Investigating the role of urban manufacturing
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THE MAGNETISM OF MANUFACTURING

Manufacturing is a one-of-a-kind sector. No other industry captures the public imagination quite like it. From cars to steel, pharmaceuticals to clothing, there is a certain allure about the making of tangible objects that is hard to resist. Evoking images of skilled workers and bustling production lines, few people would disagree that manufacturing has an inherent worth. Indeed, barely a week passes without another opinion piece extolling the virtues of modern manufacturing, and there are no shortage of books analysing its next trajectory. Among them are Industries of the Future (Ross), The New Industrial Revolution (Marsh), and Makers (Anderson).

The public enthusiasm for manufacturing has not been lost on politicians. In the US, President Trump’s ‘Make America Great Again’ campaign put manufacturing squarely at the heart of his vision for the country, winning him many supporters in the process. The recent decision to impose import tariffs on foreign steel shows his Administration is willing to protect American manufacturing almost at any cost. In the UK, meanwhile, Prime Minister May has thrown her weight behind a new ‘Industrial Strategy’, aimed at positioning the UK once again as a workshop of the world. At a supranational level, the European Commission has pledged to boost manufacturing to 20 percent of GDP by 2020, up from 15.1 percent in 2013.

Not everyone agrees that manufacturing deserves to be held aloft as a special sector. The economist John Kay describes the fascination with manufacturing as a kind of ‘fetishism’, writing that ‘for many people the role of manufacturing is an emotional, perhaps even a moral issue rather than an economic one’. According to Kay and other economists like him, the developed world has lost its edge in manufacturing but this is no bad thing. Columbia University Professor Jagdish Bhagwati argues that the success of sectors such as telecommunications and financial services are evidence that technology-driven growth can be realised without making things.

Yet these dissenting voices are more than drowned out by manufacturing’s vocal proponents. Among them is Cambridge University Professor Ha-Joon Chang, who argues that the state of a country’s manufacturing base is one of the most important factors in determining its prosperity. The chief reason is that productivity gains are more likely to be realised within manufacturing than the service sectors, and that these productivity leaps can spur wage growth across an economy. Others say a healthy manufacturing sector helps to balance economies, making them more resilient and less prone to economic crashes. A further case can be made for manufacturing’s contribution to trade and its potential to plug deficits in a country’s balance of payments.
A NEW DAWN FOR URBAN MAKERS

Manufacturing will always have a pride of place in people's minds. But what about a literal place in our neighbourhoods, towns and cities? Curiously, the debate about the future of manufacturing has rarely transcended to a more grounded conversation about its role in local economies. Until now, urban and manufacturing have been jarring concepts, one associated with the future and the other with the past. Yet cities need manufacturing more than is often recognised – for a range of jobs, for economic stability and resilience, and to sustain diversity. Equally, manufacturing needs cities – for easy access to markets, for large pools of talent, and for the cross-fertilisation of ideas.

It is concerning, then, that manufacturing has dwindled in Western cities. Beginning in the 1950s, a combination of forces served to push industry outside of urban enclaves, while those businesses that remained moved to the edge of town, to freeway junctions and cheaper wasteland. One cause was urban planning policy that sought to clamp down on noisy and polluting factories. Another was the rise of service sectors, particularly in the financial and technology industries, which began to compete for space alongside burgeoning populations of residents seeking affordable housing. By the 1980s, what industry had survived in cities was further rocked by the forces of globalisation and automation.

Today's urban manufacturing is of a qualitatively different kind to the one that preceded it. Whether it is Detroit or New York, London or Berlin, the composition of manufacturing may be different but the trajectory has been the same. Businesses have been clustered in industrial zones, often located out of sight from residents, and disconnected from the day-to-day bustle of cities. Functionally obsolete, intercity waterfronts, railway yards and warehouses now lie dormant or have changed function. Former factories have been converted into apartment blocks, while huge sites have been regenerated into new commercial districts, such as Canary Wharf in London and Kop van Zuid in Rotterdam.

The recent history of urban manufacturing has been one of neglect and decline. A paradox is that while the public, politicians and the media ache over the national fate of this industry, few seem to have noticed the struggling makers on their doorstep.

Yet the future does not have to be as bleak as the past. While forces combined in the 20th century to undermine the urban maker, trends in the 21st century may do the opposite. New technologies including additive manufacturing techniques will
allow for quieter production more suited to built-up environments. Circular economy ideals may encourage the making (and re-making) of goods closer to where they are consumed. While consumer trends like just-in-time production of clothing could bring manufacturing closer to home.

WHY IT ISN’T AS SIMPLE AS THE HEADLINES SUGGEST

The potential for manufacturing in cities becomes clearer with a more nuanced understanding of the sector and what it offers. This requires challenging common narratives which can polarise opinion of manufacturing.

The first being a narrative which says that manufacturing is in terminal decline. Stories of industrial decline have been repeated across many regions in Europe, from the closure of the steelworks of Sheffield in the UK to the car plants of Genk in Belgium. Whilst devastating for the communities involved, these reports can belie the true role of manufacturing in Europe and give the false appearance that the path for manufacturing trudges ever downwards.

In fact, Europe is a world leading manufacturing region. Seven of the top twenty countries by manufacturing output are within the EU (and Switzerland is an eighth), and the sector is an important driver of growth within EU economies generating over €1.7 billion of GVA in 2014. Its output made up 83 per cent of all EU exports in 2016 and these goods are traded with nations across the world. Whilst employment in the sector has declined in the EU, it is still significant and employed almost 30 million people in 2014. Declines in manufacturing employment are often a function of increased productivity within the sector, so changes to employment are but one part of the story. Manufacturing remains a vital part of the EU economy.

The second set of narratives to challenge are those which bemoan the loss of manufacturing and seek to return to a ‘golden age’. Manufacturing has a clear value yet it is important to separate out the realities of the industry today from the nostalgia for some of the impacts it once had, particularly the scale and type of employment. Some discussions about the role of manufacturing stir emotions which go beyond the loss of jobs into loss of identity. The complexity of the macro economic impact of manufacturing is combined here with the localised impact of the sector. Many communities across the continent have suffered from deindustrialisation, and these real concerns need to be addressed. But manufacturing should be recognised for what it is today, and for its future potential, rather than trying to recapture its past.

Just as taking a nostalgic view of manufacturing can be problematic, so too can the portrayal of modern urban manufacturing
Gillette factory - a building between uses that seems to have been abandoned. Fast solutions are often chosen. © Chris Sampson (Creative Commons)
and ‘making’ as being fashionable. There has been a surge of interest in craft production of late, from ceramics to real ale. Perhaps in part a response to the ubiquity of mass produced goods and an increasingly digital world, there is an appeal in the slow and handmade. Makerspaces and open access workshops have also sprung up across Europe making accessible new technology, such as 3D printing as well as traditional activities, such as upholstery.

This movement and these spaces have attracted much attention from policy makers and commentators, epitomised in 2014 when President Obama held a Maker Faire at the White House. This rising trend embodies a spirit of innovation and entrepreneurialism which captures the imagination, and says much about people’s desire to reconnect with the products around them. But there are risks in its portrayal as the face of new urban manufacturing. Firstly, this type of manufacturing forms only a segment of the sector as a whole. There are plenty of activities ongoing which do not hold the allure of either new technology or cutting edge design and it is important that these are not neglected or seen as less desirable. Secondly, it is important that this manufacturing and its outputs are not seen as the preserve of particular groups of people or particular districts. Finally, there is a danger that the in vogue manufacturers become victims of their own success. Examples of this can be seen when the hype which they create is used by others to brand or regenerate an area which then goes on to become unaffordable for the makers themselves. It is important that the spectrum of manufacturing comes into discussions about its future role in European cities.

The story of manufacturing is more complicated than these narratives suggest. Their danger is in obscuring or polarising productive debate about the value of urban manufacturing.

WHY MANUFACTURING IS IMPORTANT (TO THE BIGGER ECONOMY)

Whilst economists don’t always agree about the degree to which manufacturing is important for an economy, there are a number of ways in which it adds value to both countries and cities.

Manufacturing generally produces goods which are tradeable and can be exported to other regions of the same country or across borders. Services, on the other hand, are more likely to be offered and consumed locally, for example restaurant meals or haircuts. Manufacturing therefore plays an important role in smoothing out a country’s balance of payments. One reason for the superior tradability of goods over services is the location of consumption. For personal services such as social care and hair-
dressing, and physical services such as plumbing or decorating, consumption and production are necessarily in the same location. Even where communications technology has allowed some face to face services to be imported from overseas, the lack of cultural affinity and local knowledge has lowered quality of service. Following a wave of offshoring call centres to the Indian sub-continent in the 2000’s, many UK service firms have since relocated their call centres to the UK as a result of customer complaints\textsuperscript{12}.

Strong productivity within a manufacturing sector can help drive further productivity and wage rises across an economy, even where other sectors have not experienced equivalent growth in productivity. This is known as the Baumol effect and is created in part because wages have to rise across the economy to prevent workers leaving their jobs for the lead sectors, and partly because workers in the lead sectors have greater spending power to channel elsewhere. It explains why the pay of teachers and hairdressers has risen throughout the post-war period, despite these professions teaching the same number of students or providing the same number of haircuts as before. Manufacturing is a key sector for capitalising on productivity driven by technological developments. From the electrification of factories to the development of big data analytics, the sector can often derive benefit from these developments more easily than other sectors like services. Growth in manufacturing productivity from emerging technologies will continue to benefit economies more widely.

As manufacturing has become a globalised industry over the last half century, production has often been separated from other parts of the value chain, such as research and development. Developed economies have tended to retain elements of higher value, such as design, and the lower value production activities have moved to parts of the world with lower wage costs, such as China. The British technology company Dyson, for example, design and develop products in the UK and manufacture them in Malaysia\textsuperscript{13}. However, as the importance of knowledge in value creation becomes more apparent there are those who contend that manufacturing production needs to be collocated with development in order for successful and ongoing innovation. Shih and Pisano\textsuperscript{14} argue that dividing production from the rest of the value chain risks missing the transfer of important, tacit knowledge between business divisions and damages innovation prospects.

They explain that this is particularly true of activities in which process is embedded in product innovation, such as high end garment making or advanced materials production. It is also the case for process-driven activities, such as nanotechnology, where the process is new or rapidly evolving. Manufacturing has
an important role to play in innovation and colocation of production with the rest of the value chain can drive competitive advantage.

This begs the question of how much of a manufacturing base is required to keep technical skills and knowledge of manufacturing processes alive. Shih and Pisano refer to this collective foundational knowledge as the ‘industrial commons’ and argue that these supporting skills should be cultivated in order for an area to compete through innovation. The advanced manufacturing campus in Sheffield is an example where a number of actors, from Boeing to McLaren, have clustered to form a high-end manufacturing eco-system that is supported by skills training and research and development.

**FACING THE FUTURE**

Technological developments have shaped urban manufacturing, and will continue to do so. A radical shift in the way goods are produced and consumed is on the horizon, driven by emerging technologies including 3D printing, the internet of things, cloud computing, and blockchain. This shift has been coined ‘Industry 4.0’ in recognition of its comparable significance to the three previous industrial revolutions: the first was driven by steam power which moved labour from the sweat of people and animals to the use of fossil fuel powered machinery; the second took place at the end of the 19th Century and moved to using electricity in the mass production of consumer goods; and the third revolution was in the post-war period, as computing technology enabled global communications and connectivity.

These technologies are opening up new possibilities for manufacturing. Whereas previous revolutions centralised and standardised production, this one looks set to redistribute it and allow for ‘mass customisation’ - individually tailoring items at scale. Businesses have already forayed into this territory, such as Nike with their customisable NIKEiD service. It is anticipated that this shift will also enable increased local production, as technologies like 3D printing make small scale making more affordable. These changes offer great opportunities for manufacturing within cities, which possess large market opportunities but with limited space for industry.

Alongside technological change comes the serious imperative for society to become more environmentally sustainable. The booming material culture enabled by the industrial revolution and subsequent developments in manufacturing brought with it significant environmental damage. Today the challenge is to produce and use goods in ways which do not create harm for current or future generations. This will require dramatic shifts
in manufacturing and in other areas of the value chain, especially waste and resource management. Manufacturing in cities provides an opportunity to reduce the environmental impact from goods travelling long distances, and are a rich source of valuable secondary materials which could be used in production.

These changes in manufacturing offer opportunity for social changes too. Distributed production has the potential for local ownership and involvement, something which large scale centralised production rarely does. Urban residents will have the ability to ‘make’ their city in a way which has not been possible before.

Manufacturing in European cities finds itself between two storms: the significant impacts of globalisation and the changes that deindustrialisation brought have been felt, but the full impact of the next wave of technological development is yet to be realised. Now is the time to take stock of the current state of urban manufacturing and to form a vision for its future, one which will enable Europe’s cities to harness and capitalise on the next wave of disruption.
Endnotes

11. See 8
15. Pisano and Shih, op. cit.