Reimagining urban innovation

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In urban governance networks there has been a clarion call for rapid transitions to low-carbon systems which underpin everyday life in cities by meeting demand for transport, energy and shelter. Such transitions are thought to arise from urban innovation projects which are often deliberately seeded in urban test beds (Evans, Karvonen & Raven, 2016). Urban innovation projects typically aim to foster the development of sustainable technologies and associated management approaches. These may help address specific sustainability challenges in the cities in which the projects are situated but also through ‘upscaling’ help resolve sustainability challenges in other cities (Wathne & Haarstad, 2020). This approach to transition is inspired by industrial innovation, where an idea is developed and diffused throughout a market to gain a return on investment.

Test beds and associated sustainable innovation projects have been established in cities across the globe (Bulkeley et al., 2019). Yet how such projects, which are often initiated at speed, proceed in practice and help achieve real progress towards sustainability remains unclear. In this chapter, I therefore examine sustainable transport innovation projects deliberately seeded in ‘test bed’ Milton Keynes. I focus on ‘test bed’ Milton Keynes (MK) for two reasons. First, in contrast to many cities which have developed over long periods and often in episodic fashion, Milton Keynes has developed rapidly over the last 50 years and thus in a singular, relatively short slice of time. Today MK is one of the UK’s fastest-growing urban areas. Consequently, the need for speed and to accommodate a rapidly expanding population is deeply embedded in its urban fabric, technologies and governance networks.

Second, since its inception Milton Keynes has been a ‘test bed’ for urban innovations (Valdez, Cook & Potter, 2018). There is a rich,
well-documented history of technology-focused projects in MK which aim to render transport sustainable and carbon-neutral through electrification. Such approaches are emblematic of many sustainable transport innovations in cities. Thus the focus on MK provides an opportunity to reimagine urban innovation in general, so it better recognises diversity and a multiplicity of transition pathways (i.e. not just technology-focused ones) to more sustainable urban transport futures.

**Sustainable transport innovation in ‘test bed’ Milton Keynes**

Founded in 1967 as part of the new towns project to deflect growth away from cities, including most notably London, Milton Keynes is now one of the UK’s fastest-growing urban area with a population of 250,000 expected to rise to 300,000 in 2050. Milton Keynes stands a little apart from many other UK towns and cities because it is a fusion of English and American planning ideas, with a masterplan informed by the sensibility of the long-standing English Garden City tradition of town planning influenced by Ebenezer Howard but also by the ideas of the American sociologist Melvin Webber, who took Los Angeles and other fast-growth areas in California as his model for the interpretation of the changing nature of towns and cities in relation to technical advances (Bendixson & Platt, 1992).

The framework of the city is based upon an American-style grid of fast roads designed to facilitate fluid vehicular transport unrestricted by neighbourhoods (Figure 20.1). It is a low-density city with land uses delineated in the spaces between the grid roads for housing, offices, light industry and distribution, retail and leisure. Indeed, there is a large shopping centre, significant central business district with offices for service industries, theatre and restaurants located in the city centre. Weather is even made in the centre of the city, in a ‘snowdome’ which is a covered artificial ski slope.

Throughout its 50-year history local actors have systematically sought to position MK as a ‘test bed’ for innovations in sustainable living: business and governmental actors can test new ideas in place in MK, setting standards for future adoption of technologies around the UK (PRP Architects, 2010). Various innovations have been trialled and developed through these test bed arrangements. For example, the Californian-style grid system upon which the city is based is an experiment in transport and choice, solar-powered homes have been trialled in the city and set
new UK energy in buildings standards, and more recently multiple trials have been seeded to develop the city’s electric vehicle infrastructure.

There is little doubt that the grid road system enables rapid motorised transport across the city. Indeed, one can travel by car across the city at speeds in excess of 100 kilometres per hour. However, although the city’s urban fabric has enabled rapid transport by car, it has simultaneously almost created an in-built reliance upon this technology for personal transport. Indeed, it is difficult to get around the city without a car. There is a system of Redways for cycles and pedestrians, but this was designed for leisure purposes and Redway routes tend to meander between various parts of the city and do not really provide an effective means of commuting. Hence the dominant ‘script’ built into the city is one of motorised vehicle use, principally the car for personalised transport. In this way, MK’s urban form allows almost congestion-free car transport but the city is simultaneously reliant upon it to function.

MK has received funding from various sources, such as UK government departments and agencies and the private sector, for trials/demonstrator projects focused on the development of electric vehicle infrastructure (Valdez, Potter & Cook, 2019). Trials have mostly followed a twin-tracked approach that focuses on 1) making electricity networks ‘smart’ so they can accommodate supply from intermittent renewables and demands from electric vehicles and 2) building a concomitant

**Figure 20.1** Aerial View of Milton Keynes clearly showing grid system. Photo: Destination Milton Keynes.
electric vehicle (EV) charging infrastructure to stimulate EV adoption and accommodate their use in the city.

Outside the major UK cities such as London, Birmingham and Manchester, MK has the most extensive EV charging infrastructure (Intelligent Transport, 2020). Chargers are situated in neighborhoods, as well as in workplaces, retail outlets and leisure facilities throughout the city. There is even a network of superfast charger hubs located at main transport intersections in the city. However, efforts to decarbonise transport in MK have not only focused on the electrification of existing infrastructure and vehicular technologies. For example, autonomous vehicles such as the MK Auto Drive pods have been trialled in the city to facilitate movement between MK's railway station and city centre. Starship delivery robots have also been trialled and are now well established in various neighborhoods in the city (Figure 20.2).

Figure 20.2 Starship delivery robot on a MK Redway. Photo: Miguel Valdez.
These and other interventions have attracted considerable investment into the city, including £19.5m for the UK Autodrive project, £1.2m for an electric bus programme, £9m for the Go Ultra Low programme, £2.5m for the Plugged-in Places programme supporting increased adoption of electric vehicles and £16m for the MK:Smart programme. As a result of this trajectory the Connected Places Catapult (2020) places MK in the top 20 per cent of potential growth centres on account of the strength of its infrastructure and the patents and trademarks resulting from its innovation processes, while the Centre for Cities ranks MK as second only to London for the most dynamic environment on the basis of a range of indicators, from business start-up rates and productivity through to skills levels and employment rates (Connected Places Catapult, 2020).

Given the strong history of MK in technological innovation, actors with national remits such as the Connected Places Catapult are now located there. Such organisations make their presence felt in MK and exert some degree of power over it. Given the UK’s climate change policy focus on the development and export of urban innovations, it is hardly surprising that MK policymakers narrate the city as a ‘test bed’ for smart technological innovations and attract public sector funding for such projects. At the same time, MK-based actors reach out and make their presence felt elsewhere as the ‘test bed MK’ approach is framed as part of a wide-ranging search for new forms of sustainable urban growth (Milton Keynes Council, 2020).

Thus MK is a nodal force in the circulation of ideas and technologies for sustainable living through the UK. For example, a coalition of public sector partners developed a system of electric bus and induction charging plates in the city (Miles & Potter, 2014). The trial was positioned on a bus route in MK which has similar characteristics to those in other cities, thus allowing the development of transferable insights and technologies and ultimately the potential of standardisation and upscaling (Figure 20.3).

Is this progress?

Today the history of Milton Keynes is often framed by local government, business and planners as a search for innovation. MK has been positioned as a place where coalitions of private and public sectors can demonstrate, trial and learn about new sustainable technologies which may be subsequently upscaled to decarbonise urban environments (Milton Keynes Council, 2020). And for many commentators, MK is a
place where progress to reduce carbon emissions has been made. But I wonder if these innovation projects seeded in test bed MK represent progress. Do they reassure populations but further embed the technologies of automobility, which ultimately have created much of the climate change problem in the first place? Are they ‘quick tech fixes’ which match infrastructures and urban fabric in general but draw policymakers’ gaze
away from innovations, which may be needed to achieve the deep cuts in carbon emissions climate change will require?

Perhaps because of MK’s Californian-style grid system, with its segregation of uses – housing, work, shopping and leisure – which almost presupposes automobility, it is hardly surprising that it has one of the best EV infrastructures. For governance actors in MK who work in sustainable transport, the city’s urban fabric strongly frames the search for sustainable transport solutions. Such framings may be so powerful that they do not even need to be articulated but are simply routinely enacted in governance networks and reinforced by national institutions located in MK and UK government funding schemes which it has so effectively drawn upon. Consequently, transport innovations such as e-bike and e-scooter hire schemes that fall outside this development trajectory seem to be somewhat marginal concerns in the city.

Such framings may also tend to favour readily available, technologically focused transport ‘solutions’. In this way, the proposition that MK’s urban fabric is founded on a grid road system which may be rendered sustainable and carbon-neutral through electrification seems to be central to many innovation projects in the city. Authority for such claims often comes from exclusive technical languages and expertise which assert various forms of causality and credibility. Problems such as how to move towards lower-carbon transport in MK are cut into small discrete pieces that warrant ready-made solutions such as induction charging technologies, which are in turn owned and/or controlled by specialist organisations and individuals, such as entrepreneurs and engineers.

Crucially, in these instances alternative problem framings and solutions may be sidelined. The example of Milton Keynes illustrates a particular imaginary of innovation: technology is required to augment existing infrastructures in pursuit of improved resource use and ultimately, urban sustainability. In MK it is a ‘quick tech fix’ forming the next step in ‘test bed’ MK developments. Although actors involved in city governance networks are far from blind to other forms of innovation or social practices, technological innovation is the main focus of their work, and in a world of finite resources other pathways to urban sustainability may be overlooked and may not receive the attention they deserve.

Further, many of the innovation projects that can be found in MK are designed and implemented with upscaling in mind. The electric bus infrastructure based on induction charging plates is a good case in point. Here upscaling was not only an analytical category but formed part of an urban entrepreneurial practice to secure funding and potentially gain further returns from investment (van Winden & van den Buuse, 2017).
In this way, the potential of scalability is founded on the assumption that the efficacy of scalable solutions to ‘grand societal challenges’ such as the need to decarbonise systems in response to climate change can be established locally and, once proven effective, rolled out to other places – addressing essentially the same problem through more of the same. Resultant blueprints and associated best practice effectively condone not only certain solutions but also problems associated with them. Thus upscaling holds the potential to ignore the particular problems and challenges experienced in places and in turn to further alienate local populations from sustainability problems which they must ultimately own.

Finally, there is little doubt that there is much well-intentioned action in MK to make it more sustainable and the urgent calls for action on climate change have been taken seriously and multiple projects established in quick succession. However, one can gain the impression that securing government funding to set up ‘test bed’ innovation projects which also hold potential for upscaling may have become an end goal in itself, resulting in insufficient care for innovation projects over time. For example, a number of innovation projects have simply fallen apart when public funding is withdrawn, leaving little trace in the city.

Such high failure rates are consistent with the logic of technological innovation and suggest that a ‘management of technological innovation’ often found in firms has inflected urban governance (Lovell, 2019; Temenos & Lauermann, 2020). Within MK the net impact of innovation may simply be to create a city of perpetual ‘fast experimental projects’ (Karvonen, 2018) from which technologies and ways of working may be abstracted and used to inform developments elsewhere. There may be little lasting change in MK, meaning it only bears the cost of innovation and may not receive its benefits.

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Thus sustainable innovation projects seeded in cities to induce low-carbon transitions are not without challenges. Test beds can favour incumbent actors which use near-at-hand technologies to develop quick ‘tech fixes’ (Levidow & Raman, 2020), and the development of test beds and projects can be viewed as a policy goal in itself, resulting in a lack of care for projects, leading some cities to bear the costs of innovation. And more profoundly and worryingly, such projects hold potential to shift urban policymakers’ and managers’ gaze from radical innovations necessary to attain the deep structural changes needed to respond to climate change.
Thus an alternative approach to urban innovation is needed: one that acknowledges and even celebrates diversity of objects and rationalities and embraces the notion that there may be multiple transition pathways towards sustainability. In practice this means that rather than setting up technologically focused urban innovation projects which start to define a universal blueprint to resolve urban challenges such as sustainable transport, we should recognise that urban sustainability concerns alter over time and space and that consequently innovation must be recast as a more creative and pragmatic response (Cook, 2014). Seen this way, sustainable transport innovation does not result simply from, for example, optimising technological performance but from distinct perspectives, processes and practices rooted in differing situated accounts of the changing relationship between environments and societies.

Consequently, reviewing competing definitions and interpretations of sustainable transport is unlikely to yield simple solutions to what urban sustainability really means. Instead we need to collectively discover a convincing and workable toolbox of innovations, technological options and creative practices that engage productively with urban sustainability issues. The question is not whether any combination of these might provide a universal blueprint but more how they might contribute to meeting specific environmental challenges, in particular places. Below I begin to sketch out some general principles and priorities that might support ‘fluid transitions’ and provide a frame to generate diverse pathways to more sustainable transport.

First, we must acknowledge that the analytical and practical lens of sustainable urban innovation needs to broaden, to encompass not only near-at-hand technologies but also other novelties. For example, new e-bike and e-scooter services in cities may usefully focus innovation on a renewed approach to common pool resourcing and shared mobility practices (Sareen, Remme & Haarstad, 2021). And while we cannot go back in time, modes of transport such as walking may need to be reimagined and reinvigorated in cities.

Second, we must recognise that all activity is inevitably situated. Space is not simply a homogeneous container but variegated, with concepts such as sustainability falling unevenly (Castree, 2010). Practically, this means that in one place sustainable concerns may focus on flooding, in another extreme heat and in another emissions of pollutants to air. Here, wise governance practices are needed to identify when specific solutions should be developed to these place-based issues and when technologies and management approaches could be usefully ‘imported’ from elsewhere.
Third, since urban innovation is inevitably situated (Bouzarovski & Haarstad, 2019), it must respond to the sustainability concerns arising from felt needs of urban populations. Here innovators should not occupy exclusive closed spaces but porous ones which are inclusive and provide opportunities for shared endeavour. Participatory approaches where many voices are heard and make a difference are therefore needed. The exclusive spaces created by elite, technologically focused actor networks may be far from fit for purpose as they are a method of doing things to urban populations. Debates about urban innovations and the problems they should resolve need to proceed with populations and be accepted and owned by them. Not only will this promote legitimacy of interventions but it will also increase the chances of innovations which respond to climate change actually being used to reduce carbon emissions.

References


