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Journal of Open Innovation: Technology, Market, and Complexity

Provided in Cooperation with:

Society of Open Innovation: Technology, Market, and Complexity (SOItmC)

Suggested Citation: Cooke, Philip (2020) : Silicon valley imperialists create new model villages as smart cities in their own image, Journal of Open Innovation: Technology, Market, and Complexity, ISSN 2199-8531, MDPI, Basel, Vol. 6, Iss. 2, pp. 1-18, <https://doi.org/10.3390/joitmc6020024>

This Version is available at:

<https://hdl.handle.net/10419/241428>

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Article

Silicon Valley Imperialists Create New Model Villages as Smart Cities in Their Own Image

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Received: 13 March 2020; Accepted: 27 March 2020; Published: 8 April 2020



Abstract: In her study of ‘Surveillance Capitalism’, Shoshana Zuboff cites Google’s parent firm Alphabet’s legal customer-purchase agreement for the parent firm’s Nest thermostats. These impose ‘oppressive privacy and security consequences’ requiring sensitive information to be shared through ‘Internet-of-Things’ (IoT) networks with other domestic and external devices, unnamed functionaries and various third parties. This is for data harvesting, analytics, processing, manipulation and transformation through digital re-sale to the same and other consumers in the form of unwanted, targeted advertising. The point of this identity ‘rendition’ is to massively augment corporate profits. It is but a short step from trapping the unwitting consumer in a ‘smart home’ to planning a similarly mediated ‘smart city’ aimed at further massively augmenting corporate profits. This is happening, as founders of digital media from Google, Facebook, Microsoft, Amazon and Tesla either commission or become beneficiaries of ‘smart city’ planning. However, there is evidence that such imperiousness is increasingly countered by emerging democratic critique of these new ‘model villages’ or ‘company towns’.

Keywords: digital innovations; company towns; smart cities; surveillance capitalism

1. Introduction

In recent years, such has been the rapid and successful growth of their corporate profits that Facebook, Amazon, Google, Alphabet and Microsoft (FAGAMi) firms specialising in the design or exploitation of identity theft, big data analytics and automated social media advertising that they have had to create new digital accumulation opportunities. Accordingly, they have tinkered more or less successfully, with new imperialising ventures such as cryptocurrency (Facebook; Libra), financial services (Google; Knowles [1]), cloud computing (Amazon Web Services; Drive), health care artificial intelligence (AI) (Google; DeepMind), town planning (smart cities; Alphabet Sidewalk Labs), and ‘smart’ factory automation (Microsoft Azure). Many of these interests create ‘recombinant knowledge’ that often leads to an intertwining of ideas that become ‘crossover innovation’, currently the most-favoured commercial form of creativity in innovation. It occurs through the combining of knowledge among different types of: cars (crossover from saloon to SUV in a single vehicle type), mobile phones/computers (smartphones), electric vehicles (smartphones/computers/media), health care (nursing/robotics) and so on.

In this contribution, we will focus on the current apotheosis of this ‘crossover’ trend which combines most of the above ‘transversal’ innovations in a single concept, glowingly advertised as the future ‘smart city’, once critiqued as past history’s ‘model village’ or ‘company town’. One of the marketing devices of this urban version of the ‘crossover’ is that it is normally associated directly or indirectly with the narcissistic iconography and image of the successful owners of the above-mentioned mega-corporations. Since we listed five of the digital media corporations, we propose five sketches of their modern company town plans but because Google is also Alphabet’s subsidiary, we propose to

add one other from automotives who is a major social media user in electric vehicles, namely Elon Musk and Tesla. As a prelude, the first section offers historic examples of company towns that were relatively popular in the first industrial revolution in the UK (where they were also known as ‘model villages’) but also extending into the twentieth century in the US. A coda to this section is a listing of the main criticisms that led to their demise in the twentieth century. The point of this is to gauge the extent to which such criticisms extend into the present by indicating critical lines of weakness in the current fashion for so-called ‘smart cities’. Some useful advice from reviewers of this paper concern the following: first, this paper offers a new and rather sceptical perspective on ‘smart cities’ with the possible exception of the more ‘sustainable’ rather than simply ‘smart technological’ variant of ‘smart city’ [2]. This is not a ‘big data’ statistical analysis but, as a reviewer suggests, a highly structured thought piece. It has many case analyses and, for each, a series of interrogations of admired reform policies introduced as innovations in traditional ‘company towns’ but not highlighted in smart city planning. Hence, our conclusions are informed by running analyses of numerous historic and contemporary cases. The interrogations are about whether there is collective social infrastructure supplied in the old company towns compared with the ‘smart cities’ where it generally is not. Nor are the latter supplied with aesthetic infrastructure, like art galleries, theatres or public entertainments. There is misogyny in the engineering design of smart cities and an overwhelming ‘technophilia’, whereas more familial and even, in Lowell, safeguarding of women in the town design. Other questions concern work–life balance and matters of worker care such as medical facilities provision or opportunities for healthy pursuits, such as allotments for gardening and home food production. These were common in company towns but not the ‘smart cities’ under inspection here. Finally, industrial relations (union representation, right to be represented in labour–management conflicts), which were struggled for in ‘company towns’, are scarcely visible, other than individual transactionism, in ‘smart cities’.

So, the ‘surveillance capitalism’ that underlies the current wave of ‘smart cities’ and ‘smart neighbourhoods’ is totally different from the more reform-minded and welfare-friendly ‘company town’ designs of the nineteenth century. However, commentators continue to refer to ‘smart cities’ as new ‘company towns’, when they are mostly characterised by a number of negative and welfare-disinterested qualities. To assist the analysis of the approach of the ‘Silicon Valley imperialists’, they can be summarised as following the 5Ps that can be identified. The first of these is ‘Privacy’, which is the way that the ‘data farmers’ exploit personal identity data and seek to collect personalised information for free. This is clearly evident in the Sidewalk Labs design of Quayside, Toronto, Canada, which proposes using beacons to personalise and localise residents to bombard them with advertisements that invade their privacy. The second ‘P’ is ‘Pervasive’. This leads to placing people into a filter bubble, becoming manipulated by advertisements, experiencing discrimination, fraud, and identity theft by ‘dark triad’ denizens. On a societal level, it can lead to deepened polarization and societal manipulation of the kind that ‘surveillance capitalism’ critics have seen multiplying in recent years. Third is the ‘P’ for ‘prediction’. In Zuboff’s book, this is held up as the lengthily evolved behaviourist aspiration for organisational control (most closely associated with B.F. Skinner) of human society in precisely the way that Skinner’s intellectual forebears achieved with the taming and control of animal behaviour. The fourth ‘P’ is to get human behaviour to express ‘performativity’ in the manner that performers are choreographed, articulate a dramatic script, or harmoniously play to the score in a philharmonic concert. In this, the metaphor of ‘threads’ intertwining to produce a ‘tapestry’ of organisational control is expressed as the apotheosis of a successful ‘surveillance’ outcome. The fifth ‘P’ is the dark consequence of the preceding elements, namely ‘purposelessness’, since that is the burden of the attenuated humanity that is envisaged, from ‘digital behaviourism’ for the present focus on ‘smart factory’ ideology.

2. Company Towns: A Brief Review of Some Exemplars

2.1. New Lanark

The first company town was New Lanark, famously founded in Scotland in 1786 under the influence of 'Utopian Socialist', social reformer and philanthropist, Robert Owen of Newtown, Wales. New Lanark was founded by his father-in-law, David Dale of Glasgow, who built an integrated settlement of cotton mills and worker housing for 2500 people. Technologically, the spinning mills were innovative, using Richard Arkwright's water-powered 'water frame', an improvement on the earlier 'spinning jenny' loom. Sociologically, it was also the site of the UK's first infants' school, when built in 1817. The planning of employment in the mills alongside housing for the workers and services such as a school also makes the settlement iconic in the development of town planning in the UK. Setting the mark for such socially-informed intervention for otherwise poorly housed employees, this 'model village' established new norms for welfare provision. Nevertheless, although profitable, especially after Owen inherited it, New Lanark was bedevilled by Owen's partners undermining his utopian ideals and seeking to defray the costs incurred by its welfare ideals. In 1825, Owen headed for America, where he founded the settlement of New Harmony on the Wabash River in Indiana (nowadays part of Evansville). It was a failure, perhaps because there was no 'company' to anchor a company town. Rather, education, science, technology and welfare were the intended attractions. Service to the community would be rewarded with credit at the town store, but inequities from purchasing credit as a substitute for service caused disputes between those who worked and those who chose not to. Hence, New Harmony was, it may be argued, too utopian in its early ideals for socialism as a way of life under US conditions.

2.2. Tremadoc

Other early company towns in the four parts of the UK included the industrial village of Tremadoc in Wales, the land for which was purchased in 1798 and building completed in 1811 by William Madocks. Like New Lanark, Tremadoc was also a modern water-powered factory, carding and spinning woollen mill. The woollen garments were exported to the Americas and Russia. Tremadoc was founded with grandiose, but unfulfilled intent, as a potential international ferry port to Ireland and beyond. Thus, it was more an egotistic expression of Madocks' personality than an indicator of a desire to promote a moral crusade. Nevertheless, he built both establishment and non-conformist houses of worship—one in neo-Gothic and the other in the prevailing Georgian style. Snowdon House in the town was the birthplace of T.E. Lawrence—'Lawrence of Arabia'—and Madocks' former residence *Tan yr Allt* was subsequently occupied by the Romantic poet, Shelley. The founder's moral outlook was liberal, believing workers had the right to work, educate their children, pray, drink, gamble, save or waste money as they pleased. To those ends, a junior school, a dance hall and a coaching inn were built in a classically planned style around a market square theatrically set against a mountain crag, though there was no master plan. Madocks essentially memorised and subsequently implemented his own plan.

2.3. Milford

Northern Ireland's early company town began life as the Irish village of Ballycenadus in County Armagh, but it became Milford when English plantation settlers changed the name after the corn mill on the River Callan at the end of the street. Milford was a planned company town built by William McCrum in 1808, centred upon a linen mill. The village of Milford consisted of three streets of terraced houses, nowadays adjoined by modern housing estates. McCrum was more of a pseudo-aristocrat than even a liberal. He was the son of the linen millionaire Garmany McCrum, later High Sheriff of Armagh. However, he preferred playing football to managing the business. He also devoted time taking part in amateur theatrics in the village's McCrum Institute. His grandson noted that 'he was shut out of the family business as a lightweight, eventually deserted by a faithless wife and coldly ignored by his

father, travelled the world, lived high on the hog and was a well-known as a gambler' [3]. He died after a long illness in December 1932 in an Armagh boarding house.

2.4. Trowse

Finally, the earliest company town in England was devoted to the growing, processing and canning of mustard. This was developed in the Colman family-based village of Trowse near Norwich in Norfolk. The 'model village' as its scale, which was comparable to Tremadoc and Milford implied, was suitably but briefly named Newton when the amalgamation became Trowse-with-Newton. Trowse was enlarged at the behest of the Colman family, who produced, until their absorption into the multinational Reckitt-Bensickler in 1999, the UK's best-known mustard. By coincidence, the Reckitt part of the resulting conglomerate had also been a paternalist social reformer, who built and inaugurated Hull Garden Village in 1908. He captured the ethos of such model villages, comparable to Bournville in Birmingham and Port Sunlight in Birkenhead, in the following address:

'The objects of this Garden Village are to provide a House and a good Garden, in fact a better house if possible, and a garden attached for the same rent as is now paid for inferior houses with no garden at all' [4].

So Trowse was expanded by the Colman family, beginning in 1808 for workers at Colman's mustard factory. The name Trowse derives from the old Norfolk word trouse, for a grating of wood or iron which could be raised or lowered (like a gate) to allow water out of a dam into the mill race. Accordingly, the original village of Trowse grew up round the local water mill—now Trowse Millgate. Trowse (or Trews in Scottish) was also the slang name for the leggings worn by Scots (since, unlike kilts, they too went up and down like a gate to allow water out)—and hence the word trousers. In 1857, Colman's mustard factory moved to larger premises in Norwich, where the Colman family's pioneering achievements in social welfare remain important in Norwich's history. In 1857, a school was opened for the employees' children. In 1864, the firm employed a nurse to help sick members of staff—an innovation at the time.

So, in brief, the early history of company towns or, in fact, model villages, in the UK is tremendously varied in relation to the moral frameworks within which they were constructed. Robert Owen was a pioneer of socialism, albeit Karl Marx considered it the first practical form of 'Utopian Socialism' which he disparaged as not being grounded in historical materialism and 'scientific socialism'. The experience of New Harmony bears that judgement out, but New Lanark survived as a functioning industrial community from 1786 to 1968, which, at one-hundred and eighty-two years, is longer than most private businesses. Contrariwise, Tremadoc was founded by a moderately free-thinking liberal who was tolerant of responsible enjoyment of life while respecting religious life. Milford's founder was beyond liberal, being a classic business founder's son who lived a self-indulgent and dissolute life but nevertheless built a planned community based on housing and social infrastructure, serving the employees of his linen mill. Colman's—and Reckitt's—efforts were exemplary. In what follows, we shall try to ascertain whether today's company town planners have anything in common with these diverse stereotypes or whether they have, other than prodigious egos, images expressive of a new breed of 'smart city' entrepreneur.

3. From Company Town to Smart City: Who Has the Biggest Ego of Them All?

All our examples in the section that follows come from North America. Thus, we feel it incumbent to give some lineage to the historical path of company town, if not 'model village', building conducted over its industrial community heritage. The first thing to say is that commensurate with its scale advantage, it has very many examples of company towns—many were quite short lived, but a few have shown considerable persistence and longevity [5–7]. Our first task is temporarily to sideline the motto 'From Pullman, Illinois, to Hershey, Pennsylvania' by asking about Canada's company town heritage. Older than any—even in the UK—Canada's company town heritage began in the seventeenth century.

3.1. The Hudson's Bay Company

The Hudson's Bay Company (HBC) traces its origins to the New France colony's control of the fur trade, when two French traders, Pierre-Esprit Radisson and Médard des Groseilliers, Radisson's brother-in-law, learned from the Cree that the best fur country lay north and west of Lake Superior, and that there was a 'frozen sea' still further north that they took to be Hudson's Bay. Seeking finance in Boston, they were referred to London financiers, where they met Prince Rupert of the Rhine, Duke of Cumberland. With him as sponsor, the explorers hired ships—one of which, the *Nonsuch*, housed Groseilliers. In time, he and its crew of explorers founded, in 1668, the first fort on Hudson Bay, Charles Fort, at the mouth of the Rupert River. It was later known as Rupert House, and developed as the community of present-day Waskaganish, Quebec. Rupert House (1668) was later superseded by York Factory (1684), which became the main post because of its convenient access to the vast interior waterway systems of the Saskatchewan and Red rivers. Its 'factory' status is explained because the 'factor' or mercantile agent operated business there. A means of exchange arose based on the 'Made Beaver' (MB) status as a prime pelt, worn for a year and ready for processing. By the eighteenth and nineteenth centuries, Hudson's Bay Company operated with a very rigid hierarchy regarding its employees: officers and servants. Comprising the officers were the factors, masters and chief traders, clerks and surgeons. The servants were the tradesmen, boatmen, and labourers. The officers essentially ran the fur trading posts. They had many duties which included supervising the workers in their trade posts, valuing the furs, and keeping trade and post records. In 1821, when Hudson's Bay Company and the North West Company merged, the hierarchy became even stricter and the lines between officers and servants became virtually impossible to cross. Officers in charge of individual trading posts had the huge responsibility for enforcing the policies made by the HBC board. One policy concerned the price of particular furs and trade goods. 'Made-Beaver' (MB), the quality measurement of the pelt, was the means of exchange used by HBC to define Official and Comparative Standards. Clearly, many more than one company town arose than Fort York and HBC was scarcely a utopian community; nevertheless, in 1821, a clerk might aspire to £100 per year (£9180 in 2019 value) and a boatman £40 per year (£3676 in 2019) against respective average wages at the time ((senior clerk, London, £13,770 in 2019 £s. equivalent; or £150 in 1844 pounds) and (sailor, London, £4590 in 2019 £s. equivalent; or £55 in 1844 pounds)).

3.2. Pullman

Let us move next to the case of company towns in the US, starting with Pullman, one of the country's later model planned industrial communities. This company town was named after George Pullman. In 1884, he built a new town for 4000 of his employees and their families to people the Pullman Palace Car Company, which he founded in 1867 to build de luxe railway sleeper carriages. His priority in executing this apparently philanthropic act was to limit labour unrest in the South Side Chicago Pullman plant. Second, he sought to recruit a more highly skilled labour force and, third, by designing a planned community with above-average living and recreational amenities, he hoped to attract them by his agenda to raise labour productivity in a more salubrious suburb of Chicago. Pullman initially contained some 1000 homes with gardens, indoor plumbing, piped domestic energy and daily domestic refuse removal. It also boasted public buildings, including a theatre, library and parks. Attracted by jobs, stores and amenities, by 1893, its population had trebled despite Pullman's authoritarian governance regime. Evictions for rent arrears on leased accommodation occurred with little notice and on the recommendations of official housing inspectors. Bars and political meetings were banned and Pullman himself determined which books the library stocked and what shows the theatre performed.

In true industrial magnate style, Pullman's response to the US-wide economic recession of 1894 was brutal. He introduced layoffs for hundreds of employees, reduced wages by 30% and refused to lower rents or store prices. Infamously, the Pullman workers went on a strike supported by a boycott from the American Railway Union (ARU) led by Eugene Debs which was met with hostility

from the US General Managers Association (GMA). They mounted a legal case after a derailment of the locomotive of a US mail train in Blue Island, Illinois, and an injunction from the federal district court followed. This was the first-ever injunction to decree against union support or direction of a strike. It was followed by the Cleveland administration ordering federal troops in to enforce the injunction. This sparked a violent response, with hundreds of Pullman carriages overturned and the killing of some 30 protesters and wounding of many others by National Guardsmen. In 1898, a year after George Pullman's death, the Illinois Supreme Court ordered the Pullman Company to sell all its domestic property, allowing workers to buy their homes. The neighbourhood had been annexed by Chicago in 1889, but subsequently entered a long decline, followed by closure of the plant in 1957. Soon afterward, it was threatened with demolition but attracted a citizen protest and Pullman still survives. The company's remaining designs were purchased by Canadian aerospace firm Bombardier in 1987, while Pullman carriage construction still remained a subsidiary of automotive rubber supplier Tenneco in 2019.

If the Pullman case has a plotline for dusting down by one of the new Internet-connected video-streaming services, that of the next US company town exemplar may seem much more sober, except in its recent dénouement. The reference here is to Hershey, Pennsylvania, the company town home of the eponymous chocolate confectionery. Thus far, whether considering the 'philosophies' behind most of the British or North American cases, it can be said that two motivations underlay the ultimate profit motive in the service of which these ideas and plans were implemented: social reform and 'betterment'. In the British cases, it is clear that both images operate to varying degrees. That is, recruiting a docile workforce of skilled and well-socialised workers and their families by offering them higher environmental standards, healthy and convenient housing design, and varied public amenities. 'Betterment' included opportunities for self-sufficient living (gardens), religious and secular pastimes (worship and popular entertainment) and aesthetic appreciation (the arts, libraries and theatres). Thus, even Ulster's tiny Milford had an institute for theatrical performance, while Tremadoc had a dance hall and coaching inn as well as company provided churches. New Harmony had far more 'betterment' facilities than New Lanark, but they were its undoing because 'reform' which meant better quality housing and social infrastructure got translated into a utopia of cultural liberty. Good works were realised in housing with gardens and health, education and welfare in the case of Norwich after early planning in Trowse by Colman's mustard factory, also emulated by Reckitt in Hull. Earliest of all were the multiple efforts of the Hudson's Bay Company, whose 'forts' were more trading posts than 'model villages' but which gave moderate remuneration to its clerks and seafarers. Thus far, Pullman is the only case where overweening housing reform and authoritarian provision of amenities combined remarkably violently. Its incidents were far from utopian outcomes, with legally historic determinations affecting US employment laws that are still contested by the right today. Moving on but, incidentally, when pulled together, these disparate strands surrounding 'social reform' on the one hand, and 'betterment' on the other, offer a template for reflecting below in main section three of this essay, upon the 'philosophy' behind the contemporarily fashionable discourse of the 'smart city', as its apologists refer to it, or the 'capitalist kibbutz' as it is referred to by others [8]. However, before then, we propose briefly to examine the trajectories of further cases of historic company towns in the US.

3.3. Hershey

Chocolatier Milton Hershey built a factory complex near his birthplace of Derry Church in rural Westmoreland County in Pennsylvania-Dutch speaking country. He was raised on a dairy farm and located not far from home in Lancaster County not least because of the many local Amish country dairy farms available to meet his Lancaster Caramel Company's demand for a regular supply of milk. This new demand arose because Hershey had, in 1900, sold the successful 'caramel candy' confectionery business he had founded in order to become a pioneer in the mass production of milk chocolate. Having already created 114 types of chocolate bar before selling the caramel candy business for \$1 million Hershey was known as a man of the people, but now he was as rich as his product and so he

expanded his business. Moreover, with his common touch, he also aimed to make life sweet for his workforce. Accordingly, he began to build an entire community, including houses, department stores, churches, schools, and the Hershey Park amusement park. From the beginning, he intended it as an industrial utopia that reflected his progressive beliefs. By 1905, just two years after the opening of the factory, Derry Church was renamed Hershey, Pennsylvania, in honour of the founder. Over time, this company town featured a wider variety of affordable, modern homes that could be rented or bought nearby, a streetcar system, public schools, social clubs, and a zoo to augment his amusement park. In 1909, he established a local boarding school for orphaned boys while, in the Great Depression, he launched a building campaign that kept hundreds of people employed and resulted in the addition of a large hotel, sports arena and other public structures to this model town.

Yet, as in Pullman, company executives acted as inspectors to investigate how employees spent their free time and favouritism was shown in hiring and wage-rate setting. The result was worker organisation to establish the company's first trade union in 1937, and a strike was called but with far more benign effects than in Pullman. Hershey town survived and chocolate is still made there. The main reputational blight to the company name was when Hershey purchased the license to market Cadbury's American chocolate brands in 1988 for \$300 million, shutting Cadbury's British brands out of the US confectionery market. Meanwhile, in 2010, the rest of Cadbury's business was acquired outright by Kraft, the US food company, putting the British chocolate label completely under American ownership. Ironically, Kraft's former spinoff company Mondelez sought to acquire Hershey for \$23 billion but the chocolatier successfully resisted its approach. Kraft then broke its promise to keep Cadbury's Somerdale (Quaker firm Fry's 'Garden City' plant near Bristol) open but closed it in 2011 and shipped the machinery to its cheaper plant in Poland.

As a coda to the Quaker (and US Mennonite) history of chocolatiers, by 1879, Cadbury's Bournville factory had been built near Birmingham (UK) and Quaker principles meant workers were treated with great respect, relatively high wages and good working conditions; Cadbury also pioneered pension schemes, joint work committees and a full staff medical service but allowed no public houses. The Bournville Village estate, built in 1900, began with 313 cottages and houses set on 330 acres. Further similar properties were built in the years leading up to the First World War, with smaller developments taking place later in the twentieth century. American Quaker street names like Swarthmore Avenue can be found. These Arts and Crafts-influenced houses were traditional in design, with large gardens and modern interiors designed by a resident architect. Such designs became a blueprint for many other Model Village and Garden Suburb estates around Britain. An irony is that Cadbury's Bournville Village Trust management vehicle became one of the earliest and most successful company towns anywhere. Finally, though, Hershey's 'model' is a balanced combination of 'social reform' with—if not 'betterment'—then public entertainment in the form of the zoo and amusement park. Hershey Park (1906) pre-dates Bournville's 'Cadbury World' Hershey Park (1990) theme park by eighty-four years.

3.4. Lowell

Finally, and keeping in mind three distinguishing features of the early company towns—namely, their inclination to improvement of worker family living conditions, the provision of moderate 'betterment' or at least entertainment amenities in the performing, literary and even fine arts (cf. Port Sunlight's celebrated parks and art gallery) and, true to their time, very little recognition of gender or ethnic inclusivity, other than that of the white male—we turn finally to what many US historians consider their oldest company town, Lowell, Massachusetts. In the early nineteenth century, Francis Cabot Lowell, toured industrial Britain, especially the textile districts, to learn how to push industrial development forward in the US. As a consequence, he established his first cotton factory to use power looms at the Boston Manufacturing Company in Waltham, Massachusetts, in 1813. After Lowell's death in 1823, a group of his associates founded the town of Lowell, some 20 miles north of Waltham, in his name and a series of textile mills under a new company name (the Merrimack Manufacturing Company). No doubt recalling his observations on the 'unreformed' UK textile districts yet, unusually,

in light of the point about the ‘white male’ predominance in most company towns, the firm recruited mostly young, single women from rural areas to work in the factories (many of whom also participated in strikes due to poor working conditions). Typically, workers lived in boarding houses and attended church, built by the Merrimack Company. This ‘boarding house system’, alongside other provisions of corporate paternalism both inside and outside the five Merrimack cotton mills, is seen as significant in placing Lowell alongside original utopian industrial developments such as Owen and Dale’s New Lanark in Scotland. Besides the boarding houses and church, which were run to the high moral standards the mill girls and their parents expected and the company imposed, Merrimack provided a library, a lyceum (secondary school), and a savings bank. All of these were arranged in the town whose plan was basically very simple: a main street with shops and public buildings on both sides, and a cluster of identical houses for the workers leading off from the main street to the mills. By 1836, 18,000 people lived in Lowell [9]. Those employed by Merrimack worked at the textile mills. However, by the end of WWII, many of the mills had closed. Today, much of Lowell has transformed into a national historic park and a modern city of over 100,000 residents. In conclusion, Lowell conformed to both the social reform and, to a considerable extent, the ‘betterment’ or social improvement intentions of what remained a profit-seeking venture with a possibly stern human face. In the post-industrial era, a profit-seeking venture, which also embodied a social project referred to as ‘The Lowell Experiment’, was established in 1978. ‘The Lowell Experiment’ and the Lowell National Historical Park broke new ground, with radical reinterpretations of the company town’s labour, immigrant, and women’s history.

4. Sm*** Cities Engineered as Art-Free Zones

If we were to summarise the main principles of the first model villages and company towns, they would conform to three main genotypes. First, they are planned rather than ‘organic’ forms of urban evolution, with the built form involving close, if regimented, community proximity. Second, they are usually provided with public buildings such as schools, some health care facilities and institutions for ‘self-improvement’ or entertainment (including parks, galleries or theatres). Third, they represent sociability but also social stratification of an exclusionary white, male-dominated kind in ‘harmony’ with the norms of social structures and divisions of labour typical of their time. We could hardly expect the discourses and narratives of today to be pronounced in the prospectuses of contemporary ‘smart cities’ aspirations or developments. One characteristic of contemporary heterodox lifestyle that, paradoxically, stresses the present fate of ‘sociability’ but highlights the misogyny of modern male narrative bias is captured in musician David Byrne’s 5 observation:

‘... that human interaction is often perceived, from an engineer’s mind-set, as complicated, inefficient, noisy, and slow. Part of making something “frictionless” is getting the human part out of the way. The point is not that making a world to accommodate this mind-set is bad, but that when one has as much power over the rest of the world as the tech sector does over folks who might not share that worldview, there is the risk of a strange imbalance. The tech world is predominantly male ... with a drive to eliminate as much interaction with real humans as possible for the sake of “simplicity and efficiency”’ [10,11].

Byrne goes on to highlight how much of ‘smart’ technology and services involve individualistic indulgence, solitude and indeed loneliness, whether consciously or unconsciously felt. He lists numerous consumption goods and services that involve minimal human interaction. Thus, ‘ordering and home delivery’ (Amazon, Deliveroo, Instacart, etc.) have eliminated most human interaction; ‘digital music’ (iTunes, Spotify) undermines much of the ‘social glue’ that hitherto focused on social sharing of opinion and enthusiasm; ‘ride-hailing apps’ (Uber, Lyft), where even the driver has the address in a social media device, obviating the need for conversation; ‘driverless cars’ (Google; Apple) result in further elimination of stranger drivers; ‘automated checkouts’ (Amazon Go; Tesco Express) involve zero human contact; ‘AI’ (Google, IBM, Apple, Facebook Healthcare diagnostics), which are superior to human medical skill; ‘robot workforce’ (Kuka; ABB, etc.), an automated 24/7 workforce, with no

worker overheads; 'personal assistants' (Amazon Echo 'Alexa', Google Home, Apple 24me), non-human instructioning; 'big data' (Facebook, Google) pattern recognition, identity harvesting; *gaming and virtual reality (VR)* (Microsoft, Oculus, Google, Samsung), interaction that is virtual and anonymous; *high-frequency trading (HFT)* pattern recognition algorithms for stock selection and post-human AI decision making; MOOCS (edX, Coursera, FutureLearn), automated higher education lecturing; 'social media' (Facebook, Google, Microsoft, Apple), simulated 'social' interaction. Does all this elimination of social interaction correlate with a widely-recognised societal rise in intolerance, ignorance of difference, envy and antagonism by amplification of echo and cognitive bubble effects? Possibly, as the most thorough analysis of digital society's debt to Skinnerian behaviourism declares [12]. Yet there is much insouciance and even imperiousness about the purveyors of 'smart' technology and services as identified below regarding 'smart cities':

'It goes without saying this is not a matter of merely wanting to do good. These companies are promoting these new cities as fitter, happier, more productive, and convenient places, even as they are envisioning cities with expanded means to monitor our lives, and better market our previously private information to advertisers . . . Instead of the lower density and relatively affordable post-war suburbs that "smart" planners and progressives have long mocked as cultural wastelands, the tech giants are pushing a 21st century high-tech update of the grim worker housing that dotted the Lancastrian and New England landscapes of the early industrial revolution' [13].

Accordingly, the remainder of this section investigates six exemplars of the rise to fashionability of the company town phenomenon disguised as the 'smart city' discourse. The narrative begins with Google's Silicon Valley 'model village' development in Mountain View, California; then we assess progress on the activities of Sidewalk Labs, a subsidiary of Alphabet, the parent company of the near-ubiquitous Google that is so central to the design and development of so many of Byrne's [10] list of digital innovations. Next, there follows a distinctive implementation of a company town-plus 'smart city' development on former industrial land at Warm Springs, Fremont, California, home of electric car production by Tesla. The fourth instance is Amazon's 'smart quarter' version of the contemporary company town in downtown Seattle. Fifth, this is followed by an update of the Willow Park project of Facebook owner Mark Zuckerberg at Menlo Park, Palo Alto, California. Finally, we feature a vignette of plans for a more 'steampunk' company town scheme in California as the brainchild of former Microsoft owner Bill Gates.

4.1. Google

The Silicon Valley municipality of Mountain View approved plans in 2017 for Google to build an 18.6 acre expansion of its campus, including a 595,000 square foot building designed by 'starchitects' Heatherwick Studio and Bjarke Ingles Group (BIG) [14]. Known as 'Google Charleston East', a suburb of Mountain View near Google's main Googleplex campus, the main structure is a cluster of buildings housed within a tent-like canopy, so that the cover allows in natural light while also serving as one of the largest solar arrays ever built. Its first stage has offices on the second floor and some 300 dwellings on the ground floor mixed with shops, amenities and parking. The canopy design has incited a number of comparisons to a gigantic tent. However, as seen in the aerial design view computer graphic, the rippling roof resembles more the look of the surface of a meringue pie. Google has never before troubled to create a new building with such a distinctive look for itself. However, competitive comparisons to the Norman Foster-designed Apple Park 'spaceship' and the Frank Gehry-designed Willow Park Facebook headquarters seem inevitable, as high-profile architecture increasingly becomes a mark of stature in Silicon Valley. Reports said not a single person showed up to the meeting to criticise or oppose the project, suggesting that Google can do little wrong from the residents' point of view or Mountain View planners bow down to whatever Google wants to do [15].

To that end, the cladding was developed to provide active shading and allow targeted light to selected portions of the building to enhance biophilic (human-nature interaction) elements. The design

also incorporates photovoltaics into the ‘meringue’ skin to generate energy for the scheme to yield net zero emissions. To achieve thermal comfort and air quality while meeting architectural aesthetic demands and future flexibility, an underfloor air system was installed based on detailed thermal simulations of occupant experience. Chilled fabrics and underfloor air were also installed to minimise energy consumption by balancing ‘meringue’ skin air side and waterside cooling temperatures. The development lacks the traditional ‘model village’ amenities and social infrastructure. Notably, no public investment (e.g., an art gallery or community facility) is specified in the East Charleston scheme:

‘... Under the Google tent or inside the Apple circle there is little but googleness or appleness. There is nature but—despite the meticulous selection of native plants—it is of an abstract, managed kind. There is art, but it is drained of the power to shock and subvert, leaving only diversion and reassurance. There is architecture but, notwithstanding the high degree of invention that goes into materials, it finds it hard to shed the quality of computer renderings, the sense that buildings are made of a kind of digistuff, which could as well be one thing or another. Even when the corporations reach out to their communities, to use the preferred PR terminology, the rest of the world is a hazy, ill-defined entity, a mist in the background of the computer-generated images’ [16].

Thus, as architecture critic Moore sees it, ‘social reform’ or ‘self-improvement’ evolve in Apple or Google’s discourse with the provision of toys, food, and fun rather than challenges, except for the superfluity of body rather than brain-honing installations. They create calibrated lands of fun, in which staff offer their lives, body and soul, day and night for work. In return, Google provides gyms, Olympic-sized swimming pools, climbing walls, basketball courts, running tracks and hiking trails, indoor football pitches, massage rooms and hanging gardens, performance venues (notably, Apple’s auditorium for announcing its latest models) decorated with comforting corporate art and lovable graphics. Moore is surprised that Apple’s new Apple Park is oddly reminiscent of a corporate HQ of the 1950s or 1960s, something that IBM or Bell Labs might have built, ‘which you would have thought is exactly the look Apple wouldn’t want’ [16].

4.2. Alphabet—Sidewalk Labs

Having cut its teeth on the ‘smart annexe’ to Googleplex, the company’s design partner under the Alphabet parent firm, Sidewalk Labs, announced an ambitious ‘smart city’, known as Quayside, in Toronto. The scheme had faced widespread critique since late 2017, when Sidewalk Labs’ plan to create a neighbourhood ‘from the internet up’ was first revealed. For example, the following summarises the concerns of informed digital business journalist and founder of BlackBerry, Jim Balsillie:

‘The 21st-century knowledge-based and data-driven economy is all about IP and data. ‘Smart cities’ are the new battlefield for big tech because they serve as the most promising hotbed for additional intangible assets that hold the next trillion dollars to add to their market capitalizations. ‘Smart cities’ rely on IP and data to make the vast array of city sensors more functionally valuable, and when under the control of private interests, an enormous new profit pool. As Sidewalk Labs’ chief executive Dan Doctoroff said: “We’re in this business to make money.” Sidewalk also wants full autonomy from city regulations so it can build without constraint’ [17].

Other criticisms revealed suspicions about turning part of Toronto into a corporate test bed. These were alerted, at first, by the company’s history of unethical corporate activities like censoring Google’s messaging in China by feeding location, mobility and other positioning data to the Chinese government and illegally tracking movements of Android and iPhone users even when they implement privacy settings to prevent such data harvesting.

So, Quayside is the joint effort by the Canadian government agency Waterfront Toronto and Sidewalk Labs, owned by Alphabet, to develop 12 acres of valuable waterfront just southeast of downtown Toronto. In April 2019, the managing board (appointed not elected) of Waterfront Toronto made interim recommendations which led Sidewalk Labs’ boss Dan Doctoroff to welcome

the determination: ‘We want to be a partner with Waterfront Toronto and governments to build an innovative and inclusive neighbourhood’. This means Sidewalk Labs will continue to develop its proposal, along with Waterfront Toronto’s evaluation of the project after inviting further input from the public. Waterfront Toronto’s board will then make a final decision on 31 March 2020. Among new stipulations are restrictions on Sidewalk Labs’ ability to collect data in Quayside. ‘After two years in Toronto and engaging and planning with over 21,000 Toronto residents, we are looking forward to the next round of public consultations, entering the evaluation process, and continuing to develop a plan to build the most innovative neighbourhood in the world’, Doctoroff added. Sidewalk’s preference was to establish, with the agreement of the partners, an Urban Data Trust. However, social media’s tarnished reputation, based on previous surreptitious activities, like Facebook’s carelessness, or worse, in facilitating Cambridge Analytica’s advertising algorithm and data to influence voter intentions in national elections, counted against this. The agency disallowed such data collection to inform neighbourhood design and resident activities. Even Sidewalk’s promise to anonymise and bar the use of data for advertising or to be used by other Alphabet companies cut no ice with Waterfront Toronto. Their determination was for the team to follow existing and future privacy legislation, regulations and policy frameworks in Canada. Thus, Waterfront Toronto will manage the data collection and be responsible for proposing any amendments to the City of Toronto. In a major climb down in accepting this,

‘Sidewalk Labs agrees to work with Waterfront Toronto and governments to ensure proposed solutions do not impede accessibility, freedom of association, freedom of expression, equitable treatment of marginalised groups, and public engagement’ [18].

The specific condition that had so exercised the agency into curtailing Sidewalk Labs’ and CEO Dan Doctoroff’s ambitions was as follows: Sidewalk Labs had proposed the up-front creation of an Innovative Design and Economic Acceleration (IDEA) district covering a much greater area (190 acres) than even Quayside’s 12 acres. Waterfront Toronto told Sidewalk Labs that this was ‘premature’ and that they needed to see goals achieved for Quayside before collaborating on other schemes: government ‘performance payments’ to Sidewalk Labs depend on this. Even then, the City of Toronto would need to be supportive, especially as it owned the development land in question. Sidewalk Labs was also required to use established language, which bans it from terms such as ‘Urban Data’. Commenting on Toronto’s freezing winters (‘colder than Mars’; [19]) as a site for a putative ‘smart’ city, Sidewalk Labs designer, Rohit Aggarwala, referred to the planned innovations to ‘disrupt’ normal city functioning by installing ‘building raincoats’ which are voluminous tetrahedrons of thick ethylene see-through plastic meant to protect Quayside’s timber architecture, designed by Thomas Heatherwick, from harsh winter weather. Further, folding door ‘fanshells’ that, contrastingly, open up the building frontages, curbless street design, wider sidewalks, wayfinding beacons and heated pavements are other novelties. Heatherwick Studio’s computer graphics of these show no art in the lobby or on its stairwells, despite copious space. Questions of sustainability and practicality were issues of controversy for the ‘Block Sidewalk’ protest movement that sought to stop the proposal to use a ‘tech company’ to develop a neighbourhood [20]. This led to the prospectus adjustment promising to use a central square flexibly to house occasional public installation art with a side-square ‘sculpture garden’ [21]. However, many such ‘innovations’ are core to the thinking of Sidewalk Labs’ leadership as testified to below:

‘... ubiquitous connectivity; incredible computing power including artificial intelligence and machine learning; the ability to display data; sensing, including cameras and location data ... then target ads to people in proximity, and then obviously over time track them through things like beacons and location services as well as their browsing activity’ [22].

This is both the mantra and the intention of surveillance capitalism after Zuboff (2019) [12] but as we have seen the overwhelming ambition of Alphabet to make money out of the beacons, location services and people tracking has for the moment been somewhat thwarted. City and agency

stipulations against articulating terms like ‘Urban Data’ to mystify neighbourhood users and likely infringing Canadian data privacy laws have ‘curbed’ Sidewalk’s ambitions. Without the profits from any as-yet-to-be-invented new business model, it is hard to see a glowing beacon for Quayside’s ‘future city’. A \$13 billion splurge announced in 2019 on property development in low-cost locations suitable for building huge data centres to support cloud computing requirements may be a signpost of the company’s next step as it seeks to keep up with Amazon’s supremacy in that market [23].

4.3. Warm Springs, Fremont

This mega-development is different in ethos from Alphabet’s ‘smart city’ approach, first by being planned by the Californian city of Fremont, centred on a new branch of the Bay Area Rapid Transit (BART) system. However, comparably, it also recycles former industrial land (site of the GM-Toyota NUMMI joint venture that closed in 2010) and is anchored by an iconic Silicon Valley company, this time the electric vehicle (EV) automotive firm, Tesla, on a site four times that of the IDEA proposal. Breaking the automotive industry’s ‘lean production’ model of industry organisation, Tesla built its own supplier park on the Warm Springs doorstep, temporarily located next to Tesla in the old NUMMI plant but nowadays occupying an old Chrysler parts plant at Lathrop, California. Here, TAI, Eclipse, Futuris and Asteelflash were pioneer first movers from Fremont to Lathrop. More recently, some of Tesla’s own suppliers (e.g., seats) also relocated alongside Eclipse and SAS (dashboards), making a total of approximately fifty in California, with ten in the San Francisco Bay Area. Construction at the 850 acre Bay Area Rapid Transit (BART) *Warm Springs* station of a new Fremont ‘Innovation District’ features a ‘Tesla Campus’. This comprises an advanced manufacturing plant, an ‘innovation cultivator’ for technology startups, and thousands of new homes, offices, various plants and retail outlets. The different industry plant mix includes Tesla Motors, Lam Research, Delta Products, Seagate, Western Digital, ThermoFisher, Boston Scientific, and startups in clean tech, life sciences, and advanced manufacturing. Presence of the rapid transit station near the Tesla plant is the reason for Tesla’s headquarters, direct manufacturing and suppliers to exploit co-location proximity. Though nowadays central to the rise of electric vehicle automotive manufacturing, Tesla’s owner is nevertheless a pioneer who belongs to the high-tech world. So, having a critical mass of manufacturing, head office and research in and around the Bay Area is essential. Detroit-based industrial consultants, Oliver Wyman, conjectured that if Tesla were headquartered in Ohio or Michigan, would they have the same reception? It is difficult to decouple Tesla for what they stand for and Silicon Valley, where they are located [24].

The image being promoted for Warm Springs by the ‘Think Fremont’ agency differs unexpectedly in stressing a clean but otherwise not hyperbolic ‘smart city’ in its ‘Warm Springs: A Fresh Outlook on Yesterday’s Innovation District’ prospectus:

‘Here was our strategy: create a mixed-use public realm that prioritizes not just job creation, but also residential neighborhoods, connectivity, open space, urban vibes, and of course, the best food trucks the Bay Area has to offer. We’re dreaming up a place that ticks off all the qualities that people look for in a 21st century workplace. For instance, today’s employees, especially those who fall into a younger demographic, often prefer public transportation over the ‘pleasure’ of driving to work in bumper-to-bumper traffic.’ [25].

As the Bay Area’s urban design critic for the San Francisco Chronicle saw it:

‘In a region where imaginative planning is often constrained by fears of the unknown, it’s startling to see a major city take an open-ended approach . . . This runs counter to how planning is done in cities like Oakland or San Francisco, which puts every conceivable restriction in place beforehand so that, theoretically, developers will behave. But the Fremont approach grasps a reality that conventional planning tends to deny: We can’t predict the future’ [26].

With the aim to develop 3000 housing units and 40,000 jobs, mobility will clearly be the dominant motif, as shown by centring the scheme upon the BART station. However, although the planning rules

are liberal, certain key requirements for building permission include at least one publicly accessible urban plaza per scheme and such plazas are to be linked by streets or pathways that include dedicated bike lanes; areas near rapid transit are to be built to a density of 50 housing units per acre, allowing higher density according to demand; and high rise buildings up to 240 feet are allowed in four of the ten areas at the developer's discretion. Not so democratic, then, despite being set in a city-regulated jurisdiction. Thus, it is more of a mixed-industry, intentionally high-tech, moderately sustainable city development than either a traditional socially reforming, culturally improving model that predictably leaves much to market forces and neglects the cultural, aesthetic or public institutional spheres except the 'planning gain' condition that the selected developers build or pay for a new elementary school.

4.4. *Two Kinds of Modern Company Town: Amazon Is One*

The two types are a corporate campus with a large footprint on an existing city or corporation-built employee housing and public infrastructure. In 2017, a news file photograph showed Amazon's campus construction proceeding on three large, glass-covered domes as part of its expansion in downtown Seattle. When challenged by Amazon's real estate diaspora, Jeff Bezos agreed to the campus idea; the only condition was that Amazon would stay in downtown Seattle—then faced with planning the reversal of a decades-long outflow to the suburbs. By staying in the urban core, Amazon would attract members of the 'hip creative class' [27].

Amazon had earlier announced that it would spend more than \$5 billion to build a second headquarters in North America to house as many as 50,000 employees (subsequently selected as Crystal City, Arlington, Virginia, after opposition from Long Island City, New York). It, nevertheless, planned to stay in its sprawling Seattle headquarters and the new space would be 'a full equal' of its current home according to the Amazon founder Bezos (Jacobs, 2018) 17. Seattle's business community complained that the city's left-leaning 'anti-business' politics drove Bezos out. However, many ordinary Seattle residents expressed relief. For despite the extraordinary prosperity that Amazon had brought to Seattle since it arrived as a startup in 1994, they were also conscious of the associated costs, not least the fastest-rising house prices in the US, congested traffic and an uncomfortable loss of urban identity. What was once an amiable, if contrarian, middle-class city had become more anxious and segmented with a narrow stratum of wealthy younger engineers elevated above a mass of precarious wage workers [28]. In recent times, a number of corporations, including IBM, Google, Amazon and GM built such campuses with large footprints in towns and cities across the US and particularly in London, UK. These companies often became its host's largest local employer, changing people, flows and infrastructures. Amazon now occupies 19 percent of all prime office space in Seattle—the most for any employer in a major U.S. city. For example, in the South Lake Union area that Amazon dominates 'like a private city' [29], with 33 offices and 40,000 employees, it is not unusual to have pedestrian privacy invaded by security personnel photographing anyone presumed to be from the media. Needless to say, the firm has not been particularly swift with donations to charity or other public goods associated with philanthropy in company towns. Even charitable intent by the Microsoft co-founder Paul Allen was refused for his planned public park, which then reverted to him and became the development land for 'Amazonia' [27]. Only in 2018 did Bezos enter the US 'Philanthropy Fund' with his first Bezos Day One Fund for homeless families and low-income pre-school education [30].

4.5. *Willow Village: Facebook's New Home in Menlo Park*

'Housing costs in Silicon Valley and the Bay Area have skyrocketed. If tech companies want to attract skilled workers they may have no choice but to build good, affordable housing for these workers, who of course have lots of alternatives' [31]. Facebook is building 1500 housing units, aimed largely at its employees, in its new Willow Village campus in Palo Alto. As we saw earlier, in late 2017, Google signed an agreement with the city of Mountain View, where it is headquartered, eventually to build close to 10,000 homes and apartments. Both developments will be situated conveniently close to Facebook and Google's offices. The office-sharing startup, WeWork, for its part, until its 2019

near-bankruptcy, was intent upon expanding with WeLive, providing studios and communal areas in the same building as WeWork office space. As one resident puts it, 'You just roll out of bed, go down the elevator and get to work' [32].

Critics fear erosion of work–life balance. Naturally, when your employer is your landlord, and possibly providing you with transport, food, and other amenities too, the lines between work and time off become blurred. 'You can work from home, you can work in your bus, you can work in the public space that's also in the campus designed by Google. So you're not working eight hours a day any more. Basically every part of your life is part of work'; to some, this is an unwelcome trend. 'If your employer is also your landlord and maybe even your social-services provider, an employee may be thankful — or may have multiple reasons to be unhappy' [33].

A Facebook spokesman's response to request for comment was to provide a list of local and legislative measures he said Facebook supports, including efforts to provide housing at below market rates in Menlo Park. The Facebook spokesman said: 'On 7 July 2017, Facebook announced our next phase of expansion with the Willow Village, which will bring community benefits such as new affordable housing and retail to the Belle Haven neighbourhood of Menlo Park. The Willow Village will include 1500 units of housing with 15% offered below market rate' [34].

4.6. Bill Gates and the Belmont, Arizona Project

Finally, in Phoenix, Arizona is the Belmont development, a partnership between billionaire philanthropist and Microsoft founder Bill Gates with local real estate investors, which will plan a 'smart city' designed around emerging technologies. It is an idea rather than a realised ambition. From the 1990s to the 2000s, lack of growth had hindered development in Phoenix's West Valley. Then in the mid-2000s, developers proposed Douglas Ranch, a long-term scheme that would house over 290,000 people on a nearby site (comparable in size to the Phoenix 'edge city' campus city of Tempe). Bill Gates' involvement in the planned community was announced on November 8, 2017. His company, Cascade Investment, purchased an \$80 million stake in the project [35]. Belmont will be aimed at creating an enlightened community with a communication and infrastructure spine that embraces cutting-edge technology, designed around high-speed digital networks, data centres, new manufacturing technologies and distribution models, autonomous vehicles and autonomous logistics hubs according to Belmont Partners, the developers. Arguments against Belmont include the fact that Arizona is in the middle of an ongoing water crisis. Adding another city would clearly further strain the state's dwindling water resources. There is not much that is smart about trying to land even more people on the deep suburban edge in the desert—with or without distractions like driverless cars. 'In a land-use sense, that's trying to put high-tech makeup on an unsustainable pig' [36].

This is by no means the first intentional community built to optimise urban life in the area. Approximately an hour north of Phoenix, the experimental town Arcosanti was built by architect Paolo Soleri in the 1970s. The retro-futurist site followed Soleri's philosophy of arcology, an integration of architecture and ecology. Yet, by its very nature, a ready-made city seldom allows neighbourhoods to grow organically. Other sceptics point to Arcosanti as an Arizona ready-made neighbourhood. However, since being built in the 1970s, it has underperformed compared to the original vision of a city with self-sustaining agriculture, thousands of residents, and 100% renewable energy. The town is now mainly celebrated as one of the inspirations for the architecture of *Star Wars'* Tatooine. It is unlikely that Gates' new city will be as ambitious or aesthetically sublime as Soleri's project. However, it also remains to be seen whether it can deal with the sustainability critique that Belmont brings to the honourable tradition of utopian ideas for planned communities or end up being mostly abandoned alongside the twenty-first-century's fashion for so-called 'smart cities'.

5. Conclusions

We began with the research 'grid' of the 5 'P's of personality traits and societal characteristics that 'smart cities' wish to design into their urban plans. We can conclude that plenty of evidence is

available to support such a viewpoint. Thus, the first two 'P's are especially clear in the range of connectivity elements that the Internet of Things brings to the 'smart city; environment that invades the Privacy of residents by tracking them Pervasively. Such tracking uses the personal profile to sell targeted advertisements, not only on the tracker's search engine, but also on over three million other websites and apps. Every time a person visits one of these sites or apps, the tracker is stalking her with hyper-targeted ads, trying to influence her behaviour and exploit it. This is profoundly anti-democratic behaviour. One of the striking continuities from the earliest company towns and model villages to the contemporary FAGAMI 'smart cities' or city districts is their almost total absence of democratic processes. Just as the democratic deficits of yesteryear were filed under the headings of 'paternalism' and 'self-betterment' or 'social improvement', nowadays the 'new paternalism' pays lip service to 'individualism' and 'flexible freedom', while articulating the reality represented in Sidewalk Labs' Dan Doctoroff's assertion that 'we're in this business to make money'. The money is made in the form of super-profits from expanding the digital media's form of surveillance capitalism into the real, physical world of bodily existence. Only the faintest echoes of the past historic response to the democratic deficits of Pullman or Hershey in riots and strikes can be heard in the muted protests of the 'Block Sidewalk' demonstration.

So, we know that the often harsh industrial relations incidents of some early company towns were somewhat outweighed by their paternalists' intentions to assemble industrial workforces and their families in sometimes isolated places by offering above-average housing, incomes and public goods with broad social reform and self-improvement impulses. However, clearly, 'smart cities' can give an appearance from a surprising amount of journalistic buzz with references to 'new company towns' yet the resemblance is ultimately superficial. So, now we come to the third 'P' which is Prediction, which is in many ways the core of surveillance capitalism because it turns the data that supplies the free, surplus resource into the controlling power that secures pervasive, apparently inescapable, digitally informed visions of what, down to the micro-level, the individual really wants, as predictably as the sunrise. The urge to assemble appropriately talented workforces is more akin to colleges aggregating recruits to student life, where work-life balance disappears as each task deadline looms and later, 'sleeping under the desk' becomes part of the normal office cubicle routine. The fourth 'P' stands for Performativity, which is simply stated as the manner in which "surveillance capitalism" is the behavioural modification aspired to by behavioural "science". By this [12] means "... behaviour that reliably, definitively and certainly leads to desired commercial results". This is known in economics as the *performativity thesis*, which is the claim that the assumptions and models used by, for instance, academics or business gurus, affect the phenomena they purport to describe, aligning the world more accurately with theory. For this, workers or freelancers are rewarded with toys, junk food and energy drinks at the behest of the corporation but the employee may not be thankful but just unhappy at that kind of employment regime. Unhappiness is the result of the fifth 'P', which is Purposelessness. Finally, with so little escape from (no) privacy, pervasive data, predictive marketing, and performative role models, is there still purposefulness for the active citizen or does the "smart" metaphor induce surrender to purposelessness in the "surveillance capitalism" utopia? Critics refer to this state as 'McMindfulness' as equally locked-in to its current ethically neutral, quietist, isolationist, self-absorbed and individualistic form.

The critiques of 'smart cities' are relatively few in an era when questioning the virtues of regular employment and sometimes substantial pay packets seems irrational, but amongst the more pronounced are first, the paucity of non-male perspectives in the prospectuses and practices of the digital media engineering 'communities of practice' that prevail in 'smart cities' and in respect of their technological imagery. Another, more muted one is the obverse of the aforementioned where the design principles promoted tend to emphasise the bland and beige un-decoration of bleached pine and unpolished birch with relative neglect of the creative arts that might enliven 'the look'. Similarly, few 'smart city' prospectuses emphasise the desirability of public art installations or venues for artistic, theatrical or musical mobility. That is usually left to individualistic choice in 'the market', if it is even

referenced at all. So very little collective public infrastructure is profiled. Smart cities are shrines to digital technology rather than to the sustainability and self-sufficiency of their historic forebears [37,38]. The pursuit of advertising returns and their ubiquitous augmentation from new combinations of networked beacons, sensors and connectivity kiosks appear to signal their intent on being deployed to exert ‘digital strangleholds’ on ‘smart city’ digital denizens.

Funding: This paper was presented as a keynote speech of SOItmC 2020, and the publishing fee was supported by SOItmC.

Conflicts of Interest: The author declares no conflict of interest.

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