Sheffield = UP!

A report

by

James Woudhuysen

Visiting professor, London South Bank University

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Introduction: the specificity of Sheffield

How can cities make people happy to be in them? What bold steps could city leaders take to harness technology and social planning to re-create urban space for the now? If we could remake Sheffield – not by knocking it down, but by reusing or repurposing its buildings and street patterns – what needs to happen?

For years now cities have suffered at the hands of consultants, so it is with some diffidence that the author presents this report. But cities have also suffered at the hands of ubiquitous performance league tables – around issues such as liveability, cost of living, and the availability, price and performance of commercial and residential property. Familiar formulae have too frequently been applied universally; in particular, the idea of industrial 'clusters', pioneered by Michael Porter in 1990, [1] has made the leadership of far too many cities try to turn parts of their environs into yet another Silicon Valley.

More recently, cultural clusters have multiplied. No doubt Sheffield's developing cultural quarter has its merits. Still, please note that China, for instance, is has at least 200. Also: it currently builds about 400 museums a year. [2]

The dangers of a commoditised approach to urban regeneration ought to be apparent. For many of China's cluster projects in the cultural domain, 'the bottom line', Michael Keane has written, 'is real estate speculation'. [3] Yet there is plenty more to the uniformity of urban policy today.

We refuse to join the mainstream consensus about British cities. So some of our proposals will be controversial, perhaps even outlandish, and some may look costly. However, all progress depends on 'unreasonable' people, as George Bernard Shaw intimated; and discontent, as Oscar Wilde said, is the first step in the progress of a man or a nation. So please, read this report with an open mind. It will not persuade everyone – indeed, it questions both the agenda of happiness and that of refurbishment. But it may provoke thought, as well as creative counter-proposals.

To avoid the mainstream, our point of departure is *what is peculiar to Sheffield*. The city is uniquely laid out by a steep hills, so that *what strikes the visitor coming to Sheffield is the verticality of it*. After all, the Peak District is inside city limits; the city is host to the Awesome Wall Climbing Centre and the Climbing Works, and there are even plans, currently thwarted by asbestos, to turn the Grosvenor Hotel into a climbing wall.

The single idea that should now motivate all new plans for the city centre is that of taking the high ground – not just physically, in terms of making ascents easier, but also intellectually, in terms of arguments, education, culture and value-added in wealth production. Sheffield should be recognised as the city that eschews 'dumbing down' to the lowest common denominator, and instead takes people UP, to new heights of achievement and enjoyment.

We return to this theme again and again in this report.

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1 Michael Porter, *The competitive advantage of nations*, Macmillan, 1990.
2 New Cities Foundation, 'Cultural districts as engines of urban transformation', 28 November 2014, on www.newcitiesfoundation.org/re-imagining-cities-2014-cultural-districts/
3 Michael Keane, *China's new creative clusters: governance, human capital and investment*, Routledge, 2014.

The challenge of growing population

Even without this year's surge in immigration, it was apparent more than four years ago that the population of Yorkshire and Humberside as a whole was likely to rise more than the North East, the North West and the Midlands:

More households in England – and novel around Sheffield [4]	
	Rise 2006-26, per cent
North East	3.7
North West	9.3
Yorks & Humber	11.5
E Midlands	9.4
W Midlands	7.9
East of England	14.0
London	15.5
South East	17.0
South West	11.8

Let's not succumb to Malthusian pessimism here. The future growth of population in Sheffield and its surroundings is not just a problem of greater demand versus limited resources; it is also an opportunity to put many more additional brains to work in and for the city – to *raise the level* of ambition and achievement.

Recommendation: *while not denying the extra load that new, permanent arrivals will bring to Sheffield, the city should frame all matters related to migration, immigration, housing and social services in terms of people's ingenuity, potential and likely footfall – not just in terms of the extra burdens they create*

Innovation, and the need to take responsibility for plenty of failures

In his Spending Review 2015, Chancellor George Osborne repeatedly called for innovation in public services. More recently, Labour leadership contender Jeremy Corbyn has invoked 'revolutions' in sectors such as 'biotech, nanotech, the internet and the emerging green industries'. These commitments to innovation, though long overdue, are welcome. However, if the world of politicians is characterised – a few historic apologies aside – by a refusal to admit past mistakes, the actual business of technological and social innovation is fraught with setbacks: James Dyson, for example, made no fewer than 5000 prototypes before he perfected his cyclonic vacuum cleaner.

One cannot foretell the results of R&D; so failure is inevitable, though it can and must be learned from. However, Sheffield is very well placed to absorb the spirit of making errors in the cause of innovation. The monthly Inventors' Groups at the Central Library, the Design Futures group at Sheffield Hallam University (SHU), even Sheffield's pop-UP shops – all will know all about how setbacks contain lessons. Sheffield is also the historic home of major scientists, engineers, novelists and performers.

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4 Alan Homans and Christine Whitehead, *New and novel household projections for England with a 2008 base – summary and review*, Town and Country Planning Association, 24 May 2011. Note: these projections are the latest that are available.

How Kings College London advertises its heroes

Two further points here: First, *'most organisations are reluctant to fund proper business experiments and have considerable difficulty executing them'*. [5] The authors continue that experiments need to be reliable, and abided by; experiments also need to be sweated, in the manner of assets being sweated, for results.

Second, one needs to *get ready for experiments to collapse*. Here is a letter that General Eisenhower drafted for use in the eventuality that the invasion of Normandy went wrong:

'Our landings in the Cherbourg-Havre area have failed to gain a satisfactory foothold and I have withdrawn the troops. My decision to attack at this time and place was based upon the best information available. The troops, the air and the navy did all that bravery and devotion to duly could do. If any blame or fault is attached to the attempt it is mine alone.'

Recommendation: *Sheffield should build a culture of public (and private) technological and social experimentation; explain how experiments are instructive, even when they don't succeed, and take responsibility for those that fail. TO ascend a hill, a goat will sometimes find itself going downwards. But it will get UP to the top all the same*

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5 Stefan Thomke and Jim Manzi, 'The discipline of business experimentation', *Harvard Business Review*, December 2014

What not to do: the fad for spatial determinism, for smart, resilient and low-carbon cities, and for city-regions

To *help Sheffield more fully differentiate itself from other cities*, let's briefly survey some of the thinking that, in its monotony, is taken for granted nowadays.

Down with spatial determinism!

Since 1998, when the architect Richard Rogers formed the government's Urban Task Force, the doctrine has grown that urban design is key to economic and social health. In 2001, indeed, the Government held that good urban design added economic value through no fewer than 11 different mechanisms. [6] Yet today there are some striking paradoxes here. Few sources provide convincing evidence that space is key to economic revival. On the other hand, the emphasis has changed among those we might term spatial determinists – in Britain, the Design Council's Commission on Architecture and the Built Environment (CABE), and, in America, the movement known as New Urbanism. Instead of overblown claims about urban fabric determining economic success, the accent now is on how it can deal with social problems. Thus the Design Council is keen to stress the role of design in bringing communities together. It upholds Crime Prevention Through Environmental Design (CPTED). It is out to 'embed health and wellbeing in buildings, spaces and neighbourhoods'. And in the US, the Charter of the New Urbanism goes further: 'we recognize', it says, that 'physical solutions by themselves will not solve social and economic problems'. [7]

Perhaps the downplaying of the causal chain 'good space leads to high growth' reflects a broader disenchantment with economic growth, not least growth is widely held to be inimical to the cause of preventing climate change. Whatever the case, Sheffield always needs to recall that, in the words of Oxford University's Dr Alan Hudson, 'citizens make cities, not the other way round'. [8] It is the acumen, high spirits and *ideas* of Sheffield that will make it soar above its rivals. What happens in bricks, mortar, steel and concrete will follow from all that.

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6 Andres Duany and others, *The smart growth manual*, McGraw Hill, 2009.

7 The mechanisms were: producing high returns on investments (good rental returns and enhanced capital values); placing developments above local competition at little cost; responding to occupier demand; helping to deliver more lettable area (higher densities); reducing management, maintenance, energy and security costs; contributing to more contented and productive workforces; supporting the 'life giving' mixed-use elements in developments; creating an urban regeneration and place marketing dividend; differentiating places and raising their prestige; opening up investment opportunities, raising confidence in development opportunities and attracting grant monies, and reducing the cost to the public purse of rectifying urban design mistakes. See CABE and the Department of Environment, Transport and the Regions, *The value of urban design*, 2001, on http://webarchive.nationalarchives.gov.uk/20110118095356/http://www.cabe.org.uk/files/the-value-of-urban-design.pdf

8 Alan Hudson, 'The dynamic city: citizens make cities', in Austin Williams and Alastair Donald, *The lure of the city: from slums to suburbs*, Pluto Press, 2011. For a book-length critique of the concept of smart cities, see Anthony M Townsend, *Smart cities: big data, civic hackers, and the quest for a new utopia*, WW Norton, 2013.

Smart cities – not so clever

In the world of IT, the tag used to be 'always connected' (RIM) and 'connecting people' (Nokia). Now the doctrines are those of the 'smart home' (Samsung), a 'smarter planet' (IBM) and 'smart cities' (the Brussels Commission). How has the trendy idea of smartness come to dominate thinking on cities? After all, in the old days, cities were intrinsically 'smart' – they were sites of possibilities, and of expansion. Now, by contrast, it's thought that cities must somehow justify themselves, because all of us, apparently, have been so stupid in the past. In particular, the smart cities movement wants to – but in practice cannot – lower demand for energy and transport, respectively the biggest and fastest growing sources of carbon emissions. And to give a gloss of modernity to the idea that we should try to turn the clock back, it presses IT into service here. IT, we are told, will smooth peaks in demand, suppress it, and ensure that behaviour is changed in a sustainable direction. In the case of President Obama's September 2015 initiative, it is also argued that products and services associated with the smart cities market 'present a significant export opportunity' for the US. [9]

Faces of the New Orthodoxy: a forthcoming conference, to be addressed by speakers who include representatives from Leeds and Manchester

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9 The White House, Office of the Press Secretary, 'Administration announces new "smart cities" initiative to help communities tackle local challenges and improve city services', 14 September 2015, on https://www.whitehouse.gov/the-press-office/2015/09/14/fact-sheet-administration-announces-new-smart-cities-initiative-help

Clearly IT has much to offer Sheffield. However, the idea of smartness contains more than a hint of condescension, and it is hardly an accident that 96 per cent of more than Britons surveyed online in May 2015 were unaware of any smart city initiatives being run by their local city council in the previous year. [10] Even boosters of smart cities now concede that they have too often gone about 'emphasising expensive hardware rather than cheaper solutions using the internet… often showcasing technologically interesting ideas rather than responding to citizen's real needs… making over–inflated promises that couldn't be supported by hard evidence'. [11] In fact the situation is worse than this. With smart cities, the authorities are always supposed to know best; they must always use IT to 'nudge' locals to Do Right. Gone missing in the smart cities conception, too, is any idea of human agency: the idea that, just as human ingenuity is the key force behind prosperous cities, so that same ingenuity is the driving force behind IT. Electrons, software and hardware can no more lead to intelligence than they can bring about 'digital democracy'.

People are not a problem to be managed by enlightened administrators through opaque algorithms. What should accompany public space is public life, based on the premise of autonomous, thoughtful individuals. IT can enhance public life. It must not be used to constrain it.

Resilient cities: the safety first approach

The Rockefeller Foundation has popularised, among no fewer than 100 cities, the notion that cities must plan from the very beginning to be resilient in the face of disaster: economic, ecological, or disaster in terms of social unrest. [12] Oddly, too, the British Government's Office for Science has likewise published an bizarre plea for urban resilience and a 'smarter urban metabolism'. [13] The 10th anniversary of Hurricane Katrina has reinforced these kind of narrow, unconfident, oh-so-safe views of cities.

Later we will see how IT does have a role to play – just as steel foundations have a role to play – in helping cities avert death and injury. However to make resilience the Alpha and Omega of urban planning would itself be a disaster. The example of New Orleans and Hurricane Katrina confirms that old-fashioned engineering, not the gospel of The Flood, should be Sheffield's lodestar here. As Harry Shearer from New Orleans has very recently argued, of the impact of Katrina:

*'some people still regard it as a natural disaster when, in fact, independent investigations by two universities concluded that the devastation was caused by more than 50 levee breaches and failures. **The studies point the finger of blame at the US Army Corps of Engineers**, which built the protective system.'* [14]

It should be noted that floods typically do not respect geographical boundaries. Therefore if the floods that affected the broad Sheffield area in 2007 did not reach the city centre in the way they did in 2009, that fact forms no excuse for Sheffield to be complacent about the prospect of future floods.

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10 Arquiva, 'Are our cities really getting smarter?', press release, 1 July 2015, on www.arqiva.com/news/press-releases/are-our-cities-really-getting-smarter/. In Britain initiatives tend to be small, benefits obscure, and problems with scaling up considerable: see Marc Ambasna-Jones, 'Are our cities really getting smarter?', IDGConnect, 10 August 2015, on www.idgconnect.com/abstract/10260/are-cities-getting-smarter
11 Geoff Mulgan, 'Foreword', in Tom Saunders and Peter Baeck, Rethinking smart cities from the ground up, Nesta, June 2015, on http://www.nesta.org.uk/sites/default/files/rethinking_smart_cities_from_the_ground_up_2015.pdf
12 https://www.rockefellerfoundation.org
13 Michael Thompson and M Bruce Beck, *Coping with change: urban resilience, sustainability, adaptability and path dependence*, Government Office for Science, Foresight unit, 2014, on https://www.gov.uk/government/publications/future-of-cities-coping-with-change
14 Harry Shearer, 'New Orleans – flood, failings and fears for the future', on www.bbc.co.uk/programmes/articles/1JmPFJPCbzBrqmGjCKSy11h/new-orleans-flood-failings-and-fears-for-the-future

<u>Recommendation</u>: *Sheffield should make the city centre a showcase for science and engineering – and not just science and engineering in steel. Without cant, it should highlight those local women going into engineering. It should experiment with new kinds of engineering: self-cleaning street furniture and transport seating, bacterial self-healing concrete, and automated refuse collection. It should show giant images from the Daniel K Inouye Solar Telescope, which will open in 2019 in Hawaii, with the participation of the University of Sheffield (UoS).* [15] *And, without excessive caution, Sheffieldshould encourage investment in flood defences made in 3D-printed plastics – as an alternative to sandbags.*

Tubewall and Boxwall flood defence systems are labour-saving, light, flexible and fast to assemble. They're made by Sweden's NOAQ Flood Protection AB

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15 The University of Sheffield, 'World's biggest solar telescope to be built with Sheffield expertise, 9 February 2015, on http://www.sheffield.ac.uk/news/nr/biggest-solar-telescope-sheffield-university-weather-space-1.438958

Low-carbon, sustainable eco-cities

Man-made climate change is a reality. In accepting that, though, we also need to recognise that carbon is a miracle material: it accounts, for example, for no less than 18 per cent of the human body, and, in the shape of graphene and carbon nanotubes, has begun to go beyond carbon fibre in terms of exciting new applications. [16]

That isn't something we hear from many cities; yet carbon steel is key to the work of Sheffield Forgemasters International and Hallam Steelstock. Instead of hearing about such stories, however, what we hear the mantra of sustainability. In 2015, it would be hard to envisage anyone making a positive claim that his or her work is *unsustainable*. Thus we learn that cities and regions need 'sustainable food systems'. Seattle and Oakland in the US, [17] together with no fewer than 39 UK cities and regions, believe that such an approach to urban agriculture is the way forward. Sheffield City Council has its own sustainable food strategy for the period 2014-17. To its credit – and unlike some of the more extreme exponents of diet correctness – the Council's approach recognises that sustainable food must be 'tasty, affordable and nutritious'. [18]

After low-carbon and sustainable cities, what about eco-cities? Here it is worth noting that the environmental credentials of eco-cities such as Tianjin in China and Masdar in Abu Dhabi has been widely criticised. [19] In this light, it would be wise for Sheffield to temper its aspirations for environmental advance with concern that it might be joining a cause whose promises cannot be delivered upon, and one that will not distinguish it from other cities.

Recommendation: *Sheffield should publicly uphold the merits of carbon. It should publicise, exhibit and field-test the collaboration between UoS and Manchester in transparent, flexible, transparent, energy-efficient, light-emitting graphene – in flexible electronics, and especially in lighting. [20] To take a high-tech approach to carbon emissions consistent with its technological heritage, Sheffield should form an alliance with scientists such as Klaus Lackner, at the Center for Negative Carbon Emissions at Arizona State University, who aims to remove CO2 from the atmosphere with artificial trees; [21] or with FuturaGene, Israel, which in April won approval in Brazil to grow genetically-modified, fast-growing, high-yield, highly carbon-absorbent trees. [22] With sustainable food, Sheffield should abjure overblown rhetoric, and keep a cold eye on taste, prices, nutrition and profitability; nevertheless, in a spirit of open-mindedness, it should investigate and perhaps replicate the experiment made in Beckton, Newham, in east London, where Britain's first commercial aquaponic urban farm is set to reap its first harvest of salad ingredients, herbs and fish this month. [23]*

16 Woudhuysen, 'Carbon makes the world go round', November 2014, on www.woudhuysen.com/carbon-makes-world-go-round/
17 Hannah Greinetz, 'Down to the roots: how cities are building local & sustainable food systems', Meeting of the Minds, 29 December 2014, on http://cityminded.org/roots-cities-building-local-sustainable-food-systems-12245
18 Sheffield Food Strategy, Sustainable Food Cities, on http://sustainablefoodcities.org/findacity/cityinformation/userid/387
19 See for example Federico Caprotti, *Eco-cities and the transition to low carbon economies*, Palgrave Pivot, 2014.
20 The University of Sheffield, 'Graphene displays clear prospects for flexible electronics', 2 February 2015, on https://www.sheffield.ac.uk/news/nr/graphene-displays-clear-prospects-for-flexible-electronics-1.436945
21 Ari Daniel, 'Is an artificial tree part of the solution to climate change? These guys think so', PRI, 30 August 2015, on www.pri.org/stories/2015-08-30/artificial-tree-part-solution-climate-change-these-guys-think-so
22 Heidi Ledford, 'Brazil considers transgenic trees', *Nature*, 27 August 2014, on www.nature.com/news/brazil-considers-transgenic-trees-1.15769; FuturaGene, FuturaGene's eucalyptus is approved for commercial use in Brazil, 9 April 2015, on www.futuragene.com/FuturaGene-eucalyptus-approved-for-commercial-use.pdf
23 Sophie Morton, 'Britain's first soil-free urban farm to be built in Beckton', *Newham Recorder*, 17 April 2015, on www.newhamrecorder.co.uk/news/britain_s_first_soil_free_urban_farm_to_be_built_in_beckton_1_4038225

How UoS illustrates the use of carbon to make transparent electronic devices

Sucking carbon out of the atmosphere: Klaus Lackner's 'pine-tree looking pieces' of fabric

Aquaponics in Sheffield might look like this farm, which is located in the Netherlands

Beer at the Moor: even in such a confined space, can we make more of the processes involved – even if the display is merely an HD TV?

City-regions: too easy a cop-out

The unanimity around the concept of city-regions today is matched only by the fundamental fuzziness of the concept. This report acknowledges that the previous administration approved the Sheffield City Region Enterprise Zone in 2011, and does not wish to quarrel with that. However, it is striking that the Royal Society of Arts' City Growth Commission says, in its final report *Unleashing metro growth*, that 'as with our previous reports, the terms "city", "city-region" and "metro" are used interchangeably'. [24] This is about as informative and unthinking as the RSA's metaphor of 'unleashing' – one that, incidentally, that is widely but just as questionably used, too, with regard to… innovation.

In the case of Sheffield, it can be argued that the 'region' bit of the city-region has overwhelmed the 'city' bit. One of the respondents to the author's (very limited) series of interviews put the situation this way:

'The key aspects [of Sheffield's problems] seem fairly clear…. Meadowhall has great shops and masses of free parking. The city centre has very few shops and scarce, expensive parking. The Moor, once the centre of the city's retail experience, now looks like the Luftwaffe have just had another pop at it. A large chunk of Division Street, with its small selection of independent shops (something the council says it wants more of), is also apparently about to be demolished.'

Perhaps this comment goes too far. But the fact remains that few people can be certain exactly what a city-region is, and where its boundaries might lie around Sheffield. More importantly, *Sheffield city centre needs to take its own high ground*, *not meekly appeal for a rebalancing of resources from the city's surroundings to its heart*. Can it really be argued, in the light of Britain's recent experience of devolution and in the light of the pronouncedly weak campaign to keep Scotland within the Union, that the answer to problems in Sheffield is for more devolution of political and economic power to Sheffield city-region?

Real power in Britain is centralised through the state. It is the state that controls the Budget, defence, immigration and counter-terrorism operations. Fine words about the regions, just like fine words about the European Union, can all too easily absolve Westminster from its responsibilities. *Sheffield city centre will revive not through illusions about South Yorkshire, outstanding though that part of the world is, but by its own efforts: its wealth creation, and its own example to and links to other major cities, London and the rest of the world.*

Our argument can be finessed in one way here, and extended in another.

Earlier, this report attacked nostalgia for the right 'retail anchor tenant' as a cure-all. Pursuing this argument further, it could be contended that consumer expenditure in Sheffield's centre will only improve once employee incomes increase among major workplaces on the outskirts or outside the city centre. Indeed, in 2010 the author to Coventry City Council that its own centre would be most easily revived by an intensification of R&D, employment and wages in car factories on the periphery of the city.

For Sheffield, enterprise zones outside the city centre could well perform a similar function. However, wealth creation in 2020 and beyond will not have the same profile as it did five years ago. *One need not buy into all the hype about 'distributed manufacturing' and 3D printing to agree that value-added manufacturing, design and the Intellectual Property that goes with that will be more possible in the city centre in 2020 than they ever were in 2010.* Anyway manufacturing has for a long time been directly coupled with *services*, as the famous example of Rolls Royce makes clear; and *since services are advised about and delivered in person, people can reasonably be expected to 'shop' for a very wide range of them in the city centre*. This, after all, has proved to be the case for Sheffield's panoply of educational services. *Therefore while Sheffield should take a strong interest in the fate of employees and employee incomes in the wider region around Sheffield, it should look to opportunities for high-value wealth creation directly in the city centre.* We consider some of these opportunities in the discussion of the economy below.

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24 Royal Society of Arts City Growth Commission, *Unleashing metro growth: Final recommendations of the City Growth Commission*, October 2014, on http://www.citygrowthcommission.com/wp-content/uploads/2014/10/City-Growth-Commission-Final-Report.pdf

How the University of Westminster has brought 3D printing to the inner London

Now: to extend our defence of the city centre, this report turns to the peculiar nature of transport in, around and beyond Sheffield.

Sheffield transport

It seems to this writer that connections from the city centre to the environs of Sheffield are rather superior to those between the city and other cities, and superior, too, to those within the city centre. Trams are good; connections to Meadowhall are good. Elsewhere, transport is not so good.

What follows is far from comprehensive – it does not cover, for example, links to Leeds, Manchester and other provincial cities. The account below may also be impressionistic. But in terms of Sheffield's transport problems, the smoke we describe probably wouldn't have arisen without fire.

Sheffield station

Sheffield station has no Wifi. Moreover, exposed wiring does doesn't UP confidence, but lowers it.

Characteristically, too, East Midlands Trains conveys its URL all in lower case. This is unnecessary, and makes legibility difficult, especially for older passengers.
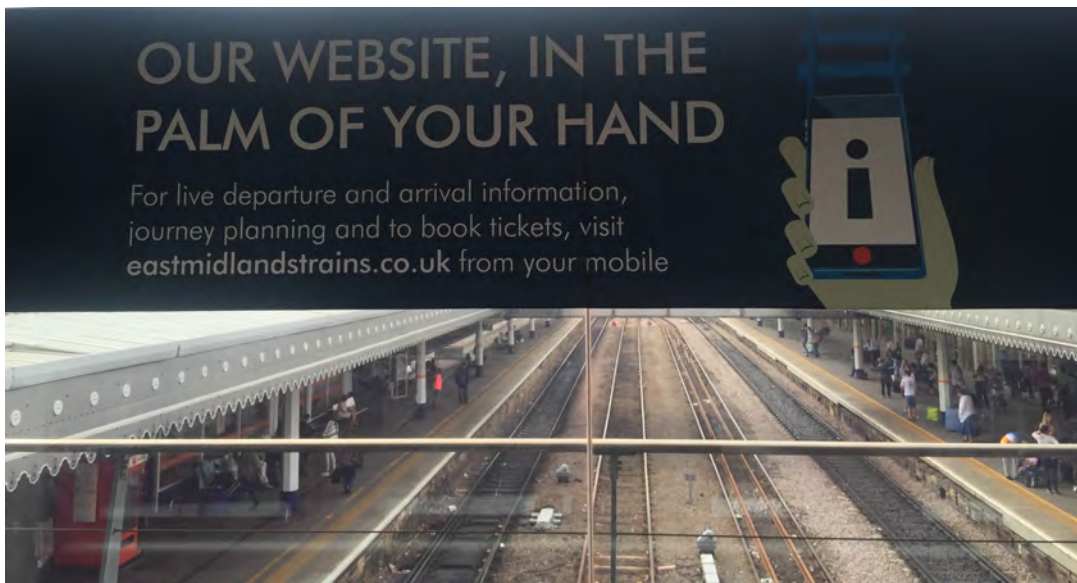
Sheffield by high speed rail and by air

HS2 *must* arrive in the centre of the city. This cannot be stressed enough. Critics of HS2 often say that 'it will only save 30 minutes, London to Birmingham'. This is a ridiculous argument. In a world of social media, stock market volatility, moment-to-moment changes in political events, need to save even seconds moving from the terminus to the centre is absolutely critical.

To this outsider, the commercial situation with Sheffield and Doncaster Sheffield Robin Hood airports, like their physical location, is very unclear. Yet for the medium and the long term, there can be no doubt that demand for air travel will rise UP, and that, despite the travails of the past, an opportunity may be being missed.

In 2012, the Organisation of Economic Cooperation and Development (OECD)said that air passenger traffic could double in 15 years; airfreight could treble in 20 years. [25] Writing about transport around the world, the OECD asked: 'Will current infrastructure be adequate?'. It replied: 'The short answer is "no"'. It continued:

'Most of the gateway and corridor infrastructure currently in place could not handle a 50 per cent increase, let alone a doubling or tripling of passengers and freight in 20 years.'

Aided by lower fuel prices, aviation now faces unprecedented demand. Airbus says that load factors rose by 0.5 per cent in 2013, to 79.7 per cent. [26] And if world GDP grows at the 3.2 per cent a year Boeing expects between 2013 and 2033, then, at 4.2 per cent, annual growth in the number of airline passengers could comfortably exceed that. [27]

Recommendation: *Sheffield should devote massive resources to lobbying Westminster, the centre of decisionmaking, to ensure that HS2 runs through the city centre. It should also eschew 'that hasn't worked in the past' approaches to local airports and plan to reopen or revitalise one or more. Naturally, it should prioritise airport-to-city rail and road connections in this*

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25 OECD, *Strategic transport infrastructure needs to 2030*, 2012, on http://www.keepeek.com/Digital-Asset-Management/oecd/economics/strategic-transport-infrastructure-needs-to-2030_9789264114425-en#page1
26 Airbus, *Global market forecast 2014-2033 – Flying on demand*, September 2014, on http://bit.ly/1QzAI3i
27 Boeing, *Current market outlook 2014-2033*, on http://www.boeing.com/assets/pdf/commercial/cmo/pdf/Boeing_Current_Market_Outlook_2014.pdf
Growth of revenue per tonne-kilometre in freight, projected by Boeing at 4.3 per cent, and, most remarkably, of revenue per passenger-kilometre, 5.0 per cent, would also be impressive. Also: by 2033, Boeing reckons Europe will have ordered 7500 new planes, as low cost carriers and large established airlines embark on a new round of competition with large airlines from the Middle East. Europe will need 94,000 new pilots and no fewer than 102,000 new technical staff.

Transport inside Sheffield

As a city, Sheffield is rather stretched out. Apart from being vertical, the city centre forms an extended space. And this isn't its only problem. Not as badly as Birmingham, but not well either, the city has too many metal fences, providing safety in relation to fast-speeding cars, but still easy to clamber over in a hurry.

Recommendation: *SHeffield should provide many more easy-to-clean underpasses for pedestrians, to supplant circuitous routes and tiring bridges. To bring people's spirits UP in these subterranean environments, Sheffield should equip them with beautiful, informative, topical electronic displays. If these look too costly, it should consider following the deployment of low-tech kaleidoscopes at London's South Bank*

Instead of dark, off-putting dinginess, this underpass by Waterloo Station, by https://sparkyourcity.com/, presents an inviting prospect

Moor Market and buses

Staff at Moor Market confirmed to us that shoppers there are ill served by inner-city bus services. The Moor needs much better transport connections.

In a brief interview with bus drivers, it was put to us that there are too many complicated bus fares.

Recommendation: *Sheffield should work for easier ticketing, pricing, payment systems and mapping for Sheffield's buses. Neither the 'before' map of bus routes, nor the proposed 'after' map will lift clarity or morale UP. Also: what about a modernised form of the small, free, 20-seater buses that people – especially older people – used to enjoy?*

Cars and parking

A full treatment of private road transport in and around Sheffield – including freight transport and deliveries to retailers – is beyond the scope of this report. However, we believe that, throughout Britain, the war on motorists and the car has now gone so far that people labour under the illusion that new roads are always being built. In fact *Britain built just 90 miles of main roads and motorways over the whole period 2005-13.* [28]

The rehabilitation of motoring in Sheffield could usefully start around parking. Much of the time drivers spend in cities is spent doing that, and Sheffield is no exception to this rule. It is a hassle, stressful, leads to disputes and often involves dents.

Recommendation: *Alongside or perhaps instead of the multi-storey approach planned for the city, Sheffield should work with NCP and other providers on vertical parking. That technology has now spread from Japan to Australia* [29]

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28 Department for Transport, *Road lengths in Great Britain: 2013 data tables*, on https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/316682/road-lengths-in-great-britain-2013.zip

29 Ben Pike, 'Robotic car stacking system in unit blocks set to resolve Sydney's parking crisis', *Sunday Telegraph* (Australia), 29 August 2015, on www.dailytelegraph.com.au/news/nsw/robotic-car-stacking-system-in-unit-blocks-set-to-resolve-sydneys-parking-crisis/story-fni0cx12-1227503195042?sv=9da49b964812d52e2c2b9ccca88909f6

Woolloomooloo parking', Sydney: 23 car spots in 25% of the space of a regular car park

Cycling and… escalators

Between 2001 and 2011, the growth in cycling to work in England and Wales was patchy. London, Brighton, Bristol, Manchester, Newcastle and Sheffield saw big increases, while the majority of other local authorities did not. [30]

No doubt the increase in cycling in Sheffield bears witness to the City Council's efforts to encourage it. Confirming the merits of carbon, carbon steel has become standard since 1998 for bikes on the Tour de France. In Sheffield it is true that Wilson Cycles, though selling carbon bikes, prefers steel ones; but Planet X, the No 2 bike assembler in the UK, is expert in the carbon sort.

There is more to consider. In Copenhagen, bikes for hire are electric, and come complete with a screen and GPS.

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30 For the statistics, go to http://bit.ly/1pzFrrZ

Its tablet computer takes remote bookings and rewards you if you park where demand is high [31]

<u>Recommendation</u>: *Sheffield should promote electric bikes to show how new technology can overcome verticality and take people UP easily. In the same spirit, it should open discussions with the hilly, north central Italian city of Perugia about that city's experience with outdoor escalators. Similarly, for indoor escalators sloping up to 12, it might explore possibilities with Syney Elevator (Hangzhou)* [32]

Perugia moves UP – and quickly, too

31 Lucas Laursen, 'Copenhagen pioneers smart electric-bike sharing', <u>IEEE Spectrum</u>, 17 December 2013 on http://spectrum.ieee.org/transportation/alternative-transportation/copenhagen-pioneers-smart-electricbike-sharing
32 Go to http://syney-elevator.en.made-in-china.com/product/DefJhVmybjYK/China-Sidewalk-Moving-Walkway.html

Urban fabric

Surfaces

We won't deal here with Sheffield's need to withstand *rain*, for efforts by Glasgow's Business Improvement District already point a way ahead here. Still, Sheffield does need more shelters to dart between and awnings to stand under.

What we find most interesting at this point is Sheffield city centre's *surfaces* – and in particular the contrasts between its general cleanliness, and particularly poignant black spots. Much of the city centre's surfaces at ground level are impressive – the paving outside Moor Market

However, if we compare this kind of world underfoot with some of Sheffield's roads, bad practice sticks out:

Looking UP, it's clear that some relatively inexpensive scrubbing or sand blasting could do much to improve the city centre's fascias, and, on rainy days, perhaps lighten the gloom:

There is a similar job or work to do with green eyesores, many of which are telecommunications junction boxes:

Recommendation: *Sheffield should collaborate with the materials science and engineering departments of SHU and UoS to solve the remaining problems it has with surfaces that let the city centre down. And it should act forcefully against BT to remove redundant junction boxes, and certainly remove the graffiti from and renovate those fixtures that really must be retained.*

Signage and cognition

Signage forms an underrated aspect of the welcome cities give to newcomers. Signs need to be plentiful, consistent, unambiguous, large for the benefit of older people, kept clean, and – sometimes – multilingual. Signs should not peter out after first suggesting that they will continue until your destination. They need to be where people really need them, not where designers think they need them.

All these strictures apply to maps, timetables and Real-time Passenger Information Systems.

Connect Sheffield represents a commitment to better signage and maps. [33] At this stage it may be too late to change the information panels in the city centre, since they are new. It is good, too, that they light up at night; however, one of Britain's leading signage designers has expressed the view that

'During the day, their small size and beige tones makes their details disappear unless you really know what to look for.'

He added:

'Making information more personalised is always useful. Could the panels respond to verbal questions? Could panels incorporate touchscreens? Might they be able to print information?'

The panels are also quite reflective, compounding difficulties in the appreciation of detail.

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33 Go to https://www.sheffield.gov.uk/roads/works/schemes/completed/connect-sheffield.html

The broader issue with signage is one of *cognition*, especially for 'naïve users', as such people used to be described in the literature of human-computer interaction. When they meet Sheffield Interchange, for instance, they can easily be forgiven for missing the fact that it connects to Sheffield Railway Station. Apart from a slight reference to 'Platforms C, D & E', there are little or no signs indicating that a station lies behind the Interchange's imposing entrance.

Opaque, could do better: Sheffield Interchange

Still: despite the criticisms made here, signage represents a major opportunity for Sheffield. As the city centre partly but not entirely bears witness, the issue is relevant to not just to formal signs, but also to bus stops, taxi ranks, road markings, bollards, kerbstones, litterbins, flags and banners.

Recommendation: *Sheffield should arrange for a number of first-time visitors to Sheffield to report in detail on their sense of orientation in the city, and draw up proposals for improving based on the results found.*

A more productive, Chinese economy, with still better HEIs, canals and childcare

Sheffield needs more output per head, at the same time as it needs more 'heads' going to work. It needs to UP both productivity *and* jobs.

The paradox is a circle that's hard to square. [34] But clear thinking, and avoiding the usual solutions, can give Sheffield a head start on its competitors.

Recommendation: *while always striving to raise productivity and making it a prominent issue, Sheffield should set an employment goal for its area within what the Royal Society of Arts describes as South Yorkshire Metro (= Sheffield, Rotherham, Rawmarsh, Barnsley/Dearne Valley and Doncaster urban areas: Barnsley, Wath upon Dearne, Wombwell, Hoyland, Doncaster, Bentley, Armthorpe, Sprotbrough). At present, the employment rate in the Metro is 67.6 per cent. Sheffield should consider raising employment within its area, within five years, to 70 per cent. That would still be behind London, Bristol and South Hampshire metros (71.8, 74.3 and 75.7 per cent respectively).* [35]

Productivity, start-ups, SMEs, 'scale-ups' – and jobs for older people

Productivity is the key question facing the British economy, as well as Sheffield city centre. As early as April 2014, Bank of England chief economist Andy Haldane wrote:

'UK private sector productivity has been strikingly weak since the financial crisis struck. Its shortfall relative to its pre-crisis trend may be as high as 16 per cent. Productivity growth has remained disappointing even as the economy has picked up pace and is not expected by the MPC to return to 2 per cent annual growth until 2016. UK productivity experience stands in sharp contrast to experience in the US.' [36]

In Sheffield city centre, there may be more room for manufacturing than is imagined. But even with manufacturing, there is nowadays an important service dimension to the selling, maintenance and upgrading of products. So for Sheffield, the productivity of services, always harder to raise than that of manufacturing, is a key question.

Productivity

Much of the priceless knowledge held by organisations is locked up in clunky old e-mail systems. Those systems are full of messages and attachments that are filed in different positions on the different devices – smartphone, tablet, laptop and desktop –employees may want to use. So it can be hard to unravel that knowledge and put it to work.

Yet, as McKinsey has shown, there's another, much more direct way of sharing knowledge. *Applied to the world of business, social media can improve not just communications inside and beyond a company, but also on relationships with customers – and productivity.* The biggest impacts, McKinsey argued, are likely to be on marketing and sales, new product development (NPD), operations and company infrastructure – to the extent that productivity among knowledge workers could rise by 25 per cent. [37]

In recent years, social media for business have boomed. Twitter, for example, now flourishes not just in the B2C domain, but in B2B too. Yet even in the US in 2015, it's unlikely that much more than half of small and medium enterprises (SMEs) use social media today; and in Sheffield the figure must be lower. Moreover to *get the most out* of social media isn't a technical question, but a human one. Sheffield firms need to train and organise for it – seriously; for how they use it at work differs from how people use it in private life. [38]

34 For the beginnings of an approach to this problem, go to http://www.woudhuysen.com/six-emerging-industries-2020/
35 Royal Society of Arts City Growth Commission, op cit.
36 Quoted in David Robinson, 'BOE Haldane's answers to Treasury Committee', MNI News, 20 April 2014, on https://mninews.marketnews.com/content/full-text-boe-haldanes-answers-treasury-committee-part-1
37 Michael Chui and others, *The social economy: unlocking value and productivity through social technologies*, McKinsey Global Institute, July 2012, on http://www.mckinsey.com/~/media/McKinsey/dotcom/Insights%20and%20pubs/MGI/Research/Technology%20and%20Innovation/The%20social%20economy/MGI_The_social_economy_Full_report.ashx
38 Terri L Griffith, 'Are companies ready to finally kill email?', *MIT Sloan Management Review,* 8 September 2014, on http://sloanreview.mit.edu/article/are-companies-ready-to-finally-kill-email/

Recommendation: *Sheffield should recognise that IT is by no means the only key to productivity in the city centre., Transport costs, speed and thus cost of new construction, expeditious removal of rubbish and litter, together with many other factors are very much worth keeping an eye on: indeed Sheffield might want to open collaborations with German waste management companies to deal with commercial waste, as well as with Volvo in robot-assisted rubbish removal. Moreover in encouraging IT companies to start up in the centre, Sheffield needs to ensure that it is not engaged in too much of a 'property play'. It should also ensure that the IT companies for which it provides premises are themselves not too tied to advertising, a fragile source of revenue. What instead should move UP the city's priorities is helping existing companies to make the most of IT – not just with social media, but in general. Here, hands-on training courses have their place.*

Start-UPs, SMEs and scale-UPs – aka mid-sized companies

Start-UPs are vital to innovation, and deserve the support the Sheffield is giving them – both those in the IT sector, and those outside it.

SMEs are vital to employment. In retailing, hospitality and distribution, which we deal with more fully below, they are typically more reliant on long hours and low wages than they are on automation and high productivity. That needs to change.

It is however with medium enterprises (up to 250 employees and €50m) and larger ones that getting the quick-footedness of a start-up requires real discipline. It's mid-sized businesses that tend to struggle the most with finance, HR and new networking technologies; and they have even bigger challenge on their hands if they're in the dynamic category of what the CBI terms *scale-UPs* – if they're expanding their workforce or turnover 20 per cent or more a year over a three-year period. [39]

Recommendation: *Sheffield should identify all those companies within its area that are shooting UP in workforce or turnover by 20 per cent a year, or perhaps by a more modest 10 per cent. It should focus resources on these more mature but impetuously growing firms as much as it does on start-ups or the more sedate kind of SMEs.*

Jobs and older people

People over 65 have been an important component in the ascent of self-employment as a percentage of national employment in Britain. [40] Yet if anything we are probably at the start of this trend. Healthy life expectancies in Britain have risen dramatically in recent years:

Years English 65yos can expect to be free of disability [41]

	2000-2	2004-6	2006-8	2011-13
MALES	8.9	10.2	10.5	10.5
FEMALES	10.4	10.7	10.9	11.3

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39 Sherry Coutu, *The scale-up report on UK economic growth*, Confederation of British Industry, November 2014, on www.scaleupreport.org/scaleup-report.pdf

40 Szu Ping Chan, 'Self employed? You'll be older, working longer and for less pay', *Daily Telegraph*, 20 August 2014, on www.telegraph.co.uk/finance/economics/11045631/Self-employed-Youll-be-older-working-longer-and-for-less-pay.html

41 Office for National Statistics, *Health Statistics Quarterly* 40, Winter 2008; *Statistical Bulletin*, 23 November 2010; 'Healthy Life Expectancy (HLE) at age 65, 75 and 85', 3 July 2015. The most recent data is on http://www.ons.gov.uk/ons/about-ons/business-transparency/freedom-of-information/what-can-i-request/published-ad-hoc-data/health/july-2015/healthy-life-expectancy--hle--at-age-65--75-and-85.xls

For obvious reasons, many of the old self-employed have a relaxed attitude to their work and the schedules around it. However hours tend to be long, skills weak, incomes low, and jobs in property, marketing and finance perhaps expanding just a little excessively. Entrepreneurial attitudes are also likely to be thin on the ground. Also, among 50-64yos, women significantly lower early-stage entrepreneurial activity rates than men: 4.0 per cent compared with 9.8 per cent. [42]

Recommendation: *Sheffield should accept that many older workers in Sheffield could do with having their IT and driving skills checked and UPdated. Also vital will be move the level of ambition among older people UP, not least because they will need more money for longer in their longer lives. Given that women live longer lives than men but display less entrepreneurial activity at present, special efforts should be made to bring more older women into high-value, high-income self-employment and expansion beyond that stage.*

Developing more intense relations with China

http://www.bbc.co.uk/news/uk-england-south-yorkshire-30915766

Sheffield has a high media profile in China and most of Asia because its snooker contests are shown live and watched by millions in the region. Both Universities have offices in China and recruit more Chinese students than the average UK university as a result.

The main opportunity has already been hinted at in this visit, by the development of Chinatown, and by Chancellor Osborne's recent visit to China – including the western cities of Chengdu and Urumqi. That opportunity is simply *the attraction of direct investment from China*. [43] Here as elsewhere, however, the emphasis should be to avoid simple property plays, and instead to recruit *investment that is orientated to R&D*. Chinese R&D outside China is beginning to boom. It is vital that Sheffield launches itself early, above than its rivals.

Already Chinese train manufacturer CSR Qingdao Sifang has agreed to collaborate with Imperial College London, the University of Southampton and the University of Birmingham to research energy applications in rolling stock> It has also partnered with the Technical University of Dresden and the University of Stuttgart to develop lightweight materials. [44] Away from R&D, in services, a Chinese consortium has bought nearly half of Toulouse airport, France's fourth largest. Indeed, the same consortium plans further deals in Europe. [45]

Recommendation: *Sheffield needs to make its orientation to Chinese inward investment even more strategic, by UPholding all the city's efforts in R&D – particularly those of its universities. It should identify China's largest 100 spenders on R&D and offer specially favourable rates and rents to pull them to Sheffield. Also: in the manner of Angela Merkel's proposals about Syrian immigrants, it should offer hundreds of hours of free Mandarin classes to all those on the 2016 delegation to China, as part of a broader effort to get Sheffield known as the most Chinese city in the UK and the EU.*

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42 Mark Hart and others, *Global Entrepreneurship Monitor United Kingdom 2014 Monitoring Report*, 2014, on http://www.gemconsortium.org/country-profile/121
43 'Sheffield "Chinatown" development plans approved;, BBC News, 21 January 2015, on www.bbc.com/news/uk-england-south-yorkshire-30915766
44 'CSR and universities to establish UK rail research centre', *Railway Gazette*, 14 May 2015, on www.railwaygazette.com/news/technology/single-view/view/csr-and-universities-to-establish-uk-rail-research-centre.html
45 'China investors eye more airport deals in Europe', China Travelnews, 10 March 2015, on http://www.chinatravelnews.com/article/89896

The issue of HEIs

The recent efforts of Sheffield's two universities to collaborate more closely have much to recommend them. The campus vista that greets one when coming out of Sheffield station also present an inviting prospect. These things, however, don't mean that some more radical rethinking wouldn't pay dividends.

One interviewee put it to us that there are *simply too many students and student residences in the city centre*. He derived much of his income from students, but made the point that his gain would be at the cost of rising student debt.

We tend to agree. Hotels and other service firms have a reasonably strong presence in the centre. There is also no need for Sheffield to rush to build the kind of anodyne corporate offices that disfigure many other European cities. Yet it remains hard for the casual centre visitor to believe that as the cliché has it, 'Sheffield means business'.

It needs to be remembered that students are relatively poor, but relatively mobile – whether in their feet or in bikes. This has implications for the demography of the city centre.

In the light of this, it would be foolhardy for Sheffield's universities to increase their efforts at attracting greater student numbers, even if the recruitment of Chinese students might prove an exception to this rule. The issue of HEIs is not quantitative, but a qualitative one. What are they really known for in terms of human and intellectual endeavour? How can they deepen their insights and participate fully in Sheffield's efforts to scale new heights in thought and action.

The issue of HEIs is *not* about making them vocational, orientated to commerce and all that. What commerce requires is brilliant reasoning, clear language, great science; it and it alone can work with these talents – not skills – to make them relevant to its needs.

Sheffield and Tinsley canal: a neglected asset

Sheffield city centre bestrides many other city centres in the beauty and possibilities of its canals. At the moment these are fairly derelict; but they have fantastic potential.

It is a pity, but the main concern of the authorities appears to be the prevention of parking and of fishing; while the main concern of those outside and perhaps even inside houseboats located there appears to be exactly parking and fishing. In interviews, the very modest second-hand and car repair businesses around the canal complained of not enough lavatories, and – despite the TO LET sign offering a 'waterfront bar/restaurant opporunity', nowhere to eat.

This comment from a contributor to TripAdvisor may be over the top, but nevertheless should not be ignored:

'We frequently visit the Chesterfield Canal, as we live halfway between both. But having never visited the Sheffield Canal, we expected the same kind of trip and were very disappointed. This canal is not as well looked after, full of rotting rubbish and smells disgusting. It is nice to see the boats, but other than that the views are limited to industrial units, ugly graffiti 'tags' and grumpy anglers. Even the bridges don't have much of the usual canal charm to them. I would say it's a nice trip of you don't have any expectations, but with it only being a half an hour car journey from there to the Chesterfield Canal - I would always go there instead. Sorry to say it, as I love Sheffield and would normally fight its corner! But not in this case unfortunately.'

Railings are left unpainted; bridge surrounds are garlanded with beautiful buddleia, but lie deserted; planning applications look desultory.
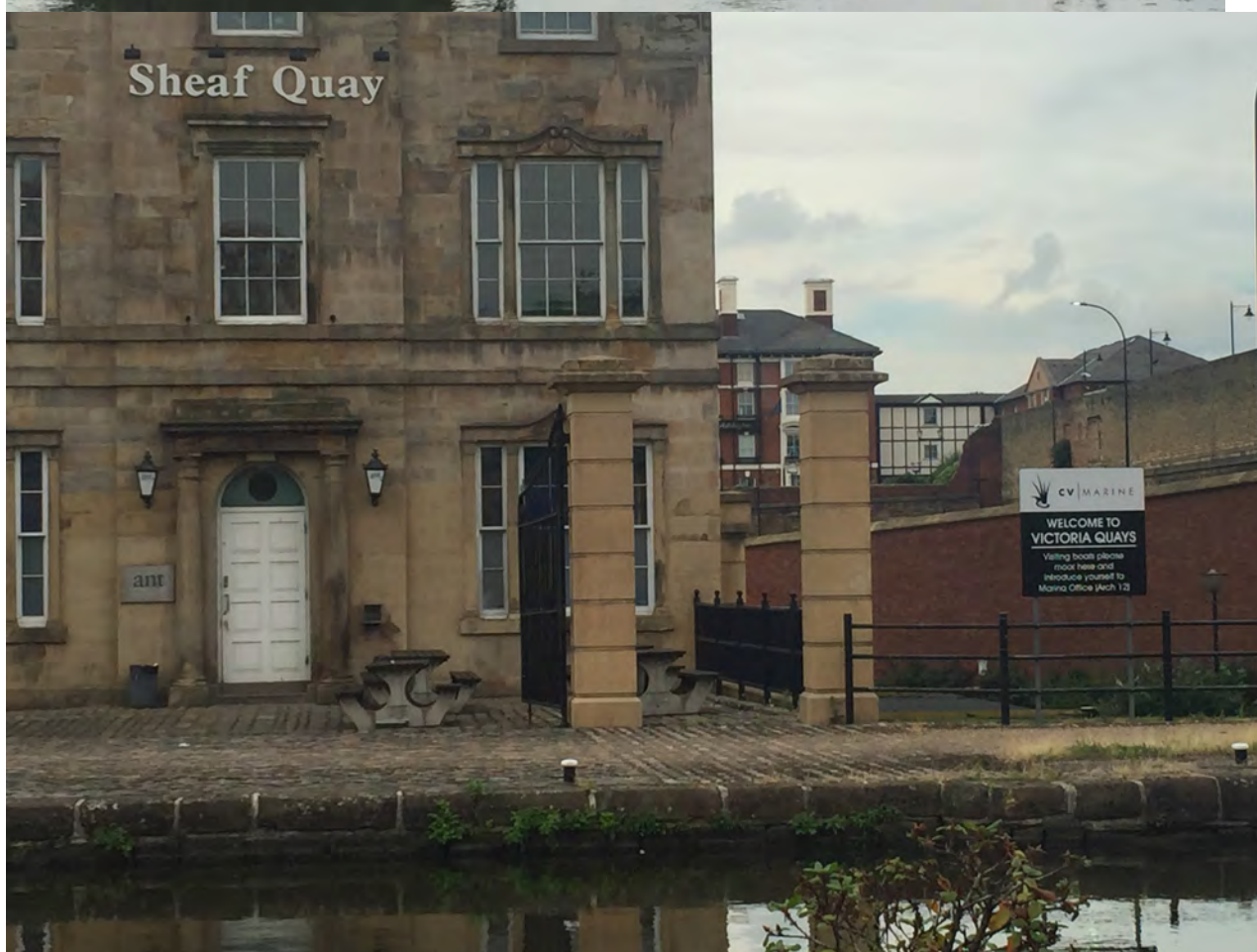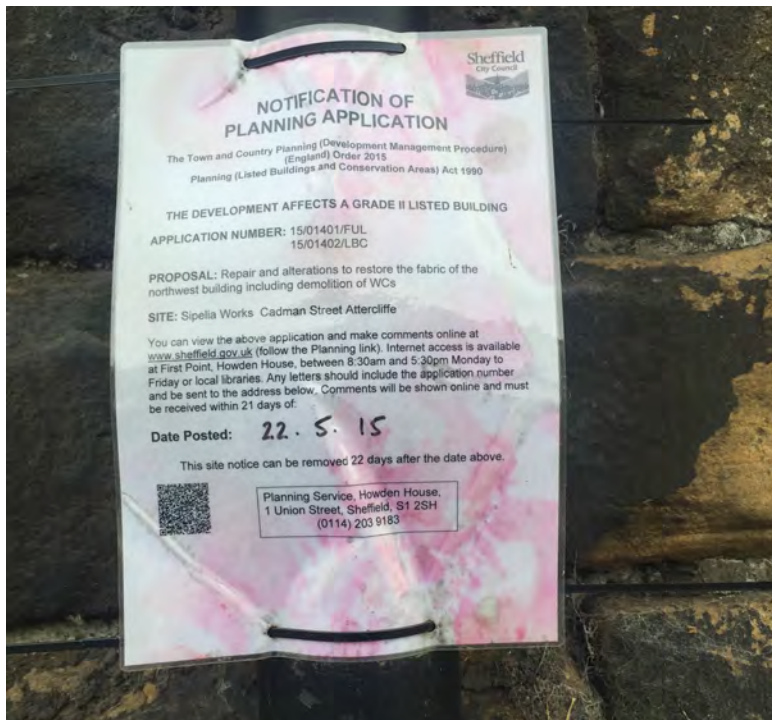
Childcare, especially outdoors

More than 10 years ago PricewaterhouseCoopers, an organization not noted for its radicalism, reported that a comprehensive package of early education, care and parental leave could see a long-term economic benefit to the UK of no less than £12-£24bn a year, or 1-2 per cent of national output. [46] This is an extraordinary figure – indeed, the author himself tried to tackle the then trade and industry secretary Patricia Hewitt on it at the time of its publication.

Even now, businesses probably underestimate how Britain's childcare system, which is one of the most backward and expensive in Europe, reduces labour mobility and utilisation – leave aside its reduction of educational opportunity.

Recommendation: *Sheffield should arrange to UP the level to and space afforded to Sheffield's children, especially in the summer months when outdoor pastimes and play can come into their own.*

Though this bed-come-Hot-Wheels-racetrack, made by Step2, is intended for interior domestic use, fixtures as imaginative could make the city centre a more UPlifting, joyous place [47]

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46 Cathy Newman, 'New move on return after parental leave', *Financial Times*, 1 December 2004, on www.ft.com/cms/s/0/68e8f91c-433e-11d9-bea1-00000e2511c8.html#axzz3mMV5Q2xh

47 'Interactive race car beds', Trendhunter, 23 August 2015, on http://www.trendhunter.com/trends/race-car-bed

Housing: sprawl, technology and Type Approvals, and how new-build beats refurbishment

In our argument that the property balance of the city centre should be rebalanced toward commerce and away from student accommodation, we don't at all have in mind a dogmatic commitment to building upward on brownfield sites. That approach has been far too dominant in British property. Building UPward has much to recommend it; but building outward, on deregulated greenfield sites, will be an essential tool in the resolution of Britain's housing crisis, and essential, as well, to Sheffield's future. [48]

In defence of suburban 'sprawl', and of inner-city space in which to swing a cat

There are signs that, despite the opposition of one or two local MPs, the city has, in preparing a new local plan, begun to reconsider its attitude to the Green Belt, and also to evince a more charitable attitude to house builders. This is to be welcomed.

When pundits denigrate 'sprawl', they may appear solely to attack the (admittedly sometimes dubious) aesthetic standards of British house building in the past. However 'tasteful' commentators often reveal a strong element of snobbery in their disdain for the suburbs. This phenomenon is not confined to the UK, but extends also to the US. [49]

Sadly, in an email interview, one of Britain's brightest young experts in housing has told us that he believes that Sheffield has yet to provide a fully adequate supply of homes in the locations where relatively highly earning households want to live. Yet this can change. *Given sweeping planning reform in and around the city, backed by strong lobbying at Westminster,* it will be possible to install new homes, *built with new technology*, at a low cost.

Two-thirds of the cost of a typical home in Britain is simply the cost of the land on which it is situated. Britain has the most regulated land of all the countries covered by the Organisation for Economic Cooperation and Development. That's why *the removal of most regulatory barriers, apart from Building Control, will be essential to Sheffield if it is to house its inhabitants cheaply but adequately. Children and older people in particular have a right to grow UP and older in a humane manner*, and that consideration *must* be allowed to trump those of natural beauty, wildlife and sites of (frequently dubious) special scientific interest. Britain's housing crisis will otherwise intensify, especially given both rising fertility and the ageing of the population.

To maintain social cohesion, and, more vitally, to preserve the best of Sheffield's humanistic traditions, the interiors of the new homes *must* also conform to space standards better than those that prevail today. When last they were measured, British homes had the smallest average floor-spaces in Europe, and the smallest rooms in Europe too. Yet despite, for example, much of consumer media moving online, people's personal possessions have tended to grow, making it more necessary than in the past for them to be able to store a fair amount of goods. In this light, *Sheffield must lead the rest of the country in exceeding the Parker Morris space standards of the post-war period*. Though already abandoned in the 1980s, those standards are no longer good enough if householders are to have a chance of being happy in their homes. [50]

48 We cannot treatment commercial property adequately here. For the full argument around both residential and commercial property, see James Woudhuysen and Ian Abley, *Why is construction so backward?*, Wiley, 2004. For an imagined scenario around British housing for next year, see Woudhuysen and Abley, *Homes 2016*, Blueprint Broadside pamphlet, 2004, on http://www.woudhuysen.com/homes-2016-blueprint-broadside/
49 See Joel Kotkin, 'Book review: *The end of the euburbs*, by Leigh Gallagher', *Wall Street Journal,* 8 September 2013, on http://www.joelkotkin.com/content/00802-book-review-end-suburbs-leigh-gallagher
50 Woudhuysen and Abley, *Homes 2016,* op cit.

The need for manufacturing technology and Type Approvals

If land is made cheaper by judicious and proportionate deregulation, then the processes by which homes are made need also to enter the 21st century. The manufacture of houses in the way to go, and one that Sheffield is well-placed to intensify.

Ronan Point, a modular, 'system-built' high-rise tower block in Newham, exploded in 1968 because of a gas leak. Yet before the spectre of Ronan Point is invoked as an argument against manufactured housing, let us remember what has changed in the past half-century. There have been tremendous advances, first of all, in *sensors*, which could now warn of gas leaks and other dangers in a matter of seconds. Add to this advances in materials such as graphene, and then think about the development of 3D printing, robotics, Internet Protocols, Building Information Modelling, voice operation, laser measurement, high-speed lifts, and modern supplier relationship management and after-sales service.

Clearly we are no longer in a Ronan Point world. In China, companies such as Broad Sustainable Building have long been able to build a 30-storey hotel with 200 workers in 15 days. Now Zouoda Group can build a small villa being crane in and stack six 3D-printed, 100kg/m^2 modules to form a small villa in just three hours (a full-scale 500m^2 villa takes 15 days). Tests confirm that these buildings can survive an earthquake measuring 9.0 on the Richter scale, as well as average wear and tear for at least 150 years. [51]

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[51] Brittney Stevenson, 'Chinese unveil mysterious 3D printed houses – built out of unique material, able to withstand devastating earthquakes', 3D Print.com, 17 July 2015, on http://3dprint.com/82322/chinese-3d-modular-homes/ .

Zhuoda is not alone. Italy's World's Advance Saving Project (WASP), an engineering company, has a 40x20' metal frame from which a nozzle can build homes using local materials such as clay and dirt. [52]

Now of course, the aesthetics preferred by Sheffield residents need not be those preferred by Chinese or Italians. Yet at little extra cost, IT and 3D printing will allow people to specify different kinds of exterior and interior décor.

In addition, contests can be held to determine which type of houses most meet with popular acclaim. Even *The X factor* may serve as an inspiration here. Then, once several basic designs are given Type Approvals, building manufacturers can – if planning is deregulated – be guaranteed a mass market for their goods, so lowering costs below those currently run up by short-run house manufacturers such as Unite or Yorkon.

Recommendation: *Alongside ambitious planning reform, Sheffield should prepare a shortlist of building manufacturers – including, not least, Chinese ones. It should then organise a competition to find out which basic designs are most popular, so laying the basis, through Type Approvals, for low-cost manufacture in quantity and with top levels of quality.*

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52 Ruby Lott-Lavigna, 'Watch this giant 3D printer build a house', Wired, 21 September 2015, on http://www.wired.co.uk/news/archive/2015-09/21/giant-3d-printer-builds-houses

New-build beats refurbishment

This report commends ReNew, Sheffield's imaginative drive to refurbish vacant property in the city centre so as to make it available for start-up, temporary, 'meanwhile' and pop-up businesses. [53] At the same time, however, evidence suggests that, from the point of view of energy efficiency – and, no doubt, more broadly – the refurbishment of residential properties is technically, economically and socially a very tricky business. Environmentally minded analysts like to make the familiar point that, for the foreseeable future, most of Britain's housing stock will be old, not new. Yet just those same analysts have been forced to admit that refurbishment is a very labour-intensive affair, and, for residents, a very disruptive one. [54]

In fact the doctrine that, for energy efficiency and lower carbon emissions, we must 'make do and mend' the nation's existing housing stock rather than build anew has all the hallmarks of a self-fulfilling prophecy.

Recommendation: *While continuing with and expanding ReNew, Sheffield should seek aggressively to UP the proportion of new-build homes to the city centre's housing portfolio.*

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53 Sheffield ReNew, 'Making meanwhile worthwhile', on http://www.renewsheffield.co.uk
54 Mark Crilly and others, 'Retrofitting homes for energy efficiency: an integrated approach to innovation in the low-carbon overhaul of UK social housing', *Energy & Environment*, Vol 23, Issue 6-7, October 2012, on http://multi-science.atypon.com/doi/pdf/10.1260/0958-305X.23.6-7.1027

Retailing: changing strategy because of the Internet, and improving management

It is good that Primark is coming to the city centre in 2016. Yet we need to remember that many city administrations less enlightened than Sheffield's persist in failing to prepare for the next 'store wars', instead preferring to fight the last one: they search for an anchor tenant in a retail area, perform a follow-up hunt for further tenants, and then hope that consumer incomes and spending will return to former levels, so opening the door to our old alliterative friend, a 'retail renaissance'. Such a hope is all too likely to prove forlorn.

Perhaps the sameyness that afflicts Britain's cities really is all the result of giant retailers – even if Moor Market will definitely need well-known brands if it is to increase footfall. At the same time, however, endlessly repeated complaints about 'clone town Britain', [55] begun as far back as 2004 and based on dubious research by the New Economics Foundation, ignore how Britain's city leaders are often just as much to blame for homogeneity as retailers. Sheffield cannot afford to make this kind of mistake.

What then is the alternative? More than two years ago, the author made this proposal, which can apply to Sheffield as much as anywhere else:

'What we need today is to take the ambition that characterised the nineteenth-century retailer and develop it again with a novel fusion of current technologies, and more besides. Retailers need to spend real money on researching and applying technologies such as robots (including the sort that assist shop assistants), 3D printing, holography, intelligent signage, and organic LED displays. Retail IT needs to provide benefits not just to the supply chain, but also, and more clearly than it does today, to the shopper. There need to be more opportunities for comparison of goods and prices, for a revival of haggling over prices. And, for both Mums and Dads, there need to be free childcare facilities and better facilities, too, in which staff can dress, eat and relax.' [56]

Since these words were written, retailers in Asia – more and more, the world's centre for innovation – have moved in just the direction outlined. As one Singaporean media outlet puts it:

'Mall operators are making more space for restaurants, cafes and bars as well as entertainment and services-oriented businesses, such as education, beauty and wellness, as these remain insulated from the online onslaught.' [57]

The approach put forward here can certainly be high-tech: there remains much to be done, for instance, in retail payment systems, which, though they speed exit from a shop by just a few seconds, make a big difference to queues and therefore to shoppers. However the turn to in-the-flesh services that the Internet makes necessary for retailers need not always be a high-tech one. To revive Moor Market, staff there put it to us the need to bring back a normal Post Office. They added that managers of that market should be full-time – and that they should 'get downstairs for a change'.

Recommendation: *Sheffield needs a two-pronged course of action on retailing. It should seek to sign up sparky, high-tech players such as Makerbot, which, for $35 in the US, offers children the chance to design and make their own toy helicopters within the space of three hours. At the same time, Sheffield should organise continuing education for retail managers, to ensure that levels of customer service are top-notch.*

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55 Jonathan Owen, 'Clone towns: British towns in danger of becoming identical and soulless', *The Independent*, 25 March 2014, on www.independent.co.uk/news/uk/home-news/clone-towns-british-towns-in-danger-of-becoming-identical-and-soulless-9214986.html
56 Woudhuysen, 'Time for some high-street innovation', June 2013, on www.woudhuysen.com/time-for-some-high-street-innovation/
57 Rumi Hardasmalani, 'Shopping malls revamp amid onslaught from online retailers', *Today* [Singapore], 15 August 2015, on www.todayonline.com/business/shopping-malls-revamp-amid-onslaught-online-retailers
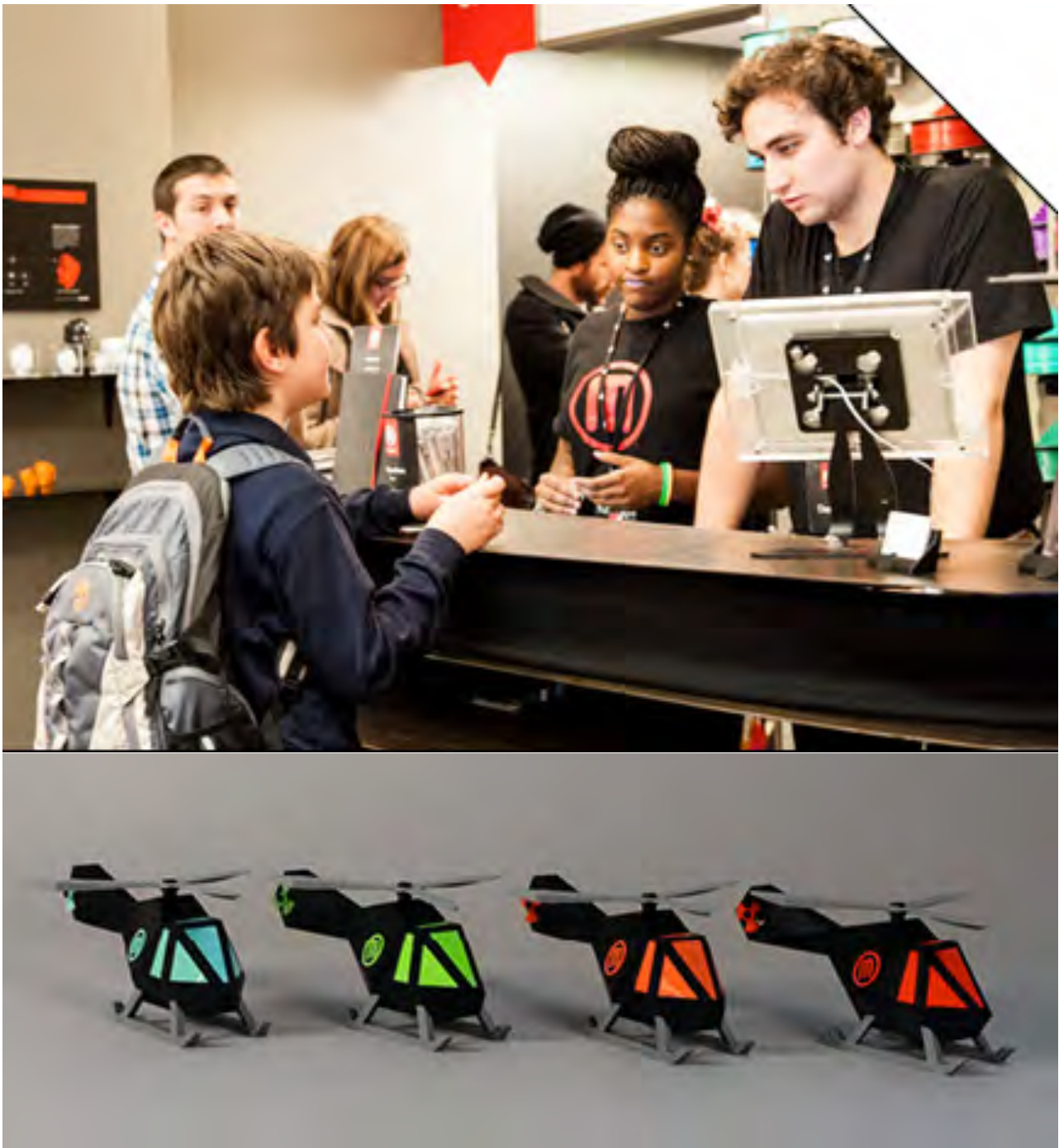
Taking 3D to the streets: a Makerbot store and its products in the US

Energy innovation: no silver bullet

Sheffield needs to take care with energy. Today's low oil prices will not be around forever. Indeed Fatih Birol, the executive director of the International Energy Agency, has issued a warning as follows:

'The security problems caused by ISIL and others are creating a major challenge for the new investments in the Middle East and if those investments are not made today we will not see that badly needed production growth around the 2020s.
'The appetite for investments in the Middle East is close to zero, mainly as a result of the unpredictability of the region.' [58]

What Birol is saying is that today's excessive supply of oil, which is mainly prompted by the US shale revolution, will be followed, perhaps within as short a period as 4-5 years, by a dearth of the stuff.

He may be wrong, but it would be foolish to ignore his advice.

Fossil fuels are here to stay

In the most recent months and years, economical solar power, once an endlessly receding mirage, has finally appeared to gain a certainly reality to it. Prices have fallen, to the degree that electricity generated by photovoltaic (PV) panels has begun to approach 'grid parity', or the price of electricity delivered by the regular grid. Solar generating capacity has also risen. In 2009, in a book titled *Energise*, the author and Joe Kaplinsky wrote:

'If the world has any luck between now and 2020, solar energy will be able to add scores of GW each year, making it into a substantial contributor to global energy.' [59]

In fact pretty much exactly this turn of events has transpired:

Increase in global solar generating capacity, per year, GW [60]

2005	1.4
2006	1.6
2007	2.6
2008	6.6
2009	8.3
2010	17.1
2011	30.0
2012	30.3
2013	38.6
2014	40.3

Now, what has brought about these advances? We can distinguish four influencing factors: (1) the efficiency of PV panels, (2) China's economies of scale, and its subsidies for scale production, (3) the cost of PV panel installation and maintenance (4) finance for PV manufacturers, and for families that install PV.

While the efficiency of solar panels has improved, improvements there have by no means matched the effect of what China has done. Low interest rates have also helped manufacturers and households that install. Though we will come back to this shortly, for the moment at least there has been no major breakthrough in the working efficiency of PV panels – though if and when that happens, the proportion of operating costs taken by installation and maintenance will rise. Gordon Moore's famous law applies to microelectronics; but despite the increasing fusion between Silicon Valley IT firms and PV manufacturers, no commensurate law has emerged in solar efficiencies.

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58 Quoted in *Hurriyet Daily News* [Turkey], 17 February 2015, on http://www.hurriyetdailynews.com/ieas-birol-says-middle-east-militancy-poses-major-challenge-for-oil.aspx?pageID=238&nid=78469
59 James Woudhuysen and Joe Kaplinsky, *Energise: a future for energy innovation*, Beautiful Books, 2009.
60 This passage owes much to Joe Kaplinsky. For source data on global solar capacity, go to http://www.bp.com/content/dam/bp/pdf/Energy-economics/statistical-review-2015/bp-statistical-review-of-world-energy-2015-renewables-section.pdf

Efficiencies in wind, which today produces five times the electricity, worldwide, that solar does, follow a similar pattern. There are some possibilities, at last, around the storage of wind energy; but in the round, all of these trends underline one thing – fossil fuels are here to stay.

Even with the great opportunities offered in the recycling of carbon from fossil fuels – what we have termed, elsewhere, as the development of a New Carbon Infrastructure [61] – this conclusion might appear overly pessimistic. Yet the facts reinforce it.

People continually underestimate how much energy the world is using and how it continues to grow. As in previous centuries, a serious transition to a different kind of energy world will take a serious number of decades. [62] If, by 2050, solar power is to take the 25 per cent of global capacity (not capacity in and around Sheffield, which is obviously cloudier than more obliging candidates for solar, such as the Sahara) to which *Energise* looked forward, then solar power's current rate of growth will have to be maintained for the next 35 years.

Recommendation: *though saying so may prove unpopular in certain quarters, Sheffield needs to be very clear that there will be little substitute for gas-fired electricity generation for a long time to come. Barring a major breakthrough in electric batteries, the internal combustion engine will also remain the dominant means of transport in Britain for a long time. Nor can the Sheffield look forward to improvements in energy efficiency as a means of lowering demand for energy, useful though these are. If Sheffield is to play a full part in UK economic growth, it can only expect increases, not decreases in demand for energy. [63] Therefore Sheffield needs to plan and lobby for energy supply to come from a variety of sources, including very prominently gas – as well as shale gas and shale oil. Also, gas is indispensable not just for central heating, but for the heat used by many of the industrial processes that surround the city*

Moving Britain UP by leadership in Combined Heat and Power

One of the many 'bullets' that Sheffield will need in its energy ammunition is high-efficiency Combined Heat and Power (CHP). And here Sheffield has a real lead. Established in 1988 and run under contract by Veolia Environmental Services, the city's district heating network, fuelled by residual waste, is the largest in the UK, powering City Hall, the Lyceum Theatre, the two universities, nearly 3000 flats and other buildings as well. As a result, Sheffield benefits from 60 MWe of thermal energy and up to 19 MWe of the electrical sort, and puts less than 15 per cent of its waste in landfill – the second lowest level in the UK. [64]

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61 Woudhuysen and Kaplinsky, op cit.

62 Daniel Yergin, 'The power revolutions', *The Wall Street Journal*, 21 August 2015, on www.wsj.com/articles/the-power-revolutions-1440172598

63 For the argument, see Woudhuysen, 'Innovation in energy: expressions of a crisis, and some ways forward', *Energy & Environment*, Vol 23, Issue 6-7, October 2012, on http://www.woudhuysen.com/wp-content/uploads/2015/01/Innovation-in-Energy-2012.pdf

64 'CHP with district heating', The Association for Decentralised Energy, on http://www.theade.co.uk/chp-with-district-heating_187.html

Sheffield's pipes for district heating extend over 40km

On top of Sheffield's prowess in district heating, the Holbrook area of the city won, this summer, £30m of investment for a CHP plant. [65]

These developments are a great start, but once more the city could fly still higher. How many people outside Sheffield know of its achievements in district heating? Moreover: while the Holbrook plant will generate a creditable but very modest 6.5MW, it has subsequently been announced that Cramlington, Northumberland, will see £138m spent on a 27.8MW CHP plant. [66]

We are not making a 'keeping up with the Joneses' point here. Rather, the need is to move toward a citywide, gas-fired strategy in CHP, so as to reap economies of scale. CHP as a form of 'microgeneration' among individual households – touted as 'decentralised' energy – cannot compete with this.

Recommendation: *Sheffield should commission a study into how to extend the city's notable gains in CHP as far as they possibly can be extended*

Moving Britain UP by leadership in high-efficiency solar power

For the avoidance of doubt, we are fully in favour of major investments in R&D around PV panels. And here once again the news for Sheffield is good. The chart below conveys some of the difficulty, over the years, in upping PV efficiencies in laboratories, let alone the everyday world: [67]
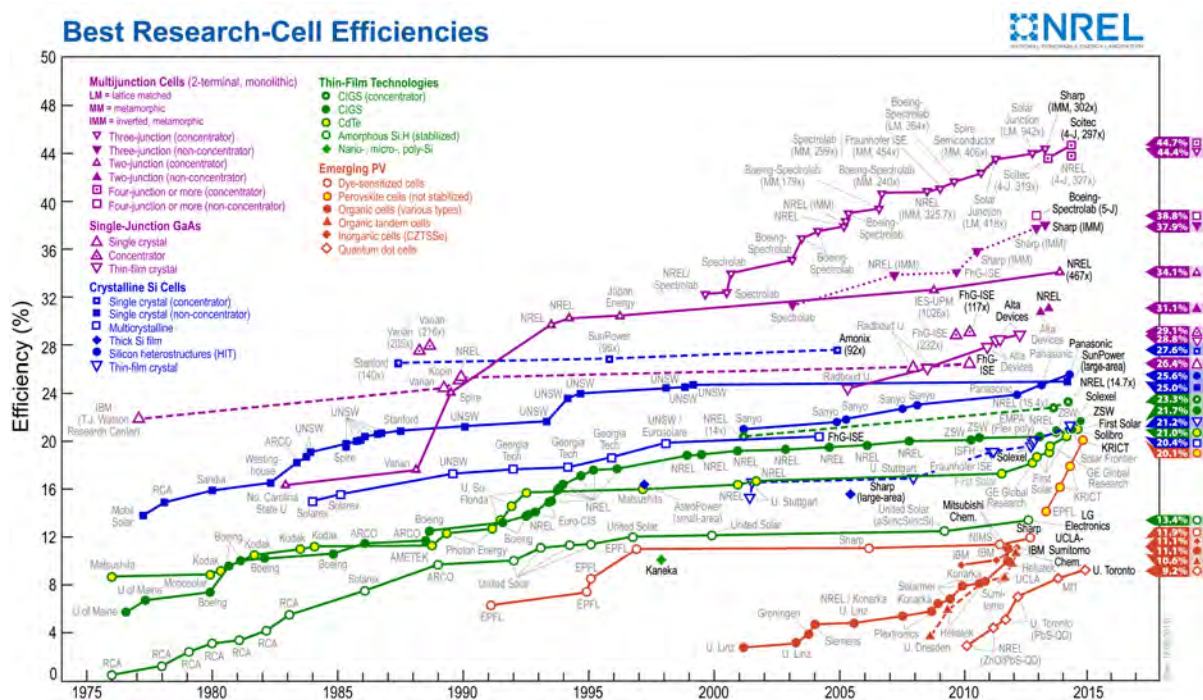
Close inspection of the right hand side of this chart near but not at the bottom, however, reveals a very fast UPward trajectory for perovskites, which are marked as orange circles filled with yellow. At present, perovskites are not stable enough in air to be used commercially. Yet it so happens that UoS is already very active around perovskites. [68]

Recommendation: *Sheffield should work with UoS and SHU to publicise and get investment for the commercialisation and exporting of solar PV panels based on perovskites.*

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65 Priyanka Shrestha, 'Sheffield CHP project bags £29.6m', Energy Live News, 17 July 2015, on www.energylivenews.com/2015/07/17/sheffield-chp-project-bags-29-6m/

66 Jacqueline Echevarria, £138m CHP plant to be built in Northumberland, Energy Live News, 21 September 2015, on www.energylivenews.com/2015/09/21/138m-chp-plant-to-be-built-in-northumberland/

67 Chart available on http://www.nrel.gov/ncpv/images/efficiency_chart.jpg

68 'Spray-on solar power for the masses', on www.sheffield.ac.uk/ourplan/guiding-principles/case-studies-archive/spray-on-solar-power-cells-perovskite-1.468540

IT: some sober perspectives

We have already drawn attention to the difference IT could make to the productivity of Sheffield. Yet it should also be noted that all the IT installed in Britain over the past 30 years has not delivered the efficiencies we might have expected. As the Nobel prizewinning economist Robert Solow famously remarked back in 1987, 'you can see the computer age everywhere but in the productivity statistics'.

IT has to be used right, as we have already observed; and first of all, it has to work. The perspectives given below, which are admittedly very brief compared with the enormous literature on IT, are ones that fully encourage the application of IT. However, they are drawn up in a spirit of sobriety, not that of the idle boosterism that so often characterises commentary on IT.

Making sure IT actually works

It's essential that IT in and around Sheffield actually works. That might seem a trite point; but nothing can be more frustrating than to encounter promises of digital cutting-edge digital technology, only to meet with the reality of poor interfaces, incompatible bits of hardware and software, and sluggish performance.

Non-functioning telephone box, Sheffield city centre

We will not here enter what has become a very heated debate about broadband in Britain, and BT's performance in it. But we do note that Virgin Media is to invest £25m in upgrading 50,000 homes and businesses in Nottingham to 152MB/s. If those South Korean-style speeds actually happen, they will be an example that Sheffield should follow.

Broadband, however, isn't everything. As Accenture and Arup argued, of cities, four years ago:

'It will be just as important to have a Chief Information Officer or policy for including small businesses (SMEs) in their procurement process as it is to have ubiquitous broadband.' [69]

Recommendation: *Sheffield must strain every sinew to achieve a quantum leap in broadband performance. Free, industrial-strength Wifi must work not just at the station, but also throughout the city centre. The mobile networks must be prevailed upon to end 'notspots' – fast. Industrial-strength fibre to business and homes must be universalized as fast as possible. A campaign of naming and shaming should not be excluded. Apart from these prosaic but vital changes, Sheffield should work with local experts to ensure that attacks on cybersecurity are anticipated and warded off. Indeed, the city should try to gain a reputation for steely robustness in the face of cyberattacks. This is but one reason why there is a case for a Chief Information Officer for Sheffield city centre*

IT in difficult situations – to show how it might help Sheffield more broadly

In the Introduction to this report, a polemic was made against the low expectations frequently bound up in the concept of urban 'resilience'. That, however, does not mean taking an insouciant attitude toward difficulties that Sheffield might encounter – it is just that precaution should *not* be the basis for all urban policy.

To suggest, in a succinct manner, some of the ways in which Sheffield could benefit from IT, we have chosen simply to highlight the difference it could make on those thankfully rare occasions when limited disasters may strike. On those occasions, as on others, IT is no panacea. However, the selective, sober deployment of IT in difficult situations can highlight the power it has to do good.

In note form, our proposals – which not quite recommendations, but which we hope are food for thought – are based on a speech made to the International Red Cross in January 2015. To repeat, they are meant as vivid hints of *the contributions IT could make to normal life in Sheffield*; they are *not* meant to reinforce alarmism about the city's fate, which can in no way be compared with what can typically afflict developing countries equipped with less powerful infrastructure.

Wearable media

Use in search and rescue, and as a means of reconnecting families. For Emergency Warning Systems, maps, evacuation and navigability information, personal phone numbers, and the detection of vital signs of ill-health.

Going aloft with drones

Help in the building of temporary communications networks, and to deliver small but critical relief items such as medicines or food. Also, in reconnaissance: of water levels and boundaries, and even in the surveillance of large-scale interiors.

Robots

In emergency healthcare, operated on site or remotely. To be ready to go boring, tunneling or underwater, should buildings become unsafe.

Home sensors

Not just for fire, but also (as mentioned already) for gas leaks, and to monitor air and water quality, as well as mould, and cracks caused by nearby excavation or construction.

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69 Accenture, Arup and others, *Information marketplaces: the new economics of cities*, 2011, on http://www.arup.com/~/media/Files/PDF/Publications/Research_and_whitepapers/information_marketplaces_29_11_11_v1.ashx

Transport IT

To coordinate evacuations, and especially ambulances. To equip road vehicles and drones with collision avoidance .

Biometric kiosks

Restore lost documentation to prove identity, access assistance and reconnect families.

Augmented reality

Crowdsource and visualise community resources – or for search and rescue. Link to wearables.

3D Printing

To make building components on site, as well as complex medical and prosthetic devices. [70]

Summing up on IT

Like every other city in Britain, Sheffield could do much with IT – provided only that it takes a balanced attitude to it. Are the correlations of Big Data any substitute for the insights into causation that human beings can make? Is the Internet of Things much beyond its infancy? [71] Are we really on the threshold of real artificial *intelligence*, or of driverless cars?

The precondition for Sheffield's advance in IT is to be cautious, for once, about rushing to answer Yes to these questions. Just like doom mongering, euphoria about IT does neither it nor human beings any favours.

Recommendation: *As it happens, Sheffield has abundant human resources in the field of IT.* [72] *The need is for the city fully to identify where those resources are, to make the best of them, and to communicate their merits fully to inward investors*

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70 For a major recent report on 3D printing, see AT Kearney, *3D printing: a manufacturing revolution*, https://www.atkearney.com/documents/10192/5992684/3D+Printing+A+Manufacturi+Revolution.pdf/bf8f5c00-69c4-4909-858a-423e3b94bba3

71 For the government view of the IoT, see *The Internet of Things: making the most of the Second Digital Revolution: a report by the UK Government Chief Scientific Adviser*, 2014, on https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/409774/14-1230-internet-of-things-review.pdf

72 For example, Professor Tony Prescott, the director of UoS's Sheffield Centre for Robotics, and an expert on the use of robots to care of older people and the sick.

Events and the nighttime economy

Events

Sheffield is known for its events. Its reputation provides a great platform on which to build. Events depend, for their success, on many of the factors we have discussed above: on transport, signage, childcare, temporary shops, energy, IT, technologies which can help deal with emergencies. Get these things right, and events will be free to concentrate on content, and free, also, to get more sponsors and make a higher margin than they do at the moment.

There are also opportunities to link performing arts and sport to other features of the city. For example, Sheffield's Pond's Ford swimming pool has a Speedo body-mapping kiosk in its foyer, to help swimmers wear the right swimming clothes.

Could go to great lengths: body-mapping kiosk at Pond's Ford

Yet in wide swathes of the IT world, particularly in the US, body-mapping has become a vital tool in the training of robots. Are there not opportunities for friendly and productive relations to be established here between theatre, sport, swimwear retailers such as Speedo and roboticists?

We have already mentioned the need to provide childcare and child education in the outdoors. There is a wider opening for *vibrant forms of adult play* – for example, informal outdoor ballroom dancing for older people, which is a common practice in China. Again, beginning with SHU's Dr Tom Allen, a lecturer in engineering design who specialises in the research, design and development of sports equipment for tennis, football and golf, there would seem to lie boundless possibilities for Sheffield to consolidate its reputation in *sporting events* – no doubt including climbing – and *engineering*.

Of special relevance to events are events around food. The popularity of *The great British bake-off* attests to this; but the surfeit of cookery programmes on television perhaps indicates that live events, and the buying and eating of great food in the open air, have much to contribute to urban regeneration. In New York City, after all, covered spaces for food around intersecting streets have managed to turned around whole neighbourhoods.

Recommendation: *Sheffield should establish a special task force to see what connections an be made with the city's intellectual and practical resources to raise the quality of the Sheffield's events still higher than it is already*

The night-time economy

Many of Sheffield's events and much of Britain's national economy revolve around nighttime activities. Yet recent years have seen more and more bureaucratic regulation of pubs, clubs and nighttime venues, threatening not just event-goers' enjoyment, but also the incomes of leisure providers. [73]

Recommendation: *Sheffield should work to bring relevant parties together to liberalise the environment for night-time events.*

Given our earlier remarks on visitor orientation in Sheffield, there ought to be particular interest in how China uses buildings themselves as icons that assist direction and connote modernity. In Pudong, Shanghai's financial district, the vertical corners of buildings already boast blue lights that run up and down 70 stories or more, making edifices fairly throb with energy at night. Already, too, one whole side of Citi's skyscraper plays videoclips over the Huangpu River:

Recommendation: *To build its nighttime economy and make people's eyes ascend to higher things, Sheffield should explore opportunities with neon and the very latest outdoor displays*

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73 Frank Furedi, *Forward into the night*, Night Time Industries Association, 2015, on
http://www.ntia.co.uk/wp-content/uploads/2015/06/Forward-into-the-Night-Report.pdf?567959&567959

Conclusion: happiness, but happiness as a by-product of overarching ambition

Looking back over this report, certain themes emerge. The first and most obvious is that of Sheffield city centre *setting sights high and reaching for the sky.*

The north of England has been given the hopeful sobriquet of 'powerhouse'. It seems to us that this is too vague. The north may have some difficulty imitating the brute economic strength of London. But in striving for the Moon – in engaging what Google and other leaders of American business call 'moonshots for management' – the north can bring a can-do attitude and a refined sensibility to the whole of Britain. In this scheme, Sheffield should try to act as the tip of the rocket, the nerve-centre and nosecone of the north.

A second leitmotif of this report is the need to elevate science and technology. It is striking that, today, the term 'technological fix' is rarely said without a note of derision. Technology, of course, cannot fix everything; it is human beings who make it, and it is the ingenuity of Sheffield that will get w can be got from it. Yet it is time that Sheffield stood out as the city in Britain most wholeheartedly committed to science, technology and engineering.

The final theme that comes out is how much Sheffield still keeps its very considerable talents under a bushel. The author has been struck by how little he knew of the city's universities, and how much, in reality, they have to offer. It's time Sheffield got on to a stairway and strutted its stuff more confidently.

If just a third of the 33 recommendations in this report were implemented, happiness would result. In modern society, happiness cannot be reached if it is striven for as a goal in itself. It will prosper as a by-product of doing things, of achievement, of progress. Making a fetish of happiness speaks of a profound unhappiness. [74]

When Sheffield thinks big and, through small beginnings, starts to reach upward in a big way, then more happiness will come to it in due course.

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[74] For a round-up of criticism of the literature of happiness, see Ashley Frawley, 'Happiness research: a review of critiques', Sociology Compass, Vol 9, Issue 1, January 2015, on
http://onlinelibrary.wiley.com/doi/10.1111/soc4.12236/full