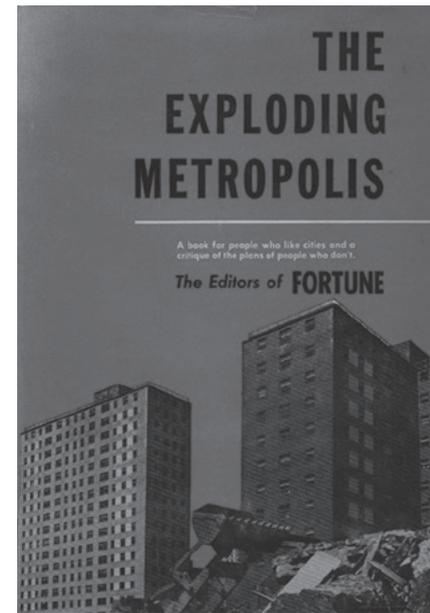
Covers of the first-edition hardback and paperback edition of *The Exploding Metropolis*. Note the paperback's more provocative subtitle: A Study of the Assault on Urbanism and How Our Cities Can Resist It (Doubleday/Doubleday Anchor Book ©1957/1958, with thanks to Peter Laurence).

the shaping of the environment in which they were to live, work, study and play from the outset. A city's identity and sense of place is best drawn out of its communities rather than imposed upon them.

Between September 1957 and April 1958 *Fortune* magazine ran a series of six articles that came to form the revolutionary book *The Exploding Metropolis*, commissioned and edited by the New York investigative journalist and critic William H Whyte. The final article, entitled 'Downtown is for People', was a collaboration between Whyte, Grady Clay, Gordon Cullen, Jane Jacobs and Ian Nairn. The optimistic Whyte was keen to emphasise the city's strengths – in opposition to the prevalent anti-city sentiments of the period – and to champion the hope of 'people who like cities', as he stated on the cover of the first hardback edition. His findings on the vitality of city life, in all its passion and chaos, and his outraged critique of decentralisation and complacency is still of relevance. *The Exploding Metropolis* made urban design newsworthy and broadened and educated its audience.

In 1960 Kevin Lynch's *The Image of the City* provided an examination of how the urban landscape's image was perceived, mentally organised and physically navigated by the people who lived there and how this could

guide good city design. The book is based upon case studies of three contrasting places: vivid, historic Boston, with its often disorientating street patterns; formless, faceless, indistinct Jersey City; and the relatively youthful Los Angeles, with its central gridiron layout. All three revealed how city users consistently understood their surroundings by forming mental maps which comprised a pattern of five definite elements: paths, edges, districts, nodes and landmarks. In addition to the five elements, two important interconnected concepts were discussed by Lynch in the book: imageability and legibility. He would return to these in later work.

In *The Image of the City* Lynch was not laying down a set of fixed planning rules or calling for uniformity of design but was presenting an investigative technique that could help planners to visualise a specific urban environment in the same way as that of its users, with the potential to recognise the unique as well as the shared perceptions. He offered a coherent framework for seeing the city as an all-embracing image that acknowledged the subjective experience of individuals.

Corner of Avery Street and Washington Street, Walton's Cafeteria, one of the nearly 2,000 research photographs of Boston taken by Nishan Bichajian for 'The Perceptual Form of the City', Lynch's study with Gyorgy Kepes, which later formed the basis of *The Image of the City* (© Massachusetts Institute of Technology, KL_000679).

Lynch believed a well-designed city harmonises the relationship between the inner and outer world, offers a precise hierarchy of the dominant elements and thereby improves people's sense of security. In his work he had hoped to demonstrate that planning authorities should not depend on the privileged designer and the privileged power centre for making decisions about urban sites but should find out what the people who will live there value.

Lynch's influence is seen today in the efforts of tourism groups to highlight neighbourhood distinctiveness and produce effective maps and on-street signage for visitors; in the regeneration schemes that seek to reconnect people to their city; in way-finding and city branding programmes; in the reconfiguration of previously intrusive road layouts that had formed physical barriers between different city neighbourhoods and different communities of citizens; in researchers employing human-scale evaluation methods as a means to understand place. In Bristol it is most clearly evident in the award-winning Bristol Legible City way-finding system. However, Lynch himself was largely disappointed with the book's impact outside of academia. He felt that planners still paid insufficient attention to how city design could improve quality of life by providing public spaces with which people could empathise. Would he be any happier if he saw how the planning process is managed today? Was he being naively idealistic? Can the engagement of members of the public be ever more than tokenistic when it comes to planning something as large and complex as a city?

The Image of the City was published at a critical moment in the history of city design in the US. Jane Jacobs' *Death and Life of Great American Cities* was published the following year and Herbert Gans' *The Urban Villagers* the year after that. All three explored the relationship between urban forms and city inhabitants and influenced the emerging environmental design movement.

Jacobs' work developed from her successful campaign to save her Greenwich Village neighbourhood when it was threatened with demolition to make way for the spatial needs of a car-dominated metropolis. Today the car still dominates many city discussions, as we shall see in the chapter on urban mobility. Another growing threat to old, quirky city corners is the rush to privatise, replacing community-focussed public streets with new, productive, profitable space driven by the free market. The mantra is that this is the way in which the city can best be revived and made globally competitive, yet it could also be argued that it reduces opportunities for the democratic social interaction upon which citizenship depends. It begs the questions: 'Who does the city belong to?' and 'For whose benefit is its urge for growth?'. In the 1960s Henri Lefebvre declared the right to make and remake our cities and ourselves was the most precious and most neglected of our human rights.

Jacobs' mentor William Whyte had left *Fortune* in 1958 and turned his attention to studying how people used the spaces they shared with

others. In his previous bestseller, *The Organization Man* (1956), he had warned against the stultifying effect of corporate conformity and the banal comforts of suburban-living in post-war America. He believed that the bold, individualistic visions of the past had been replaced by the humble dreams of 'organization men' who aspired to a reasonable work, home and community life and sought to immerse themselves in like-minded company. Whyte continued to urge resistance of unthinking conformity throughout his new career. He was also against what he termed 'urban sprawl', which was often characterised by ugly tract development on a city's edges, and embraced the humanising effect of the open places at a city's heart.

Whyte found the most effective method for understanding urban spaces was to directly observe public life. This interest developed into the pioneering Street Life Project, which was formed in 1970. The research convinced Whyte that the social life of public spaces contributed to the quality of community interaction and civic engagement in a city. He identified the major factors for making a space a 'good enclosure' and somewhere people would want to gather. From city to city, the basic principles were the same; only the scale differed.

Whyte liked the city's impulsive spontaneity and invigorating messiness and saw how these could benefit the lives of urban inhabitants. His recommendations informed new planning regulations in New York that 'livened up' existing plazas and provided guidance for the development of residential parks. They are also evident in the continuing work of Project for Public Spaces, which was founded in 1975 by Fred Kent, who had been an assistant on the Street Life Project, and which is described as the central hub of the global place-making movement.

The turn of the twentieth-first century appeared to mark a step-change in urban thinking in the UK with a heightened interest in cities, though many of the underlying ideas were familiar. In late 2000 the government launched an Urban White Paper – the first in over 20 years – which was informed by the growing realisation that cities could be good places to live as well as visit. The rise of the modern city had been spurred by nineteenth-century industrialisation. People were drawn to cities by new work opportunities while being driven from the countryside by the mechanisation that had reduced the demand for farm labourers. The development of the rail system and improvements to roads and canals meant food and other essential resources could be transported to cities more efficiently, thereby allowing the new workforce to settle there permanently. Industrialisation often brought a too-rapid growth that resulted in the collapse of infrastructure across parts of a city and overcrowded, poorly-built, unsanitary housing (as had previously been seen in Ancient Rome). However, industrialisation also encouraged the development of literacy, investment in public museums, galleries and libraries, which contributed to a positive quality of life, and wider access to health services, among other benefits. With the decline of traditional industries in the 1970s and 80s, many major British cities lost direction,

businesses failed, unemployment and social problems rose, buildings were left derelict and people moved away. The rush to the suburbs showed that many felt city centres were no longer liveable places.

Bristol followed a familiar urban pattern. In the nineteenth and early twentieth century it had sprawled out in a ribbon-like development along the main communication hubs (initially the waterways and later the roads and railway). Gaps were gradually filled to form concentrated built-up areas. Distinctive entities were lost, such as the village of Brislington, which was over-run by the eastward advance along the A4. Heavy bombing during the Second World War saw central historic areas devastated and, some claim, what the Luftwaffe failed to complete was achieved by post-war city planners who destroyed many long-established neighbourhoods. The decline of the city-centre docks, which had proved inadequate for the large container ships now carrying the world's trading goods, meant that much of Bristol's centre was derelict for decades. The growth of out-of-town shopping threatened to have further impact on the usage of the city centre.

The Urban White Paper – published as *Our Towns and Cities: The Future – Delivering an Urban Renaissance* – proposed financial incentives aimed at persuading business to (re-)invest in cities; explained how cities functioned as the nation's economic powerhouses; presented a vision in which people shared in prosperity and shaped their communities, supported by effective leaders; and championed attractive, environmentally sustainable design and good quality services. It grew out of the earlier report by Lord Rogers' urban task force, *Towards an Urban Renaissance*, though Rogers himself felt it fell short in its aspirations (in April 2017 Rogers launched *People and Places: Design of the Built Environment and Behaviour*, a new research report by the Design Commission calling upon the government to devolve powers to local authorities so that the country's architecture could be dramatically improved).

Regeneration schemes – many of which had begun in the mid-1990s in anticipation of the boost offered by lottery-funded Millennium projects – sought new uses for city-centre sites and new ways and reasons for living, working, studying and spending leisure time in the urban environment. Cities operate within complex political, social, economic and cultural frameworks. They are often competing on a global stage while also needing to re-engage their own disconnected communities. This requires adept marketing alongside planning. Spurred on by the call for an urban rebirth, city marketing campaigns in the last 20 years have emphasised what makes a city distinctive, combining an awareness of its unique historic roots while also establishing positive modern identities to fit the demands and opportunities of the new age. They reflect how cities have come to be thought of as commodities.

Manchester, for example, arguably the UK's first industrial city, aspired to be the country's first ideopolis outside of London in this new forward-

thinking era. An ideopolis is defined as a city that uses the best drivers in its local metropolitan and regional economies – normally a successful cluster of innovation, information and skills – to become a knowledge capital that grasps the opportunities and challenges of globalisation. It combines inclusivity, diversity and quality of life with strong leadership, dynamic political and economic autonomy and effective communication networks. Most ambitious cities would share similar goals though they may lack the necessary scale and resources to turn such a visionary concept into a practical reality.

Manchester began selling itself on the basis of the creativity that it believed gave it a uniquely vibrant 'buzz'. It is one of the six cities that were awarded the science city status by the UK government in 2005. The designation recognised a city's world-class academic research, business activity and technological innovation and its potential for increasing economic investment through science and advanced engineering. The science cities were introduced by then Chancellor of the Exchequer Gordon Brown to ensure that science, innovation and technology became the engines of the country's economic growth. It is debatable how useful this identification proved in terms of competing with other cities; in time such concepts become overly familiar and that sense of distinctiveness essential to city marketing is lost. However, it is just one example of how the British government was thinking about the role of cities in the new economy and of how their energy might be harnessed.

Science became a kind of commodity with which to distinguish and sell a city, as well as contributing value in its own right and in its applications. It can also be used to enhance city thinking. In recent years there has been increasing interest in behavioural sciences, as seen in the new field of conscious cities, but other evidence-based scientific disciplines also play a part including economics, anthropology, geography, spatial analysis and demography. In 2016 Foresight published a report as part of its Future of Cities project on how science can provide the evidence that will help us to understand how cities work and how they can develop in the future. The report recommends that the science of cities is broad in its sweep, encompasses multiple scales, draws insights from multiple disciplines and methodologies and adopts an interdependent systems approach.

Universities play an increasingly important strategic role as anchor institutions for competitive cities, as seen, for example, in plans for the University of Bristol's transformational new £300m campus in the heart of the Temple Quarter Enterprise Zone. They also contribute to how we think about cities. In 2012, for example, the Center for Urban Science and Progress (CUSP) was founded at New York University. It was hailed as a new kind of academic research centre that functioned in collaboration with the city itself, using New York as its laboratory and classroom. Members of the international CUSP consortium include the University of Warwick's Institute of the Science of Cities.

The Urban Living Partnership was launched in 2016. It is led by the seven UK research councils and Innovate UK and brings together university researchers, local authorities, the third sector and business partners, among others. The initiative aims to help people drive the health, well-being and prosperity of their cities by taking a 'whole city' approach that combines a unique body of expertise from across over 20 disciplines. Pilot projects are currently taking place in Birmingham, Bristol, Leeds, Newcastle and Gateshead, and York.

Other ongoing city-focussed research initiatives in the UK include City Evolutions funded by the Economic and Social Research Council and bringing together partners from Centre for Cities and the universities of Aston, Cambridge, Newcastle and Southampton.

Like science, culture has also been used to promote cities as environments conducive to a thriving business sector, helping to attract and retain the innovative people and organisations needed to grow the economy. The Guggenheim effect refers to the regeneration of Bilbao resulting from the opening of the iconic Frank Gehry-designed museum there in 1997, an effect other cities have sought to emulate with mixed results. In the UK the Baltic at Gateshead and the Lowry at Salford, which revitalised their respective urban environments, are still in operation and appear to be doing well, but New Art Gallery Walsall, a symbol of local social and economic regeneration when it opened in 2000, is under threat of closure at the time of writing.

Sheffield is one of a number of cities that have sought to benefit from the promotion of a cluster of businesses, arts venues and organisations located in a designated cultural quarter, but its landmark National Centre for Popular Music closed within 15 months of its opening in 1999 and is now the Sheffield Hallam Student Union building. The major venue in Leicester's cultural quarter, the Curve Theatre, has struggled financially over the years. Yet the concept remains popular. For example, in 2015 Southampton began work developing its own cultural quarter, which is at the heart of the city's social and economic regeneration plans. It comprises a mix of new and existing buildings and resources.

Glasgow was said to have boomed after the city was made European Capital of Culture in 1990, an accolade that brought significant increases in tourists and inward investment (though the research data is sketchy). A 2004 European Commission study concluded that the Capital of Culture title served as a catalyst for cultural development and that its potential socio-economic benefits should therefore be taken into consideration when assessing applicants. Building on Liverpool's success as Capital of Culture in 2008, the British government launched its own City of Culture award in 2009. This is given every four years to a city that best demonstrates the transformational power of culture. The current holder is Hull.

Empire State Building, New York, December 2016 (authors' photo).

Just as science can help us to think about and understand cities, so too can the arts and culture. The way in which a city is imagined through music, paintings, photography, literature and films may more effectively capture its sense of place than can maps, surveys and statistics. Think of the potency of Strayhorn's 'Take the A Train', Mondrian's *Broadway Boogie-Woogie*, Abbott's 'Seventh Avenue looking south from 35th Street', Dos Passos' *Manhattan Transfer* and Donen and Kelly's *On the Town* in their representation of mid-twentieth-century New York, for example.

An example of how new digital technologies are applied to city-focussed cultural activity is Playable City, which aims to generate and produce ideas that prompt citizens to connect with each other and to think differently. It was launched in Bristol at Watershed in 2012 and now has a global reach. The projects – which are generally modest in scale – are designed to act as conversation starters, suggesting alternative narratives to those created for cities by those in authority. Hello Lamp Post, a project by Pan Studio, Gyorgyi Galik and Tom Armitage, won the first Playable City Award in 2013. Over a period of eight weeks, nearly 25,700 messages were exchanged between the people of Bristol and everyday pieces of street furniture by the means of texting the unique codes found on each object. It was clearly fun but, it has been claimed, also evolved into a kind of city analytics platform, gauging the city's mood, probing particular issues and aiding the understanding of mobility and movement.

Both science and culture, and perhaps more particularly the critical creative thinking that goes with them, have come to be recognised as spurs for city growth. Until recently the work of urbanist and academic Richard Florida on creativity in city development has been enthusiastically cited by those who shared his belief that the creative classes were essential for prosperity and that everything should be done to attract and retain them. For those in the arts the evidence that the creative classes like to have art galleries, performance spaces and theatres in their neighbourhoods was especially welcome. However, Florida's research has been increasingly criticised for encouraging elitism and for employing questionable data and methodologies. Responding to this, his latest book, *The New Urban Crisis* (2017), proposes a new model of urbanism, one that will address the gentrification, segregation and inequality that has come with the back-to-the-city movement that he helped to foster. Suburban flight and downtown decline have been reversed in many cities but the winners have often been small groups of the young, educated and affluent at the expense of the poor and middle-class. And there is a growing gap between, on the one side, leading technological hubs like Seattle and select superstar cities like London, New York, Hong Kong and Paris and, on the other, the rest of the world.

Detroit provides an interesting case study on how regeneration programmes can work and also how they can have a limited impact. No city so effectively symbolises disastrous urban failure as Detroit: major economic decline, bankruptcy, huge population loss, massive housing
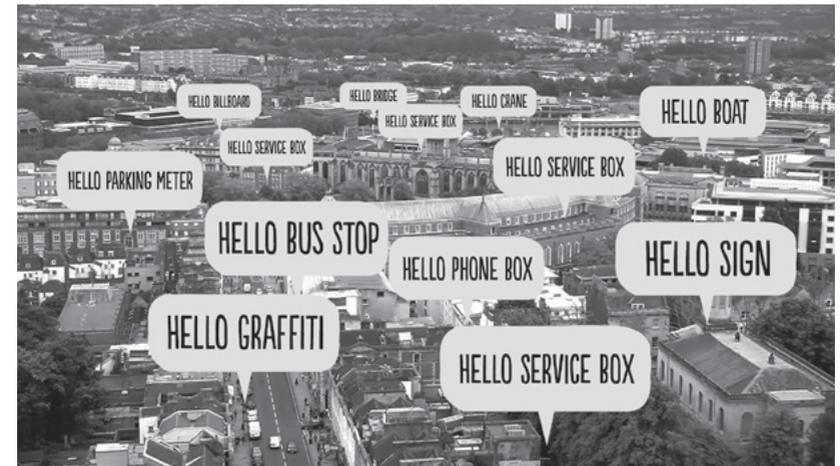
Hello Lamp Post (Pan Studio).

over-supply and a downtown in decay. There are signs that the city is recovering and has been brought back from the brink, thanks in part to new city leadership, a resolution of the bankruptcy issue and the involvement of philanthropic institutes like the Kresge Foundation. The basis of all of the planning elements of the Detroit Future City Strategic Framework – and the single most important factor in determining its implementation – was civic engagement. However, it is too soon to hail this as a success story. Recent research has queried whether all residents are experiencing an equal improvement in quality of life and whether areas of growth are robust enough to be sustainable. Population, incomes and jobs have continued to fall overall; there has been real progress in the downtown/midtown core but this represents only five per cent of the city landmass and a tiny fraction of the city's population; neighbourhoods occupied by long-term city residents continue to decay; and there are insufficient resources to provide the public school and public transport systems with the investment they need. If a city has been in unmanaged decline for decades, how effectively can it be managed back to health?

There is no single narrative for our cities as they are at different stages of development and exist in different contexts. They also exist as real places where people live their mundane, everyday life while on another level they can be experienced like a grand theatrical stage inhabited by a company of actors and highly elaborate scenery. What we perhaps need when facing the challenges and opportunities of the future is a *learning* city: one that seeks to learn from its past; understands more about the values, needs and views of its citizens, businesses and visitors, as well as the external factors that shape it; and effects change as a result of this knowledge that is to the benefit of all. A key way forward is integrated urban planning.

Integrated Urban Infrastructure/

A more integrated, joined-up approach to urban planning has the potential to improve the life of citizens, promote efficiencies, prevent disjointed planning processes, reduce costs, speed up urban development cycles and meet sustainability challenges.

Among the issues to be addressed within an urban plan are a variety of drivers that include:

• The changing demographic: a population that is increasing (through births and inward migration) and ageing (through longer life spans) will have a major impact upon the employment, housing, social services, health services and character of a place.

• Poverty and social tensions: there is a high probability of increasing divisions in the population in terms of educational aspirations and attainment, employment, pay, health, housing and opportunities for advancement unless effective measures are taken.

• Investment in education: there is an increasing need for high-quality learning services being effectively delivered to all sectors of society and at all levels of education.

• Health: among mounting pressures are increases in obesity, diabetes and other chronic illnesses.

• Environmental issues: air and water quality, climate change, waste treatment, energy conservation and energy production all have an impact.

• Mobility: the need to reduce car dependency and improve public transport travel times and costs is particularly pressing.

• Technology: changes here will have an impact upon transport, the environment, health and the workplace, among other aspects of city life.

• Crime: in addition to reducing crime rates where this continues to be a problem, persistent poor perceptions of the relative safety of certain areas of a city needed to be tackled.

Previous spread: Variety of Bristol housing in Clifton Wood and Hotwells viewed from Harbourside (Destination Bristol).

• Politics: there are seemingly ever-changing national, regional and sub-regional priorities, policies, structures and funding sources, which means it is difficult to plan for the long-term future and even more difficult to prevent projects being abandoned before any worthwhile goal is achieved.

With the limitations of forecasting, humans have always lived with a degree of future uncertainty. Perhaps our earliest ancestors were less aware of that uncertainty than we are today, being more focussed on surviving in the here and now or having greater faith in some supernatural grand plan. However, as we contemplate meeting and managing the challenges of our future cities in a rational manner, that uncertainty may be far greater than has been experienced before, not least in terms of the global climate. We are living in a new geological epoch – the Anthropocene – in which, some believe, human history and earth history are on a collision course.

In 2015 the University of Bristol's Cabot Institute and the Bristol Green Capital Partnership explored perceptions of uncertainty in a series of conversations with thousands of Bristolians. Interpretations of the implications of uncertainty ranged from viewing it as a rationale for immediate direct action to seeing it as a reason for prevarication or doing nothing at all. What came through as a common concern was the issue of leadership and in thinking about the future of cities – regardless of whether or not we believe we are on the road to an ecological disaster – identifying who is going to manage and shape the change we feel is necessary will be essential.

Governance, power and leadership are not just invested in politicians and public bodies in a democratic society. They are diffused through the public, private and third sectors and society at large in various formal and informal arrangements. In partnership working the public sector might bring to the table its practical experience of managing complex projects, its statutory powers and its accountability; the private sector might contribute its money, creative thinking and willingness to take risks; the third sector might offer its commitment, integrity and people skills; members of the public will bring their own time, expertise and knowledge. However, being effective still requires having someone or some recognised body taking ultimate responsibility not only for facilitating debate and building a consensus but also for enabling action. A coherent framework is required and there has to be some agreed understanding as to what would constitute good quality outputs and outcomes; how they will be measured; and what would need to be done if they were not achieved.

Stokes Croft is a local example here in Bristol of the challenges of managing change. It was once a thriving inner-city suburb that suffered from decades of neglect and poor planning decisions. In recent years it has re-emerged as an unconventional cultural quarter noted for its street art (much of which has been authorised by the buildings' owners,

if not always by Bristol City Council) and its independent, idiosyncratic shops and businesses. As the neighbourhood is seen to improve there is a fine balance to be reached in meeting the needs of all residents, from those resisting gentrification to those welcoming it. People are at risk of being priced out of their rented homes and businesses as property values increase or building use changes. These include the 500 residents based in Hamilton House, a large mixed-use building owned by Connolly and Callaghan and managed by social enterprise Coexist, which, at the time of writing, was hoping to submit a preferential formal bid for ownership to secure the space for community use and engagement. Should places like Stokes Croft be protected within a city plan to prevent the loss of identify and distinctiveness or is their fate inevitable when we allow market forces to dictate the future? Who should get to decide?

We return to the point we made earlier about desiring wide-spread consultation but the risk of it becoming tokenistic when it comes to actually making decisions and implementing policies. To what extent can there be a true co-investment in the process of developing an integrated urban plan? Is all the gathering of information and opinions – including from public referendums – ever more than advice to be taken into consideration, along with many other factors, by the officially recognised government, in whatever form that takes? What weight do these consulted bodies and individuals actually carry? How do we prevent their involvement being reduced to a mere façade?

We also have to consider just how much power a city can have when it comes to the drivers of change over which it does not have direct control. For example, if a city becomes environmentally sustainable but its neighbouring cities do not and neither do cities in other parts of the world, what difference can this make to the global-scale issue of climate change? During the Cold War some cities declared themselves to be nuclear-free zones, with signs declaring this at the city-line, but this would have been of little consequence in isolation. How can we ensure our leaders are able to do more than just tinker around the edges of major issues? We do not have all the answers to these questions now but will develop this thinking over the course of the festival.

We will also be returning in the festival to the subject of devolution, a topic that was particularly timely in 2015 and one that continues to be relevant as we consider how an integrated urban plan can be drawn up and implemented. In the UK sub-national devolution is welcomed by some as an opportunity to address significant deficiencies in our major cities and regions. The Scottish referendum on independence in 2014 – and the possibility of a second referendum currently under discussion – prompted renewed interest on both sides of the border in self-determination, national identity and the relinquishing of Whitehall powers.

Wave, Stokes Croft, Bristol (Destination Bristol).

Compared with much of Europe, North America and other international competitors, the UK has been highly centralised. This is starting to change. Potentially devolution is a way to give local residents a bigger say in such matters as spatial planning, regional transport, adult education and skills and employment, as well as a way of making the overall UK economy more balanced, sharing economic benefit across a wider area and increasing the country's competitiveness. In England devolution deals, partly tailored to local strengths and ambitions, have led to the transfer of some central-government powers to the regions, building on earlier city and local growth deals. These new arrangements include the introduction of metro-mayors – where a suitable regional partnership can be formed – and the prospect of retaining local business rates. A range of agreements have been negotiated with the government over the last two years, with the promise of further devolution – and more powers – in the future.

More than 20 years prior to the Cities and Local Government Devolution Act (2016) eight major English cities were recognised as centres for regional development and action. The Core Cities advocacy group was formed in 1995 with the aim of developing a new urban agenda that would improve productivity, develop skills levels and combat long-term unemployment and deprivation. The group now also includes Glasgow and Cardiff (a Key Cities group comprising cities with mid-sized populations and economies was formed in 2013). The 2011 Localism Act supported the Core Cities amendment, out of which came some of the subsequent city deals that included enhanced local autonomy and new combined authorities. Scotland, Wales and Northern Ireland have had their own elected parliaments or assemblies making nation-specific laws and representing national interests since 1999.

The move towards devolution has been seen as a long-overdue acknowledgement that a centralised system is too London-centric and the country's regions have not received the investment that would enable them to prosper during periods of economic growth and have some degree of security during times of economic decline. In January 2017 Prime Minister Theresa May announced a new post-Brexit national industrial strategy designed to close the wealth gap between the regions. This included the pledge of a £556m cash boost for the Northern Powerhouse, which was launched in 2014 as a new collective force to rival that of London and the South East, changing the nation's economic balance. Also in January 2017 Sadiq Khan, the elected mayor of London, called for his own city to be freed from Whitehall control.

In May 2017 residents in Bristol, South Gloucestershire and Bath & North East Somerset went to the polls to elect the first metro-mayor for the West of England Combined Authority (WECA), which had been formed in February that year. The West of England deal included an additional £900m in funding from the government over a 30-year period for infrastructure and public services projects. However, when the terms of the WECA deal were under discussion in June 2016, North Somerset councillors voted against the proposals. North Somerset seemed an obvious metro partner,

geographically, historically and economically, as it had worked with the other three local authorities for decades, including as part of the now much derided Avon County Council, which was abolished in 1996. North Somerset will continue to collaborate with the others on a range of projects and initiatives, including through the activities of the West of England Local Enterprise Partnership and the Joint West of England Committee, but the councillors concluded that the autonomy of the metro-mayor would lead to a withering of their existing powers.

The referendum in Bristol in 2012 on whether or not to have an elected city mayor was decided on a turn-out of just 24 per cent; the subsequent election had a turn-out of just under 28 per cent, ranging from nearly 43 per cent in Henleaze, one of the city's more affluent areas, to just over 11 per cent in Hartcliffe, one of the city's poorest (turn-out for the 2016 mayoral election rose to nearly 45 per cent). In the West of England metro-mayor election turn-out was 29.7 per cent. The turn-out of eligible voters in the other five participating regions were: Cambridgeshire and Peterborough 32.9 per cent, Greater Manchester 28.9 per cent, Liverpool City Region 26.2 per cent, Tees Valley 21 per cent and the West Midlands 26.6 per cent. The low figures are perhaps an indication of ongoing voter apathy and distrust of politicians – and election ennui induced by the general election unexpectedly called for June – but also that the majority of the electorate has yet to be convinced that the devolved system of leadership is an improvement on what has gone before. It may be that the talk on devolution needs to focus on deliverable outcomes people can readily understand – like jobs, homes and public services – rather than overly technical debates about infrastructure, governance and finance. In addition, until more devolved powers – with accompanying funding – become available, regional government is still limited in the extent to which it can truly ensure its urban planning is fully integrated and cohesive.

Evidence from around the world shows the potential difficulties facing city-regional or metro bodies. These include:

• Local government fragmentation.

• Economic competition between adjacent local authorities – and a reluctance to put the effort into growing on the part of one authority if the benefits will be dispersed into subsidising less successful authorities in the region.

• The further marginalisation and segregation of excluded communities as a result of giving priority to those who most directly contribute to economic prosperity.

• Silo thinking on the part of the local governments, agencies and institutes now expected to work for a single, collective, large unit.

• A miring in historically-based hierarchical and horizontal government and partnership relationships that have no rational basis.

- The failure to market the city-region effectively – not least by relying on increasingly meaningless clichés (as satirised in Jonathan Meades' mock promotional film for fictional Dudwich in *On the Brandwagon: The Regeneration Racket* with its 'potentialising its potential', 'incentivising incentive' and 'trailblazing connectivity').

- Territorial tensions, whereby smaller municipalities are reluctant to be overwhelmed by a larger city (remember the *poleis* of ancient Greece).

- National governments unwilling to strengthen the position of already powerful cities.

However, forming strategic alliances between willing partners around agreed powers and resources in order to increase a city-region's status continues to be tempting to many policy makers. Cities may be the future but they can rarely do it alone and need to think regionally. As they already drive economic growth, giving them an opportunity to share greater powers and wider jurisdiction will make them even more effective, some would argue.

The basis of much future planning is that growth is inevitable and desirable but that it needs to be managed effectively to maximise benefit. In England, for example, the Local Enterprise Partnerships compete for allocations from the Local Growth Fund by drawing up growth strategies. A buoyant city is deemed to be one that tends to experience above-average population growth and to have a dynamic private sector economy. It is argued that such cities are likely to be most in need of major expansion in order to fulfil their promise. With the increasing threat of global warming and all its consequences, along with the depletion of oil reserves, it has been generally recognised that the managed physical growth of cities and city-regions needs to be low-carbon and environmentally sustainable as well as resilient and well-balanced, with benefits widely shared.

However, among the fundamental – and perhaps seemingly naive – questions to ask about growth are:

- Is it really desirable, bearing in mind the many challenges it brings, including environmental damage and destruction? If cities are already struggling with demand for space, housing and services, why would they need or want to attract more people and businesses to them? Do the economics make sense?

- Is it unlimited in potential? If not, what happens once it has reached its peak?

- If cities and city-regions are competing with each other to grow, can they all be winners? What happens to those cities that fall behind? Will they ultimately bring down the successful ones? And might their citizens be worse off than they were before, being branded as failures?

- Is this growth competition for the good of the nation as a whole or just for those cities who come out best? At its heart, is it based on a furthering of inequality and imbalance?

- If growing cities are acting as magnets, what happens to the urban areas from which they are drawing their human and economic resources? Is the Municipal Darwinism that forms the basis of Philip Reeve's *Mortal Engines* steam-punk novels so very fanciful?

- Is it desirable for growth to be the ambition of all cities around the globe? If not who is going to curb those ambitions for the good of the planet?

- Is a new model needed, one that focuses on making economies thrive regardless of growth? – as proposed in Kate Raworth's book *Doughnut Economics* with its outer ring representing the earth, its inner ring representing the economy and a safe place for society in the middle.

- Why are those who have enough not encouraged to be satisfied with what they already have?

One of the most pressing problems facing growing cities and metro-regions is the imbalance between the demand for and supply of housing. This has resulted in people living in unhealthily overcrowded conditions; high numbers of homeless people; a demand for affordable housing stock and socially-rented accommodation that cannot be met; an increase in people travelling unsustainable travel-to-work distances, having been priced out of the vicinity of the workplace; and labour shortages in key areas when people abandon the long commutes and look for work where they can afford to live. These are all barriers to growth but also might be seen to be a consequence of it. In our 2015 AHRC/YouGov poll all age groups cited overcrowding, including housing shortages, as the biggest challenge to be faced.

Research by the Resolution Foundation published in October 2016 included among its key findings the fact that the most successful English city-region – the West of England – is as yet unable to deal effectively with the problems of its own success. A failure to build enough houses to accommodate its growing population means that the region has experienced the fastest escalation in house prices outside of London. Prices have increased 33 per cent since April 2009, while wages have only increased by six per cent. Cynics might say that as scarcity pushes up value private developers have an incentive to build slowly. However, stories in the press suggest they are in fact building too quickly, cutting corners which have resulted in a long list of problems with new housing developments across the country and some new homes uninhabitable.

Increasing house prices are sometimes taken as a positive economic sign – not least by those who already own them – but the price of property determines who can afford to live in a city and high prices mean increased exclusion, preventing some people from ever getting on the property

ladder and encouraging others to consider houses as financially lucrative private investment opportunities rather than as homes. Housing and real estate account for around 80 per cent of tangible assets in some parts of the country, particularly around London and the South East. Home ownership continues to be promoted as one of society's ultimate goals, at least in the UK. Meanwhile, the private rental sector has largely recovered from the stock market crash, as landlords accumulate profitable property portfolios, but the social housing sector continues to shrink. The segregation of the poor in a dysfunctional housing market is a significant barrier to social mobility; and with affordable housing usually priced at a percentage of the market value, if you are poor in a prosperous city with high property values like Bristol then you will feel even poorer.

A wider range of types of housing, in addition to more homes, is essential. This includes more housing of all sizes for those on low incomes and more homes suitable for a population that is ageing and for smaller average households. It should also be noted that however much new-build takes place, in 50 years time most city residents will be living in housing that is here now. For example, it is estimated that in Bristol 80 per cent of the housing stock in 2050 has already been built. To meet sustainability and low-carbon goals, much of this will need retrofitting to higher environmental standards.

Land is probably the most expensive urban resource. With the growth of urban areas in England comes increasing pressure on the country's 14 Green Belts. This is despite renewed interest in higher-density housing – residential tower blocks are back on the housing agenda in the UK, though the tragedy at Grenfell has raised serious concerns about their safety and maintenance – and the possible availability of space for development in the edgelands and on derelict, post-industrial sites. The Green Belts were created:

• To maintain an area of open land around major urban areas and historic towns.

• To protect the countryside from further encroachments.

• To encourage urban regeneration of brownfield sites.

• To prevent the physical coalescence of settlements so they retain their distinctive nature.

Leaders, reluctantly, are already deciding that the time has come to sacrifice this green space for the sake of the homes – and the accompanying shops, health centres, office blocks, schools, roads, places of entertainment – their growing cities demand. Is there no other viable option? Sites like the 350-acre former Filton Airfield in South Gloucestershire that has been approved for the building of over 2,600 homes plus offices, industrial space, schools and a new aviation museum are rare commodities.

Cities need the countryside not just for environmental, health and aesthetic benefits but also for essential food production. Our current food systems' over-dependence on fossil fuels for energy, fertilisers, pesticides, packaging, distribution and storage, among other elements, is unsustainable. At the moment the relatively high cost of transporting and distributing locally-produced food on a large-scale across a city is a significant barrier to finding an alternative to cheaper but environmentally damaging imports. A solution to this problem must be found.

The rural-urban relationship can be one of mutual collaboration: cities provide markets and hubs for education, health services and leisure activities; the country provides food and quality green space. It can also be a relationship of mutual antagonism: cities encroach upon the countryside and city dwellers may hold country people in low regard (as bumpkins); the country is exclusive and country people may be hostile to strangers (as city slickers). This rural-urban divide was clearly evident in the 2016 US presidential election: the country was once split politically by region into the red and the blue states but the election showed that while rural and small towns were predominantly Trump supporters, the big cities voted largely for Clinton (it was notable that the 2017 French presidential election did not appear to conform to this pattern of internal rural-urban division). Rural Americans and urbanites have lost touch with one another. How can the planning of future cities help to heal this rift? With the focus on Core Cities and metro-regions as economic powerhouses here in the UK, are our leaders equipped – or interested – in thinking of what responsibilities they may hold beyond their immediate urban environment and to their rural neighbours?

As previously stated, the move towards devolution was partly prompted as a way to make the UK more competitive in a global market. Does the integrated urban plan therefore also need to consider how relationships overseas might shape our cities' future? Or is this something best left to the negotiations of national government or the relevant companies and business sectors wanting to sell or import services and products? How are world cities created? Following the 2016 referendum and the triggering of Article 50 in March 2017, the government is planning the UK's exit from the European Union. We are still unsure of what effect this will have on the country as a whole, let alone individual cities, but potential issues include changes to the basis of the city's economy and to the availability of staff needed to run essential services including health care.

When thinking of the future it is hard to shift those long-held utopian visions we have in our imagination. In the 2015 festival Rana Dasgupta argued that a true image of the global future is more likely to be on the lines of his adopted ramshackle home of New Delhi than our cultural memories of the gleaming skyscrapers of Manhattan. He reminded us that New York was associated with the future back in the mid-twentieth century and we are now well advanced into the twenty-first where most urbanisation is taking place in what we term the developing, rather than the developed, world. New Delhi is the booming capital of an economic

giant with ambitious plans for the future. Only half of its 27 million inhabitants live in formal housing. The rest dwell in conspicuous poverty on the streets, in unauthorised buildings and in slums. This is the world's fastest growing cityscape. What kind of integrated urban plan can be developed in such cities as these?

In Africa, as 2015 festival speaker Susan Parnell (University of Cape Town) explained, cities are doubling in size every 12 to 15 years. By 2050 the population of African cities will have grown by more than 600 million people, with most of the expansion taking place in the east and west as the whole continent shifts from a majority-rural to a majority-urban way of living. Consequently Africa will assume a more prominent place in our understanding of the future of cities than it has to date. This is a radical transformation that will be difficult for some African nations to manage in light of prevailing shortages of funding, skills and institutional capacity. What will be the impact of this upon the rest of the world's cities?

Olamide Udoma (Our Future Cities), another festival speaker, talked about solutions that have been developed in light of the problems faced by Lagos, a growing city of over 21 million people according to the National Population Commission of Nigeria. Lagos has an estimated housing deficit of around five million homes. The state's Ministry of Housing introduced the Lagos Home Ownership Mortgage Scheme in an attempt to close the supply gap. Under this project, the government committed to the construction of 2,624 housing units located within 242 block-buildings spread across 11 locations. Mortgage finance was offered to first-time buyers on middle-incomes through a lottery system. This was a promising start but much more needs to be done.

Figures from the World Population Review show that other mega-cities around the world include Tokyo (38 million people), Shanghai (25 million), Mexico City (21 million), Sao Paolo (21 million), Cairo (19 million), Buenos Aires (15 million) and Istanbul (14 million). In 2012 the Economist Intelligence Unit identified 13 emerging megalopolises in China. Should we be encouraging this degree of urban growth as we look to the future? Or would a more human-scale approach be better for our people and our planet – and our cities?

Future Cities Catapult believes that digitisation has the potential to lower or remove boundaries that may exist between planning and service delivery. Such solutions could enable more direct and frequent interaction between city organisations and citizens, increasing the inclusivity and safety of cities, among other benefits.

The smart city discourse in general has raised questions about technology and its impact on our cities. This includes issues around open data, efficiency, ownership and power. In 'Are Smart Cities Really That Smart?' in the 2015 Festival of the Future City, Charlie Catlett from the University of Chicago Computation Institute suggested that the term 'smart city'

could be misleading as it suggested that any problem could be solved with technology and science. To what extent can the potential challenges and concerns raised in this chapter be solved with smart techniques? What factors will determine their success? Are we at risk of drowning in an ever-growing deluge of data that has grown too big to manage?

Planning future cities in the long-term needs to address many drivers of change. It requires leadership of people and places that is politically astute, visionary, partnership-oriented and able to look beyond an electoral cycle. It needs leaders who can work across political boundaries with national government. Critically, cities need to look internationally, connecting and working with partners beyond their nation states. The Global Parliament of Mayors sees city leaders as the possible new solution to the problems of managing places for future prosperity for all, as well as addressing effectively climate change and other problems that need a transnational response. Whether cities can address a growing ageing population, increasing inequality and the housing crisis – in challenging economic and political environments – is open to question. The growth of the mega-city shows that being big and economically successful does not solve these problems; it exacerbates them.

Bringing all the human and financial resources together will require new thinking and working, as well as new types of leaders and city planners, over the decades to come. Too little work is being devoted to this. Too much reliance on Big Data is not the right way forward. It provides information, allowing us to understand cities better as well as identify needs and challenges more, but whether we have the ability and time to use this is doubtful. And smart cities need, above all, smart people to succeed. Having smart and healthy people and places is one key part of this complex position.

Healthy Cities/

The World Health Organisation defines health as 'a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity'.

In many ways cities are good for the health of their inhabitants. They provide proximity to a range of health care services and health-related research. They also offer access to a high concentration of positive features conducive to maintaining good health, such as recreational facilities, streets full of social activity, the arts and culture, parks and other public open spaces. However, stress factors, including inadequate housing provision, air pollution, noise, poor public transport services, social deprivation, inequality, unemployment, racism and isolation, are generally higher in urban areas than rural ones and can lead to a worsening of physical and mental health, having a detrimental impact on how people feel, think and act.

Decisions made today in urban planning will contribute to future health not just in terms of what is built as new but also in what we already have that needs changing. A city can both disable and enable us and the healthiness of a city is judged by what it does to stop people becoming unwell as much as – if not more than – by the quality and effectiveness of its health service provision.

Only 17 per cent of respondents to the 2015 AHRC/YouGov survey thought that it was generally easier for people to have a good quality of life in a city than elsewhere. As city champions we are all too aware of the variety of ways in which cities can contribute to the attainment of health and happiness. However, we readily acknowledge that cities differ between each other and that perhaps even greater than these differences are the disparities of experience they contain within them.

The Townsend Centre for International Poverty Research at the University of Bristol has undertaken extensive studies of the relationship between poverty and ill health, explicitly identifying the link to place. The team has devised a list of alternative health tips that illustrate the differences between their approach and that of traditional medical models, as exemplified by the Chief Medical Officer. These are:

1. Don't be poor. If you are poor, try not to be poor for too long.
2. Don't live in a deprived area. If you do, move.
3. Don't be disabled or have a disabled child.
4. Don't work in a stressful low-paid manual job.
5. Don't live in damp, low-quality housing or be homeless.

Previous spread: Snakes Head Fritillaries in Camley Street Park, Kings Cross (London Wildlife Trust).

6. Be able to afford to pay for social activities and annual holidays.
7. Don't be a lone parent.
8. Claim all benefits to which you are entitled.
9. Be able to afford to own a car.
10. Use education as an opportunity to improve your socio-economic position.

Echoing some of these sentiments, Health Poverty Action, part of a global movement for health justice, says: 'Poverty is both a cause and a consequence of poor health. Poverty increases the chances of poor health. Poor health in turn traps communities in poverty'.

At a session in the 2015 festival Michael Marmot (Institute of Health Equity) spoke of the determinants of health along the socio-economic gradient and of the dramatic differences in health between countries and within countries. Basically, people at relative social disadvantage suffer health disadvantages; the higher a person's social status, the better their health.

Health inequalities are clearly unjust. Rather than talking about poor people in terms of how much money they cost the health service, it would be preferable to turn the conversation around to how their poverty might be ended. What can a city do to reduce deep-rooted inequalities of opportunity and thereby narrow the health gap?

Low social status brings with it physical health problems and the burdens of low confidence and low self-esteem that contribute to poor mental health. A key issue in achieving greater equality in society is breaking down the barriers to upward social mobility for those currently at the bottom of the scale. This was the subject of a panel discussion at the 2015 festival. Panellist Gavin Kelly (Resolution Foundation) believes that the biggest challenge facing Bristol is its high levels of inequality. He listed some of the aspects of urban life which could influence social mobility. These included transport networks, land-use plans, the density and quality of housing and the quality of design of public spaces, all of which the newly devolved city-region governments have some degree of control over. It is too soon to find conclusive evidence of the health benefits resulting from the way in which these powers have been deployed but the implications for the long-term are reasonably hopeful.

Another possible way of tackling inequality and its associated health problems is the introduction of an unconditional universal basic income. Under this system individual citizens are guaranteed a periodic sum of cash that is non-means-tested and regardless of wealth or work status. Among the countries where trials are taking place are Finland, the Netherlands and Italy. Although most proposals to date are focussed on the basic income being paid out and funded at the national level, there is potential for the model to operate at the level of a city or region. In February 2017, for example, Glasgow City Council announced a basic income pilot scheme to be overseen by a cross-party working group. Other Scottish councils are now following this lead.

The basic income is seen by its supporters as a fairer, more transparent and simpler way of helping people than the traditional benefits and tax relief schemes it would replace. Among criticisms are that it would be expensive to implement, it could encourage worker exploitation by unscrupulous employers and it is a distraction. It therefore remains to be seen whether there is the will, confidence and means for a basic income to be introduced in the future.

Health and housing are inextricably linked and cities are currently failing to construct enough dwellings to adequately house their citizens. The prospect for the future seems bleak unless positive action is taken now. The housing shortage is evident both in there not being enough homes available to begin with and not enough of those that are there being affordable. The location and quality of housing and the number of properties kept empty by foreign speculators are also of concern.

The charity Shelter reports that every day in Britain 150 families become homeless, enduring high levels of health-related stress at their lack of control over their lives as well as physical hardship. Being in temporary accommodation can induce life-inhibiting conditions, with children particularly vulnerable: for example, 40 per cent of the homeless children studied in a research project in Birmingham still suffered mental and developmental problems one year after moving to settled housing. The number of households in temporary accommodation in England rose by ten per cent over the course of 2016. The number of rough sleepers increased by 16 per cent in the same period. In March 2017 Crisis, the national charity for single homeless people, predicted that the government's changes to Universal Credit would lead to increased homelessness among 18-21 year-olds, undermining the effectiveness of the new Homeless Reduction Act. Those forced to live on the streets experience cold, fear, hunger and disrupted sleep and are at risk of developing drug and alcohol problems (or of existing problems being exacerbated) and of being subject to violence and abuse (which many have become homeless in order to escape in the first place).

Cities need to make available adequate support for homeless people, providing emergency or interim care when needed, getting them back into accommodation that best suits their needs as quickly as possible and preventing a return to homelessness in the future. This is currently in the hands of a range of agencies including the local authority, charities, religious groups and benevolent individuals. Can more be done to consolidate resources and knowledge into a single, integrated service? Are there new technologies, mechanisms and models that would facilitate this?

Here in Bristol homelessness measures include a three-prong approach launched in May 2017 using around £2.5m of funding secured from central government. This comprises a £925,000 grant for prevention, seeking to identify those at risk of homelessness; a £382,866 grant to help more than 600 people avoid a night on the streets; and a social impact bond of

£1,125,000 to reduce long-term rough-sleeping, a joint initiative of Bristol City Council and the Safer Bristol Partnership.

It seems clear that a greater percentage of new or reconfigured development sites in cities need to be made available for good quality social or affordable rented housing to accommodate more of those struggling to find secure, permanent homes. The local authorities, not-for-profit organisations and housing associations that usually manage such properties might be thought to have the public interest closer to their hearts than the private sector, though this is not necessarily the case. Increasing the availability of affordable intermediate housing is also desirable.

In theory regional devolution brings new powers for cities to manage their housing needs but as yet there are insufficient resources available and this is happening at a time of significant budget freezes and cuts at the local level. Where is the money to come from for these essential house-building and refurbishment schemes? What is the role of the third sector in terms of funding and how does this sector interact, complement or compete with the municipal and the private?

There is potential in increasing property tax to pay for an expansion of social housing, if required, and voters might even be persuaded to elect high-taxing politicians to help meet the costs. Taxation can be a useful tool in addressing social inequalities but it is often unpopular. In Britain, for example, people seem generally happy for their tax to support free-at-the-point-of-use health care through the NHS but there is a growing suspicion of the benefits system, fuelled by some parts of the tabloid press, by provocative programmes such as *Benefits Street* and by comments on social media. Can thinking about taxation as something that is taken away from people be changed to how it is used to provide for others? Is it enough to say to tax-payers if they want to live in a society in which, for example, no child is homeless then they have to be prepared to contribute to the cost of achieving that according to their means? How do we get around the fact that under the current system poorer cities generate less through taxation than richer ones but are most in need of support? And how can we prevent the people in need of that support being perceived as second-class citizens?

In light of increasing demand, how likely is it in the UK that we will ever return to the scale of social housing that we had before the right-to-buy policy reduced the availability of council homes and construction was cut back? Is this, in any case, the best way to meet our housing needs for the future or is it a retrograde step? Is another national housing supply review along the lines of the one authored by Kate Barker in 2004 needed – or should we still be focussing on achieving the targets set over a decade ago?

Looking to home owners, what about the health problems of those caught in negative equity as house prices fall or who are behind in their mortgage payments – through unexpected changes in circumstance or

having underestimated the implications of the loan terms — and face repossession? Can city leaders do anything more to help them at this stage in the process – or can they only really intervene when it is effectively too late and these people become homeless? Home ownership currently constitutes around 64 per cent of households in England (down from a high of 71 per cent in 2003). Home owners are investing in housing for both financial and emotional security, which is an important factor in their own state of health. How do we manage to change the housing landscape, making it more equitable, without putting the health of those people who are already protected within the present system at risk?

Whatever the way forward, major decisions need to be made on city housing and something other than a piecemeal solution is called for.

Another health-related issue to be addressed is that of employment. In the 2015 discussion on cities, health, people and leadership Martin Gregg (Lay Governing Body Member for Patient and Public Involvement and Equalities, South Gloucestershire Clinical Commissioning Group) spoke of the greater rate of illness among those who are unemployed and of how, too, if you have poor health you are more likely to be unemployed. A number of research projects over the last 20 years or more have shown that unemployed people are more likely to have poor health habits; increased cholesterol levels and other conditions linked to the stress of unemployment; and higher death rates (including through suicide, cancer and heart disease). The health risks are usually accumulative, increasing with the length and frequency of periods of unemployment. Unemployment is therefore bad for a city's economy and bad for the mental and physical health of its citizens.

Those in employment are not necessarily guaranteed better health: for example, if you are unhappy in your work because of low pay, zero-hour or temporary contracts or high levels of work-related stress your health will suffer. However, for now we will focus on those without work, or at high risk of unemployment, and what this means for cities of the future.

The three key themes of the Resolution Foundation's research on major British UK city-regions that was published in October 2016 were:
• In the vast majority of cities, employment is below the national average.

• Employment performance varies significantly across cities.

• Disparities within city-regions are greater than those between them.

In contrast with most developed countries, living standards (measured by pay, employment and income) in the majority of Britain's leading cities were found to be lower than in the rest of the country. Specific problems included:

• Liverpool: second lowest employment rate recorded, with particular concern about the low employment rate of disabled people.

• Manchester: marked unevenness in the spread of its prosperity.

• Sheffield: low pay, with one in five workers expected to be on the minimum wage by 2020 unless action is taken now.

• Tees Valley: lowest employment rate for ethnic minorities.

• West Midlands: the lowest employment rate of any city-region by some considerable degree (one that is ten per cent below the national average).

Although nationally employment levels have risen to an all-time high, the figures hide the fact that areas within the regions, as well as specific groups of workers, are not experiencing an increase. The disparities evident from its research were of concern to Resolution – and would have implications for intra- and inter-region health inequality – but were also seen as a source of optimism as they showed that improvement was possible.

Local authorities already offer a range of employment and skills programmes designed to support people in finding work, drawing on localised expertise and knowledge. For example, in a 2014 review of such schemes conducted on behalf of the Local Government Association, the National Institute of Economic and Social Research (NIESR) showed how nine sample authorities were meeting the challenge of getting some of their most vulnerable residents into employment. The Local Enterprise Partnerships also aim to improve employment prospects in their regions, with Sajid Javid claiming in March 2017 that nationally they had created 145,000 jobs and trained 95,000 people in less than seven years. Furthermore, the newly devolved city-regional governments have received enhanced powers that will allow them to offer more support to those seeking employment. This might include tailored work schemes or collaborating with the Department for Work and Pensions on the Work and Health Programme.

The nature of work in our cities is changing. As the NIESR points out, we are increasingly living with the impact of technology, globalisation and new business models. More and more people – by choice or not – will follow flexible career paths (there are fewer and fewer jobs for life) which might include precarious periods of self-employment as well as unemployment. Here in the UK we will also soon be faced with the uncertainty of leaving the European Union. We do not yet know how effective the devolved regional government will be in meeting the challenges of employment but are we sure that we have the right people, policies, programmes and powers in place? What additional tools do we still need to plan for the future of work?

Although more people are working remotely from home and having fewer

face-to-face encounters with colleagues than was once the norm, being in employment can prevent social isolation. With globalisation and digital technologies it seems as if the world has grown physically smaller yet at the same time many feel as if they are less connected and more isolated than ever before. A career, a family living in close proximity, a sense of being part of a community once provided people with roots and identity. Now things seem more transitory. Employment prospects are uncertain, people are forced to move away from family for economic reasons, the streets seem full of strangers, health visitors have been replaced by monitoring machines, work colleagues replaced by robots, drones may make deliveries once dependent on drivers, Facebook 'likes' substitute for true companionship. It is easy to become disconnected from today's society, feeling that you do not belong, have no purpose and have lost your support structures. This can undermine mental and emotional health. The Campaign to End Loneliness reports that loneliness increases the likelihood of early mortality by 26 per cent and that lacking social connections is comparable with smoking 15 cigarettes a day in terms of the risk of an early death. Cities must take steps now to reconnect and reactivate their citizens and provide a variety of ways in which people have opportunities to interact with one another (surely one of the city's greatest strengths) while also retaining their rights to privacy and to be alone when they choose.

One group of people likely to experience varying degrees of loneliness in a city are those who have either come from elsewhere in the country or from abroad. If they are refugees or asylum seekers, as opposed to voluntary economic migrants, their loneliness and isolation – and associated mental health problems – are likely to be even more intense. They might be met by members of the City of Sanctuary movement, a network of local groups committed to building a culture of hospitality and welcome for incomers. They may be able to connect with similar people who have migrated before them and have established a sense of place in their new home that they can now share with others. However, they may also be faced with long-term residents who are experiencing their own form of disconnection as they see familiar neighbourhoods altering, familiar people leaving and familiar certainties faltering. In the 2015 AHRC/YouGov survey 23 per cent of respondents believed that immigration from other countries to UK cities is generally beneficial for the city's existing population, while 48 per cent disagreed. Although immigration numbers were not explicitly being voted on in the 2016 European Union referendum in the UK, many believed that by choosing to leave they would see immigrants automatically sent packing. In the US 2016 presidential election immigration became a key theme of the divisive Trump campaign. What powers of persuasion – or coercion – will leaders require to manage the potential tension between existing city residents and incomers and to address their respective feelings of isolation?

In the 2015 festival both John Harris and Gary Younge spoke of how people in smaller, peripheral places are more likely to be supportive of the political far-right than residents of large cities. Urban areas are proportionally more cosmopolitan and ethnically diverse than the rest of the country; those

outside or on the edge of them have less experience of immigration yet seem to fear it more. What they most fear, it is felt, is the pace of change and a sense of losing control, both of which are understandable human responses. They are drawn to the intolerance and prejudice of the far-right less because of economic concerns and more because of questions of identity, difference, fairness and cultural ease. Sunder Katwala from British Future encouraged cities to engage those fearful people in non-judgemental conversations. If they feel they are not being listened to, they are more likely to seek solace in political extremism. British Future is co-host of the National Conversation on Immigration that is taking place throughout 2017 and which has partly been prompted by likely changes to immigration laws following Brexit. The other host is HOPE not hate, an organisation which, like British Future, is experienced in public engagement on issues concerning immigration, integration and community relations. Both organisations work alongside the Home Affairs Committee.

Research around issues of ethnic diversity, integration, immigration and inequality is also currently taking place through the Centre on Dynamics of Ethnicity. This is a four-year inter-disciplinary programme that began in 2013 and is funded through the Economic and Social Research Council with support from the Joseph Rowntree Foundation and the University of Manchester. One of the six inter-lapping research themes is Health and Well-being. The racism and discrimination experienced by ethnic minority people have already been identified as crucial determinants of inequalities in health. The dynamics and drivers of these inequalities are now being examined in detail in relation to identity, housing, unemployment and education, among other issues. Incorporated within this analysis will be an examination of differences across generations and genders. Research such as this will help shape the inclusive cities of the future, providing we have the means by which to deliver the necessary solutions.

People want to feel safe in their cities. Being safe gives you a feeling of mental well-being and can also make you physically healthy as you choose to get out and about more, away from your television screens and the cocoon of your private cars. City safety can relate to road traffic, pollution or, more recently, cybersecurity, but is most often associated at a personal level with the threat of physical or verbal attack, including hate crimes and sexual assault. In the 2015 AHRC/YouGov survey the requirements for a city to be a place where someone would want to live that were rated the highest by respondents were low crime rates and good public health facilities. In the first annual Avon and Somerset Police and Crime Commissioner (PCC) lecture and debate held in Bristol in April 2017, Sue Mountstevens talked of ways in which the police were working to protect the public, reduce reoffending and create more effective collaboration across all agencies. PCCs are elected to ensure that local police forces meet the needs of their communities. With devolution there have been some changes to this role. In Greater Manchester, for example, the responsibilities of the PCC have been merged with those of the newly elected combined authority mayor. Her Majesty's Inspectorate of Constabulary independently assesses police forces and policing across a range of activity

Banksy: The Mild Mild West... in Bristol (Morgane Bigault/Destination Bristol).

from neighbourhood teams to serious crime and terrorism. Evidence is used to inform improvements in the service to the public.

The Call to Action on Girls' Rights in the City compiled by Plan International in 2010 includes points that would be applicable to anyone who wants to feel safe in the urban environment, regardless of age, ethnicity, faith, gender, sex, sexual orientation or physical or mental ability. These are:

• The right to be free from violence.

• The right to secure and decent housing.

• The right to move safely.

• The right to safe spaces.

• The right to participate in making cities safer, more inclusive, and more accessible.

Because I am a Girl (BIAAG) is a global movement driven by Plan. Working with Women in the Cities International and the United Nations Human Settlements Programme (UN-Habitat) it is helping to build safe, tolerant, accountable and inclusive cities in which adolescent girls, in all their diversity, will have the opportunity to thrive. The 2013 BIAAG Urban Programme Study in Cairo, Delhi, Hanoi, Kampala and Lima found that the participants all shared a common vision for future cities that were well-lit, well-planned, provided access to clean toilets and allowed them to travel safely to places of education, work and leisure.

UN Women's Safe Cities programme was launched in November 2010 and was the first global initiative to support cities in developing approaches that make urban environments safer for women and girls. Participating cities include Cairo, New Delhi, Quito, Cape Town, Mexico City, Rabat, Marrakech, Guatemala City, Medellin, Dublin, Winnipeg (jointly with the Province of Manitoba in Canada), Reykjavik, New York and Brussels.

Does it make sense to conflate the safety of women and girls into broader safer cities research, policy and practice, making it part of the mainstream, or is this a separate 'women's issue'? BIAAG projects have included making bus travel safer in Hanoi so girls can travel independently, secure from abuse, violence and theft: something everyone would welcome and would make encouraging people to switch from private cars to public transport for their city journeys easier. Are the methods used universally applicable? Would a city designed by and for women look significantly different to one designed to be safe for all? And what impact would there be if more city leaders were female? Only nine of the 57 high-profile cities who took part in the first-ever meeting of the Global Parliament of Mayors in 2016 were represented by a woman.

One issue to be addressed is the *perception* of city safety. Statistics suggest that even when the rate of violent crime falls cities are still viewed as dangerous places, cultivated by images from the media and popular culture. Thinking of the future, cities are probably more often depicted in science fiction as crime-riddled dystopias than places of peace and harmony, for example. A research study called *Safety in Numbers* published by the American College of Emergency Physicians in 2013 reported that large cities in the US were significantly safer than rural areas, with the risk of injury by death (including accidents and violent crime) 20 per cent higher in the countryside. The risk of homicide was greater in the cities but statistics showed you were less likely to die from a gunshot wound than in a simple accident. An earlier study by Robert J Sampson of Harvard University had shown that, contrary to the rhetoric of the anti-immigration lobby, first-generation immigrants were 45 per cent less likely to commit violence than third-generation Americans and therefore, by implication, cities whose populations had a higher percentage of immigrants would theoretically be safer than those with fewer. The surge in violent crime in London reported in April 2017 was partly attributed to cuts to the funding of the Metropolitan Police, to reductions in youth services budgets and, with regard to the 24 per cent increase in knife crime, to more young people feeling they need to carry knives for their own protection, thereby escalating the severity of confrontations.

So along with all the safety measures that might be in their control – better lighting, more reliable late-night public transport, traffic calming, pedestrianisation, the encouragement of positive street-based neighbourhood activity, the use of smart technology – if cities of the future wish to promote themselves as safe places for all they will need to convince people that the risks are lower than they might at first appear.

Among those who might need convincing are the elderly. We are faced with an ageing population. In February 2017 *The Lancet* reported that scientists anticipate the average life expectancy in 35 developed countries reaching the age of 90 by 2030. Such longevity was once thought unfeasible except for rare exceptions. At the age-friendly cities debate in the 2015 festival Guy Robertson (Positive Ageing Associates) reported that the number of over-65s in the UK is expected to increase by 40 per cent in the next 25 years, rising from 17 to 24 per cent of the overall population. The first natural reaction to this would be to worry about the increased financial burden upon health care, social care and pension provision. Robertson pointed out that older people make a net contribution to the economy that is estimated will be worth £77bn by 2030 (based on research by the Women's Royal Voluntary Service). The discourse of old people – along with the poor – taking up more than their fair share of resources therefore needs to be challenged. We also would not want to presume that ageing is inevitably a downhill process into decline (old age is not of itself an illness) and know that many people will continue to live on in good health until the very end of their days (particularly if they are well-housed and not living in poverty).

Despite these caveats, we recognise that increased life expectancy represents a profound demographic change that our cities need to plan for and that we have to think about people's changing capacities and to be more age aware. Outside of medical health care, this does not necessarily mean paying for expensive services. For example, one Age-Friendly New York City project has installed hundreds of benches, replaced old bus shelters with new transparent models that include seats and encouraged over 1,000 corner shops to provide folding chairs and access to toilets for elderly people. This is simple, relatively inexpensive and can change lives for the better. Providing convivial spaces where older people can come together easily – somewhere on a convenient and reliable public transport route and with accessibility needs met – has been shown to assist in overcoming loneliness and isolation. The ability of some older people to help others of their age group should not be overlooked; such a facility need not necessarily be heavily staffed and supervised. Many older people want to keep their independence in their own homes rather than be sent to hospital or elderly care facilities, and small, low-cost, consistently applied measures may be all that they need to achieve this. Whether it is possible to make cities all-age-friendly, however, is open to debate. In the 2015 festival session Helen Manchester (University of Bristol) felt that everyone should be able to occupy the same public space while Paul McGarry (Age-Friendly Manchester) believed that designing space for everybody was utopian. He gave the example of the raised pavement surfaces used to guide the visually impaired which can make old people stumble. McGarry did agree that older people are citizens with rights to the city and that they should be encouraged to reclaim a fair share of space. Cities need to buy into this empowering narrative with a partnership approach.

According to research by the Office for National Statistics based on a survey of more than 300,000 adults in 2016, 65 to 79 is the happiest age group for adults. The lowest levels of life satisfaction and the highest levels of anxiety were among those aged 45 to 59, with the men generally less satisfied than the women. This is the so-called 'sandwich generation' that is having to care for offspring, who have yet to attain full independence, and also for elderly parents, who are beginning to lose theirs. By the time they reach what was once thought to be a pensionable age these people may find they cannot afford to retire but also that they cannot continue working, because of their own poor health, the poor health of their parents or prospective employers preferring to hire and retain younger people. This leads to increasing poverty and stress and all the associated health problems. It is a phenomenon that has been observed globally. How can cities address it?

Of related concern, Ageing Without Children reports that 92 per cent of informal care in the UK is currently provided by family and that 80 per cent of older people with disabilities are cared for by either their spouse or adult children. By 2030 the number of people over 65 in the UK without adult children is set to double to two million (this does not include those estranged from their offspring or otherwise separated from them). The

implication of this demographic for social care policy has yet to be adequately addressed.

One of the topics we will be discussing in 2017 is intergenerational conflict. For the younger side of the age divide there may be antagonism based on the perception that the older generations have stolen their future by pushing up property prices beyond their reach (Generation Rent is the term that has been coined); keeping them out of jobs by carrying on working; and depriving them of generous pensions, having soaked up all the available means of paying for them. For those who are old there may be a perception that parts of the city are not for them, being the preserves of the young, affluent and able-bodied – particularly noisy city centres on a Friday or Saturday night – plus resentment at being made to feel guilty about any comforts they might have attained for themselves. More ways in which the old and the young could interact on neutral ground might help to bridge the gap and this is something cities can actively encourage at a time when there are fewer opportunities for different generations to mix by chance.

In the 2015 housing debate Danny Dorling suggested older people should move on from their large family homes, ideally into purpose-built retirement apartments on a city's outskirts, keeping them within their age-defined social networks and freeing up accommodation for younger people and families in city centres. Although the benefits of such a move might be an escape from unwelcome solitude and prohibitive heating costs, others might say the more that is done to break down age-segregated communities, the better. Suggestions to come out of the age-friendly city debate in the 2015 festival were to introduce more of the mixed-use complexes seen in Scandinavia in which schools and old people's homes occupy the same building or to develop projects in which the generations can work collaboratively, such as old people sharing the stories of their past with young people who then turn them into digital outputs or the old teaching the young traditional skills.

Another way in which the generations can meet is through walking. Cities should be encouraged to provide as many opportunities as possible for people to meet others in safe, open places. Walking can be at the root of wellness and well-being. It has a low impact on the environment, is low-cost, has a low barrier for entry, suits all ages, is democratic, can reduce car congestion and improve air quality, keeps people active and outdoors and requires low levels of skill. Research has shown it is good for the brain: in experiments people perform better on memory and attention tests after mild exertion as the heart pumps more blood and oxygen around the body. Lots of organisations are trying to persuade people to walk and cycle more but our cities are still highly car dependent and currently the UK suffers in comparison with other countries worldwide. In 2017 the British Heart Foundation released statistics which showed that more than 20 million Britons are at risk of early death due to inactivity. A new approach is needed. Joe Irvin (Living Streets) talked at the 2015 festival of how lack of physical

activity will bankrupt health services as well as damage people's health. He suggested measuring the health of a place or city in terms of how many people are regularly out walking, how far they walk and how they feel about the experience (during National Walking Month in May 2017 Living Streets encouraged people to use its online Rate Your Walk tool). In another session Hugh Barton (University of the West of England) referred to the Finnish Environment Institute's three-layered city model: the car city, the transit city and the walking city. The goal was to progressively extend the limits of the second and third layers so people had more options on how they travelled.

Shifting to fuel-efficient transport, achieving a modal change away from car travel, encouraging low-carbon businesses and the growth of clean technology will improve the environment, which will have undoubted health benefits for all. In Bristol there has been tentative talk about the possibility of burying the M32 in a tunnel to reduce the city's air pollution problem. London is taking action with its Ultra Low Emission Zone, due to commence in 2020. In the centre of Berlin older, higher-polluting diesel cars are banned and the mayor of Paris is attempting to phase out diesel entirely by 2025. Solar power is being introduced to Rio's favelas and Nairobi's slums. Falling prices and growing investor confidence means renewable energy is undercutting the cost of coal in India, a country on track to exceed targets set at the Paris climate agreement in 2015. Stockholm aims to be fossil fuel free by 2040.

We could also do much more to protect the spaces that provide our cities with their green lungs. These include parks, private gardens, playing fields, wildlife areas, tree canopies, cemeteries, allotments, community gardens, green corridors, rivers and lakes. Scientific research has repeatedly shown the benefits of urban green space. Having wild green spaces on your doorstep can make a significant difference to your health. It is said that as little as three minutes spent in natural surroundings will reduce stress and tension to a measurable degree, as Chris Baines, keynote speaker at the nature-rich cities strand of the 2015 festival, explained. Even a green outlook has benefits; offices where staff can see greenery outside report increased productivity and fewer cases of absenteeism.

The destruction of urban green space is sometimes seen as the price to pay for progress. Instead, many believe, green space should be valued as an attractive asset, one that provides a range of ecosystem services including flood protection (increasingly needed as sea levels rise with global warming), food and timber, recreational opportunities open to all and a means of reducing air pollution. However, caution is required when putting a price tag on nature as cities could be lured into trading off one good against another. Indeed, 2015 festival speaker Melissa Harrison felt the monetisation of nature was a cynical move.

Avon Wildlife Trust is the largest local charity working to protect wildlife in the West of England area. It cares for 36 nature reserves, runs educational and community programmes and works with landowners in the wider

My Wild Street: urban wilding of an inner-city street in Easton, Bristol involving residents of 31 households (Avon Wildlife Trust www.avonwildlifetrust.org.uk).

countryside. It is one of 47 independent wildlife trusts across the whole of the UK, the Isle of Man and Alderney. Its programmes include My Wild City, which aims to get everyone in the Greater Bristol area helping to transform gardens and open spaces into a city-wide nature reserve with 'green highways' that enable wildlife to move easily around the city and link to the countryside. Projects include My Wild Rooftop at Bristol Royal Infirmary (with a move to higher-density housing, and the absence of traditional back gardens, roof spaces will become increasingly important to the greening of cities); My Wild Neighbourhood in St Werburgh's; and My Wild Pool, giving the concrete entrance to Bristol South Swimming Pool a wildlife-friendly facelift. Feed Bristol is the trust's community food-growing project in Stapleton, which enables people to get access to and value the natural world through learning how to grow food using wildlife-friendly methods. Such activity brings physical and mental health benefits to those taking part – including by encouraging healthier eating – and also benefits the city environment as a whole.

In the UK the Sheffield Tree Action Groups, an umbrella organisation, leads a campaign to encourage the local authority to adopt a more sustainable approach to the management of the city's urban forest. Since 2005 thousands of trees have been planted in Bristol on new sites or to replace lost specimens as part of TreeBristol, an initiative of the city council. Elsewhere, urban forest advocacy groups are being set up in Bangkok, Malaysia, India and the Central African Republic. Nearly half of Singapore is now under green cover. Tree-clad skyscrapers are planned for Nanjing in China. Oslo has created the world's first dedicated bee highway. Atelier d'Architecture Autogérée is setting up collectively managed landscape projects in small leftover sites across Paris. More still needs to be done to improve our cities' green credentials, to meet the environmental and health challenges of the future and to get the message across that green space is not just an ornamental add-on to city life. More also needs to be done at the national and international level as part of a concerted effort.

In February 2017 government ministers released a finance settlement for local authorities that offered no additional money during the coming financial year. The freezing and cutting of budgets is likely to be the norm for years to come. As with green space, the arts and culture (including libraries, galleries and museums) have been shown to contribute to the health of cities yet are under threat in times of austerity. The arts can seem a soft target for governments when it comes to funding reviews and justifying their existence primarily in terms of their economic contribution can be a self-defeating exercise. Involvement in the arts as practitioners, participants and audiences can enhance people's psychological, physical and social well-being; improve self-confidence and self-awareness; foster civic pride and social cohesion; nurture creativity; encourage physical activity and mental agility; challenge expectations and received wisdoms; bring much needed moments of reflection, escape, provocation and fun, as well as providing employment to thousands and serving as visitor attractions. Is a new language of cultural value required in order to

convince cities – and the country as a whole – to provide the funding to allow the arts and culture sector to flourish? Or in the balancing of budgets will the arts be set in competition with measures to reduce food poverty or increase housing provision or save Sure Start and day-care centres for the elderly and be found wanting?

When it comes to managing a city's health there are a number of different groups in the public, private and third sectors who need to be involved and different approaches to take. The health services, for example, are not just there to deal with the treatment of medical problems. At present they may only play a parochial role in planning the built environment but as they might ultimately be picking up the tab for ill health caused by bad design they are an important investor in our cities. The NHS' Healthy New Towns programme, launched in 2016, is looking to improve population health and integrate health and care services better by working alongside a sample group of ten new housing developments in England.

Many health issues are best addressed through non-medical interventions that will have a positive effect on the behaviour of individuals, targeted groups or society as a whole. Much can be done at the personal level – such as choosing to give up smoking or becoming more physically active or eating healthier – but people vary in how much or how little encouragement and support they require. Ideally changes will be achieved through nudging, rather than from nagging. For example, a local city park might be improved by enhancing the lighting, maintaining the paths, picking up litter, providing play areas for children and places where dogs can be exercised, finding imaginative ways of discouraging vandalism and anti-social behaviour and putting in more benches. This will have a greater impact on the health of poor local people, for whom this might be the only place in which to be sociable and physically active, than of wealthier people who can afford to go to a gym or travel out into the countryside for a ramble. An improvement scheme of this type might be achieved through a combination of local authority funding, volunteer time, charitable grants and private sponsorship. Collectivism seems the best way forward in terms of developing programmes and projects such as these but who should be taking the overall responsibility if this is to be achieved effectively?

David Evans (People in Health West of England) spoke in the 2015 festival of the long history of short-lived now defunct bodies that had aimed to increase public involvement in health issues. How can we ensure we have the continuity in leadership, commitment to a long-term agenda and fully-embedded systems needed to make engagement initiatives work better? Other festival speakers were equally keen for citizens to be at the centre of the consultation process as they are likely to have a clearer understanding of the link between place and health than many representatives of the NHS or government because of their personal experience. However, the speakers also recognised the problems. Morgan Daly (Healthwatch B&NES and Somerset) said if people are already disconnected from a city's leadership they are more likely to think their

contributions to the health debate will be little more than window-dressing. Supporting meaningful collaboration and influence within such a complex issue as health is difficult: it is more expensive over the short-term and can be time-consuming and, frankly, tedious. However, many are willing to contribute, despite unsatisfactory experiences in the past when they felt undervalued, and encouraging the seemingly powerless to become agents of change can be transformative.

Martin Gregg said members of the public are experts in clinical conditions, service delivery and health issues (as patients and carers and from their research online and through networking) and should be involved in working groups alongside policy makers, clinicians and academics. They might be held back by pressures of time and finance and by a deep-seated scepticism but could be offered training (including confidence-building) and practical support (such as cash to pay for bus fares so they could attend meetings). It was noted that the National Institute for Health Research only funds projects that take public involvement seriously.

Aside from meetings, ways of gathering data and comment from and/or about the public about health-related issues include:

• Surveys, such as the annual Bristol Quality of Life Survey, which uses a multi-disciplinary approach to produce a list of indicators of how people are feeling in the city.

• The Joint Strategic Needs Assessment (JSNA) of the health and well-being of local communities, a requirement of the Local Government and Public Involvement in Health Act 2007. From the Bristol JSNA we have learnt, among other things, that life expectancy is increasing but there are huge inequalities between the lowest and highest wards and people are living longer in poor health.

• The Happy City Index, which is designed to monitor a city's progress in terms of city conditions, equality and sustainability, rather than by traditional economic indicators like Gross Domestic Product.

• Avon Longitudinal Study of Parents and Children (also known as Children of the 90s), which is charting the health of 14,500 families in the Bristol area to improve the health of future generations. It is the most detailed study of its kind in the world and provides an invaluable resource for the study of the environmental and genetic factors that affect a person's health.

Other ways of making an effective contribution to the city health debate suggested in the 2015 festival include:

• Compiling readily understood evidence of how changes to a place can have a positive impact. For example, that the speed and density of traffic on a street affects the degree to which people are more likely to stop and talk with one another.

• Monitoring the health of individual developments and areas of change in a city, cumulatively building a bigger picture.

• Devising 3D visualisation models for clearer messaging.

• Borrowing from other cities that work well (something that the Festival of the Future City encourages).

• Learning from people from other countries. For example, an audience member at one of the 2015 health debates remarked on the positive impact migrants from Somalia had had on Lawrence Weston because of their culture of socialising out of doors.

Cities offer huge opportunities for finding and building a better quality of life. Being in a city can be invigorating for body and soul and lead to developing networks and friendships that last a life-time. But these benefits are not shared equally with rising numbers of homeless people; growing levels of inequality; a housing market where what would be regarded by most as a substantial salary fails to provide enough to buy a permanent home; a rental sector out of control; increasing loneliness. Nationally levels of employment are at their highest levels, but this is not shared in all places and for too many the work available offers low pay with an uncertain contract and few employment benefits – leading to the rise of a precarious class and the gig economy.

For cities to be healthy fundamental changes in the way places, buildings and facilities operate, are built, evolve and adapt through time and how people deal with each other are required. This means addressing future skills' needs in a radical way – helping people meet the challenges and opportunities of future life and work and teaching them how to cope with a changing world in which a secure job rarely exists. It means a new compact with employers. It means finding creative ways to deal with loneliness. It means learning how to accommodate movements of people without putting at risk social cohesion among established populations (the fact of Brexit adds an additional complication to this).

At the same time, smaller changes – often very low-cost – can transform city life for those not currently able to participate fully: better toilet provision; lighting of dark areas; better public safety. And there is a responsibility on most people too: walk and cycle rather than use cars; eat better and use local suppliers and food grown locally; help build communities that work together.

Achieving a shift is not easy, but the price of not making change happen is too high. The dystopian nature of future cities in popular culture might not come true. However, who in the end wants to live in a society and a city that is just for the rich; where social mobility is absent; where generations are in conflict with each other; and where the most vulnerable – the refugee, the homeless, the poor – are ignored? The good city in the future should be the place where we have answered these problems, not made them worse.

By 2050 the OECD has estimated there will be 2.5 billion cars in operation around the planet, most of which will be concentrated in cities. Writing in 2013 Ryan Chin of MIT Lab said to understand the magnitude of this we need only look at present-day Beijing where the future was now; air pollution rising to hazardous levels and heavy congestion on the roads.

As our cities become bigger, the complexity of their transport systems increases and the risk of disruption when those systems become over pressured and break down also grows. In the previous chapter we touched on the health and environmental implications of future city mobility and in Thinking About Cities spoke of Jane Jacobs' concern about how the car was taking away public space once used for neighbourly public activities. In this chapter we will concentrate on what is actually needed to get people moving effectively, safely and sustainably: firstly by looking at ways to make private car travel less damaging; then – and more importantly in the long-term – by looking at ways of making private car travel less appealing by offering more attractive alternatives. We focus on intra-city transportation networks, though national and global connectivity (both physical and virtual) is also of considerable importance.

Some car manufacturers rate their vehicles in terms of fuel consumption and the amount of carbon produced, thereby giving consumers the opportunity to buy the most efficient option. Greener car travel might also comprise vehicles that use alternative energy sources or less carbon intensive fossil fuel. Electric vehicles, for example, offer the possibility of mobility with reduced environmental impact by replacing the traditional internal combustion engine run by burning non-renewable petrol or diesel with battery-powered rechargeable electric motors. The distance that can be covered before recharging is dependent upon the weather and the weight and type of vehicle, among other factors. The advantages of electric vehicles include the absence of exhaust fumes, less noise and, in some cities, the added incentive of free parking and no road tax. They are currently the greenest practical alternative to conventional cars, particularly if the electricity used for recharging is from a renewable source.

Hybrid cars have both an electric battery and an internal combustion engine that can charge the motor as you drive, rather than being dependent on an external energy source. Although not the greenest, hybrids generate less pollution than conventional cars and, like electric cars, are exempt from London congestion charges. Hydrogen cars and solar cars are still largely at the experimental stage. Diesel-driven cars were once championed for being more fuel-efficient than petrol ones but their emissions are potentially much worse, which is why Friends of the Earth, among others, is campaigning to make our streets diesel free. Bio-fuels have contributed to the disastrous deforestation of South East Asia so any green benefit in terms of the individual vehicle is offset by the contribution to global warming at the point of source. Environmental impact also has to be assessed in terms of the whole life of a vehicle. For example, at present there are no means by which to recycle the batteries used in electric cars so we are potentially going to be facing a landfill problem in the near future.

Connected and autonomous (driverless) vehicles have the potential to be more environmentally friendly than conventional cars. Their ability to always follow the rules of the road and to avoid accidents by sharing information car-to-car means they are safer and could therefore be made out of lighter materials than cars built to withstand collisions. This would make them more energy efficient. In addition, if they were synchronised with traffic signals, traffic flow would be improved, there would be fewer stops and starts and less idling at the lights, thereby generating less pollution.

Three projects researching driverless vehicles through an initiative of Innovate UK are currently taking place. These are:

• GATEway (Greenwich Automated Transport Environment). Led by the Transport Research Laboratory and based in the Royal Borough of Greenwich, this seeks to understand and overcome the technical, legal and societal challenges of implementing automated vehicles in an urban environment. It will undertake a series of trials including driverless shuttles and automated urban deliveries.

• UK Autodrive. This is a consortium of leading technology and automotive businesses working together on a trial of self-driving vehicle and connected car technologies. The trial will culminate in its final year with autonomous cars and pods in operation on the streets and pavements of host cities Coventry and Milton Keynes.

• Venturer. This is a partnership of public, private and academic experts conducting trials in the Bristol and South Gloucestershire region. It is focussed on the behaviours that will drive the adoption of connected and autonomous vehicles and the insurance and legislative elements that need to be in place. In parallel it is developing a virtual as well as a physical test capability.

The aim of the overall programme is to establish the UK as a global hub for the research, development and integration of these vehicles for everyday, door-to-door use. There are other projects in this field taking place in the UK and around the world, including FLOURISH in the Bristol region. What will be the likely impact of this technology upon our cities? What are the risks, including the security threats? What is the time-scale? And what will the one million people currently employed in the UK in driving people and goods do for a living?

Many cities have already introduced restrictions, bans and financial charges to encourage people to own greener cars – or to leave them at home when they come to the city centre. However, when it comes to charges, are we in danger of only discouraging those less able to pay? Other than providing more recharging points and parking spaces for electric cars and supporting relevant research and development, what more can be done at this level and this stage?

Other ways of getting fewer cars on the road are by car sharing/pooling (whereby a group of people travel in one vehicle rather than travelling separately) or short-term vehicle renting in car clubs. Both schemes have the potential for making people less attracted to individual car ownership. There are also mobility-on-demand services like Uber as well as traditional taxis and black cabs. One day there may even be an autonomous mobility-on-demand network modelled on the existing cycle-share programmes that would see electric vehicles at pick-up and drop-off charging points around all our cities. However, what is really needed to reduce car dependency (defined as more than 75 per cent of commuting time spent in a private car) is the offer of an accessible, affordable, reliable integrated transport system that can be shown to improve quality of life and protect the environment. Until this is in place it will be harder to convince many car users to make the change.

People want to buy cars:

• Because they can: an increase in personal income encourages the purchasing of cars as status symbols, as promoted by advertising and the perception that car ownership is one of the conditions of development. This is a form of behaviour that is hard to break.

• Because their – and their families' – complicated work patterns and growing leisure time require greater mobility than the alternative public transport can provide. This is a form of behaviour that has greater potential for change, thereby improving health, air quality, levels of noise pollution and social inequality.

The potential problems facing public transport systems identified by Jean-Paul Rodrigue in *The Geography of Transport Systems* (Routledge 2017) include:

• They are not designed for the low-density, scattered urban landscapes, that comprise many of our cities (decentralisation).

• They are not able to change in accordance with changing travel patterns (fixity).

• They make the transfer between different modes difficult (connectivity).

• They have fare structures that encourage car use: for example, flat fares across a service make short journeys less financially attractive than longer ones – and these are exactly the types of journeys that we need to encourage people to stop making by private car.

As a consequence of these challenges – and more – many public transport systems struggle to remain relevant.

Since 2011 £600m has been handed out to local green transport projects through the Local Sustainable Transport Fund and the Sustainable Access Fund, which were set up following campaigning by the Campaign for Better Transport (CBT). However, CBT believes these achievements have been undermined by a culture of cutting bus services, increasing rail fares and building too many new roads. A section of the campaign's website is headed 'new roads create new traffic'. This maxim is based on decades of research into what is termed 'induced traffic' whereby additional journeys are made by cars if there is thought to be new road space available. CBT is critical of Local Enterprise Partnerships continuing to prioritise road spending at the expense of sustainable modes of transport and is supportive of the Campaign to Protect Rural England (CPRE), which in March 2017 published a report entitled *The End of the Road? Challenging the Road-building Consensus*. From a detailed study by consultants Transport for Quality of Life of 86 road schemes from the last 20 years, CPRE concluded that new roads do not bring promised improvements to safety and economic benefits and have resulted in an unnecessary loss of green space, woodland and wildlife habitats.

CBT believes it would be preferable if rather than expanding the current road network it was made fit for the twenty-first century, suitable for low-carbon modes of transport with better maintenance, better quality design for all road users and better use of new technology for smarter journey planning. For our cities to function well we need to manage capacity on the roads better, with concerted action to shift freight to rail (instead of introducing mega-lorries), prioritise buses and create truly integrated transport corridors with provision for public transport, cycling and walking. Looking to the bigger picture, to lessen the environmental impact of aviation on the planet as a whole, CBT also feels more needs to be done to make rail travel a viable substitute for short-haul flights, particularly for business travellers.

CBT promotes the need for seamless door-to-door journeys by means of a transport network that has four key elements in place:

• Good information available for people before and during their journeys.

• Good interchanges between different public transport services – and good walking and cycling access and facilities.

• Transport services that connect with each other.

• Tickets that allow for a simple, transparent way of providing a joined-up service.

In the UK many people feel we currently have a situation where we have de-regularised public transport that is more heavily subsidised and less efficient than much of the rest of Europe. The impact of such a fundamentally flawed system is most keenly felt by the young, the old and the poor. In early 2017 CBT made over 100 Freedom of Information requests to local councils to get a full picture of recent bus cuts. This revealed that buses across England and Wales had been cut by 33 per cent since 2010 and over 500 routes had been reduced or completely withdrawn in 2016/17. CBT has also researched rail fares. Those regulated by the government have increased by 25 per cent since 2010 with unregulated fares (around 50 per cent of the total) liable to rise even further.

In successful cities worldwide public transport is often treated as a utility – something in the public interest – rather than something that should be run at a profit, as it is generally here in the UK. How realistic is it that tax-payers will be willing to subsidise a system that might better meet their needs in the long-term – not just with regard to cheaper fares but also in the quality of infrastructure, rolling stock and vehicles? Are alternative funding models – and models of management and ownership – available?

Cities around the world with high-volume, multi-modal public transport systems include:

• New York City: though the New York subway may at first seem daunting to the newcomer with its 22 lines and its limited-stop express services – and its lack of a map that has the clarity of Harry Beck's London Underground classic – it does deliver a generally effective system that covers 660 miles of track, operates 24-hours a day on some routes and had a total ridership of over 1.7 billion in 2016. The city transit network also includes buses, ferries and regional trains. Most of the system is run by the Metropolitan Transportation Authority.

• Berlin: this city offers an excellent choice of trams, underground trains, regional rail, bus services and ferries, noted for their punctuality. The network is managed by the regional transport authority. An unlimited travel card covers all public transport in the city centre as well as from Schönefeld Airport. Some services run 24 hours at weekends.

• Tokyo: the city has one of the most extensive and most used rail systems in the world, known for its precision and cleanliness (but also its overcrowding at peak times). The underground and overground routes are well integrated despite their multiple operators. Rail is supplemented by a network of bus services linked to stations.

• Hong Kong: with bus, trams and rail accounting for around 90 per cent of city travel, Hong Kong has one of the highest rates of public transport usage in the world – and also one of the most efficient.

• Washington DC: with a subway service that goes well beyond the city limits and handles over 200 million trips a year and buses that handle 130 million, this system – second only to New York in terms of use in the US – provides access to over a million high-skill jobs in the region via a maximum of a 90-minute transit ride. The Washington Metropolitan Area Transit Authority operates the rapid transit and buses.

What lessons can be shared across all cities from where systems are working well – or poorly? Is there a generic outline that could be adapted to local needs or do systems need to be completely bespoke? How radical a change for the better can be effected using existing infrastructure, bearing in mind the huge disruption caused by putting in new tramlines or bus lanes, let alone excavating new underground rail routes or, if needs must, major new road schemes? The labyrinth of narrow winding streets and alleyways that are often at the heart of historic cities are part of their charm but also frustrating for those wanting an effortless journey from A to B. How can we have one without the other? As we have mentioned previously in this book, how do we avoid just tinkering around at the edges of the issue?

While buses, trains, underground systems and trams in theory offer greener alternatives to travelling by car (and in the case of rail, to travelling on short-haul flights), they still have an environmental impact that in some cases might be better to avoid altogether. Friends of the Earth reports that 70 per cent of journeys in the UK are of five miles or less but the vast majority of these are currently made by car. More short journeys in urban areas such as these could be made without any form of motorised transport and more needs to be done to encourage this. For example, in 2013 CBT published its *Fixing the Link* report, comparing walking routes between town centres and rail stations in the UK and the Netherlands. The routes were assessed in terms of their liveliness, human-scale, legibility and safety and comfort. The Dutch cities scored much better across the board and CBT hope the methodological template will be embedded into local and national transport policies to promote more walking.

Sustrans is a charity aiming to make it easier for people to walk and cycle. It comprises engineers and educators, experts and advocates, who work to connect people and places, create liveable neighbourhoods, transform the school-run and deliver a happier, healthier commute. Sustrans works in partnership, bringing people together to find the right solutions and making the case for walking and cycling by using robust evidence and showing what can be done. It is grounded in communities and believes that grassroots support combined with political leadership drives real change, fast.

Cycling UK has called on local authorities to create a network of up-to-date high-quality cycle-friendly routes, open to anybody of any age or ability for any purpose. This can be achieved, the organisation believes, through a mixture of planning, investment and building. Cycling UK seeks to dispel some of the myths about the hazards of travelling by bike including getting across the message that the health benefits can outweigh the risks by about 20 to one. Its suggestions for effective ways of minimising conflict between cyclists and pedestrians, most commonly caused by cycling on pavements and jumping red lights at crossings, include making roads as safe as possible so cyclists feel they are not under threat from cars, vans, buses and lorries; and providing training to improve cyclists' confidence and skills.

Cycling is already popular in many cities across the world. In February 2017 Cardiff launched an ambitious new cycling strategy aiming to double the number of trips taken by bike as part of its campaign to become Europe's most liveable capital. In November 2016 it was announced that there were now more bicycles in Copenhagen than cars, with bicycle traffic increasing by 68 per cent in the previous 20 years. A Cycle Track Priority Plan is being developed for 2017-2025. In the Netherlands 48 per cent of city-centre trips in Amsterdam are pedal-powered and bicycles are used for 61 per cent of all trips in Groningen's core. Ghent's new mobility plan hopes to see journeys by car dropping to 27 per cent of the total number made. The city is already considered one of the best places to experience Europe's cycling culture. Pedestrianisation and car-free zones have been unpopular in Brussels, where they were blamed for loss of earnings in shops, restaurants and hotels, but polls suggest many felt they were badly implemented rather than being bad in principle. Bicycles are often the fastest means of getting across the city.

Bicycle use has fallen in Beijing to just 17 per cent of journeys with car ownership quadrupling in the last 16 years (partly a consequence of the 'because they can' reasoning referred to earlier) but this trend may yet be reversed. Not all news is as good. In April 2017, for example, Seattle announced the closure of Pronto, its cycle-share scheme after two and a half years of low use, financial difficulties and waning support, the first major US city to lose such a system; and in London little progress has been made on the proposed Cycle Superhighway 11 at Swiss Cottage in the face of noisy opposition from some locals, with the mayor and his cycling and walking tsar being accused of political timidity by supporters of the plans.

Research published in April 2017 by the University of Glasgow showed that commuters could halve the risk of cancer and heart disease by cycling to work. Those who walked more than six miles a week were also less likely to develop heart disease. It would be good to get the habit young. A generation ago, 70 per cent of children walked to school – now it is less than half. Living Streets – in partnership with Public Health England's Change4Life campaign – wants to reverse this decline, with every child making a walk to school their natural journey choice if they are able. Currently one in five cars at peak travel times is transporting children to and from school. Ironically, one justification

for this given by parents is that it is not safe for their children to walk because there is too much traffic. This behavioural pattern needs to be broken if we are to have happier, healthier children (growing into happier, healthier adults), less congestion and cleaner air.

Living Streets declared the announcement of the government's new Cycling and Walking Investment Strategy in April 2017 as 'an historic moment'. Targets include cycling and walking becoming the norm for short journeys by 2040 and the proportion of five to ten year-olds walking to school rising to 55 per cent by 2025. Part of the £1.2bn budget will be allocated to local councils for investment in walking and cycling schemes.

Walk Score is a public access website and free app that ranks 3,000 large cities and over 10,000 neighbourhoods so people can find a home in a walkable location with access to good public transport. It identifies walkability as a key way by which to attain a happier, more sustainable lifestyle, with benefits to health, the environment, finances and communities. In its 2016 ranking its top five US cities were New York, San Francisco, Boston, Philadelphia and Miami. New York was also ranked the highest city in terms of quality of public transport and Minneapolis for bike friendliness. Some urban professionals have criticised Walk Score's accuracy and the relevance of its data but its list of things that make a neighbourhood walkable is useful. These include having:

• A recognisable centre.

• Enough people for businesses to flourish and to justify the provision of frequent public transport.

• A mixture of income levels and of uses.

• Public places for gatherings and play.

• Buildings close to the street with parking at the rear.

• Schools and workplaces.

• Streets designed for cyclists, pedestrians and transport.

Walkanomics, another free app which currently covers Santiago, Washington DC, Central London, Paris, New York, San Francisco, Toronto, Buenos Aires, Glasgow and Hamburg, has identified eight categories by which to assess the walkability of streets. These include:

• Road safety: based on accident statistics, street types, traffic speeds and level of activity.

• Ease of street crossing: informed by vehicle activity, street width, physical barriers and number of pedestrian crossings.

Bristol Legible City at College Green, Bristol (Jamie Shaw).

- Pavements: their quality, width, degree of clutter and density of pedestrian traffic.

- Hilliness: including whether there are hand-rails or seats provided on steep slopes.

- Navigation: the ease of finding your way, the likelihood of getting lost, the signage and the maps available.

- Fear of crime: influenced by crime statistics, perceptions of crime, lighting, levels of vandalism and presence of police.

Walkable streets are smart and beautiful, fun and relaxing.

To encourage more people to walk – and to reduce pressure on the underground network – Transport for London produced a new map in August 2016 showing the distance in steps between stations. Many stations in Zone 1 are fewer than 1,000 steps apart.

For decades there have been campaigns to get people cycling and walking more and, while there have been welcome successes, in the grand scheme of things it seems at times that little real progress has been made. What new approach is needed? And who else needs to be involved?

In the chapter Thinking About Cities we referred to the work of Kevin Lynch and the concept of legibility. Successful cities are easily understood; communicate effectively with users by providing simple yet comprehensive information; use a partnership approach to connecting people, movement and places efficiently; and are engaging and accessible. Legible city systems are based on a simple concept: delivering the right message at the right time.

The award-winning Bristol Legible City (BLC) system was launched in March 2001. The creative direction and project coordination was led by Mike Rawlinson, a former city council planner and later founding director of City ID, a multi-disciplinary consultancy with studios in the UK and US that is a pioneer in place-making, city identity, legibility and way-finding projects. BLC comprises unique Bristol-specific products that include signage, street furniture, maps and artworks. During the course of its development there was also an associated clutter reduction programme. The on-street maps give a 'heads-up' view of the area, oriented according to where the user is situated, making them less complicated to read than the conventional 'bird's eye' view map form. The maps also include three-dimensional illustrations of landmark buildings positioned at the appropriate angle to the viewer.

BLC was conceived at a time when Bristol was undergoing a period of major regeneration. It was designed to create a more convenient, safer, cohesive and accessible city centre (it was subsequently rolled out beyond the city-

centre limits). It was also operating at the national and international level, portraying Bristol as an attractive, dynamic, connected and creative city that was safe and welcoming to visitors. Inspiration came from diverse fields that included environmental graphics, social geography, environmental psychology, information planning and design theory. It took a holistic approach to city development.

One element of the BLC system that did not work well was the I+ high-tech information points, which many found too slow, frustrating and not user-friendly. Since then there have been considerable advances in technology available for way-finding and information sharing, including apps like those mentioned above which can be used on personal mobile devices. We have moved from an industrial revolution to a post-industrial revolution to a digital revolution and are now entering the fourth-industrial revolution. Each revolution has witnessed a transformation of infrastructure, from canals to railways to modern communication technologies and on to smart delivery systems. Legible cities can increasingly ease navigation and provide the means for taking seamless journeys by bringing together Big Data, sensors, wireless networks, digital signage, installations and visualisations that will connect the physical world and the virtual space.

Future Cities Catapult believes new digital technologies have the capacity to revolutionise mobility in cities, for people and goods alike, enabling cheaper, more accessible, faster, less polluting and more efficient travel. It has been running projects across the world that bring transport and mobility domains together with other aspects of urban services to help companies develop more integrated and sustainable approaches to city mobility challenges. Complementing the work of the Transport Systems Catapult, the focus is particularly on the urban aspects of usability and accessibility, including integrated solutions and innovative business models.

Other smart mobility projects and initiatives include:

• Smarter Travel Forum: a partnership of CBT, Cubic Transportation Systems, Telefónica and Thales, which has called on governments to embed smart travel – such as real-time information, smartcards and data collection – into transport strategies.

• Smart City Amsterdam: in the Vehicle2Grid pilot programme city residents will be able to use the battery in their electric car to store their locally-produced energy.

• Smart Sustainable Cities: led by the University of the West of England in Bristol and Taylor's University in Malaysia, this will include a pilot study of sustainable mobility in districts of Kuala Lumpur.

Surrendering our cities to cars – and planning our cities around them – has meant major changes in urban areas. This has been bad for places, spaces and human lives. For some, driverless cars will be the answer: a shared resource with low environmental impact. But what happens if everyone wants one; or they are just for the wealthy? What happens if we need large out-of-town car parks to house them, taking up precious land that could be used for other purposes? Autonomous vehicles may be safer, but will they enable better health for people, as walking and cycling have already been proven to do?

The answer to our urban mobility problem is an old one but arguably more relevant than ever before: major investment in integrated public transport systems and extension of legibility systems and principles around the world will better connect people to places; encourage learning and attachment to a place; and help build future resilience into city planning and living.

Twenty Questions/

We've raised many questions during the course of this book – and many more will be raised in the festival. We believe that the most important ones we should be asking now are:

1. How can successful cities ensure that their successes are shared widely within cities and across city-regions?

2. How do we bridge the gaps between the superstar cities/megacities – such as London – and the rest?

3. How do we solve the issues of growing inequality and segregation that is affecting all cities?

4. How can we stop the on-going divergence of suburbs and city centres?

5. In a period of continuing austerity, how do we make sure that cities are able to continue to support activity such as the arts and culture?

6. How will we meet the needs and demands for housing now and in the future?

7. How will we ensure greater participation in the democratic process?

8. How do we create cities that are truly sustainable?

9. How do we create a compact between the generations to ensure that all ages can live and flourish at all levels in cities?

10. How do we ensure old buildings are made good and new buildings are good from the start?

11. If Big Data is to be used, how do we make it of benefit to communities as well as commercially viable?

12. How do we make certain that cities get the full devolved powers they need to prosper?

13. What will be the fate of cities in Brexit and what influence can we have upon the outcome?

14. How can cities make immigration work for all residents?

15. How can cities take their place as the powerhouses of regional and national economies?

16. How do we create smart citizens as well as smart cities and how do we ensure that the automation revolution has a positive impact for all?

17. How can the public, private and third sectors work together effectively?

18. How can we encourage people to be healthy and to take greater responsibility for their own health?

19. How do we create social policy that does not bankrupt places and ensure all people are treated with dignity and well throughout life?

20. How can cities provide the solutions to problems that the nation state has failed to answer?

We look forward to debating the issues at the festival sessions and online.

Andrew Kelly
Melanie Kelly
Bristol Cultural Development Partnership, September 2017

Bibliography and Notes/

Some of the content of this book has been adapted from previous BCDP publications. These include *Festival of the Future City*, a summary of some of the topics covered during the 2015 festival. This was published in a limited edition in 2016 and is available as a download at www.ideasfestival. co.uk/blog/festival-of-the-future-city/festival-future-city-book

Other sources of information included:

Ageing Without Children **awoc.org**
Avon Wildlife Trust **www.avonwildlifetrust.org.uk**
Basic Income Earth Network **basicincome.org**
Because I am A Girl **plan-international.org/because-i-am-a-girl**
Campaign for Better Transport **www.bettertransport.org.uk**
Campaign to Protect Rural England **www.cpre.org.uk**
Centre on Dynamics of Ethnicity **www.ethnicity.ac.uk**
City Evolutions **www.cityevolutions.org.uk**
Crisis **www.crisis.org.uk**
Cycling UK **www.cyclinguk.org**
Future Cities Catapult **futurecities.catapult.org.u**k
Future of Cities **www.gov.uk/government/collections/future-of-cities**
Health Poverty Action **www.healthpovertyaction.org**
Living Streets **www.livingstreets.org.uk**
National Conversation on Immigration **nationalconversation.uk**
Resolution Foundation **www.resolutionfoundation.org**
Sheffield Tree Action Groups **www.savesheffieldtrees.org.uk**
Shelter **england.shelter.org.uk**
Sustrans **www.sustrans.org.uk**
Townsend Centre for International Poverty Research **www.bristol.ac.uk/ poverty**
World Health Organisation **www.who.int**

A longer list of website links to organisations, articles and publications that have been referred to is available on the Festival of Ideas website at **www.ideasfestival.co.uk/blog/festival-of-the-future-city/festival-future-city-links**

The second Festival of the Future City takes place 18-20 October 2017. This book outlines some of the topics that will be debated and sets out some of the challenges that the festival aims to address.