

Forthcoming in *Economic Anthropology*, 5(2)

Accepted for publication, November 2017

Frontier financialization: Urban infrastructure in the United Kingdom

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Abstract

This paper contributes to critical social scientific understanding of the significance of state power to the furtherance of the financialization of socio-economic life. Drawing on the poststructural theories of power of Gilles Deleuze and Michel Foucault, the concepts of ‘diagram’ and ‘*dispositif*’ are developed to foreground how changes in modalities and relations of power are manifest in shifting governmental rationalities and contingent policy interventions that attempt to advance financialization processes. The paper’s conceptual claims are illustrated through an analysis of the financialization of urban infrastructure that focuses on the United Kingdom’s first ever National Infrastructure Plan (NIP), enacted between 2010 and 2015. The NIP is shown to have marked a step-change in the UK state’s approach to the governing of ostensibly public urban infrastructure, one that sought to reconfigure privately owned, market operated and privately financed infrastructures as a ‘new asset class’ to be prospected for value by global investors. As the NIP problematized the private debt financing of urban infrastructure, it was through the diagram of governmental planning that the apparent limit points of financialization processes were identified and confronted, and through specific *dispositif* that attempts were made to extend the frontier of financialization.

Keywords: financialization; urban infrastructure; diagram; *dispositif*; National Infrastructure Plan

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Introduction

The aims of this paper are two-fold. First, it will seek to deepen critical social scientific understanding of financialization, and especially of the significance of state power to the furtherance of these processes of socio-economic transformation (for reviews, see Christophers 2015; French, Leyshon and Wainwright 2011; Erkurk *et al.* 2009; Pike and Pollard 2010; van der Zwan 2014). Theorized from the vantage point of political economy, financialization processes tend to be conceptualized in terms of the dynamics of capital accumulation – developments that are variously grounded in the ‘capital switching’ provoked by the crisis tendencies of capitalist production (Harvey 2010), the geo-political shifting of capitalism’s productive centre from West to East (Arrighi 1994), and the transformation from mid-twentieth century Fordism to a ‘finance-led growth regime’ (Boyer 2000). Even when these political economy conceptions are muted or implicit, it is the power and reach of financial markets, intermediaries and elites that is typically held to be driving financialization processes (e.g. French, Leyshon and Wainwright 2011; Pike and Pollard 2010; van der Zwan 2014). This creates an important omission in the social scientific understanding of financialization: it tends to underplay state power in general. Resonating somewhat with broader currents of thought which hold that the state is declining in the face of global capital and suffering a ‘hollowing out’ of its bureaucratic institutions, social scientific accounts of financialization typically interpret various and variegated state programmes and interventions – for example, the re-regulation of markets, the reform of welfare and pensions, the bailout of banks – as following from changes in the dynamics of capital accumulation and/or the reified

economic and political pre-eminence of financial markets, intermediaries and elites (Christophers 2015; Davis and Williams 2017).

By way of contrast, drawing on the poststructural theories of power of Gilles Deleuze and Michel Foucault, this paper develops a pair of concepts - 'diagram' and '*dispositif*' - to foreground how changes in modalities and relations of power are manifest in shifting governmental rationalities and contingent policy interventions that attempt to foster financialization processes. As a range of research attests (e.g. Konings 2011; Krippner 2011), political economy frameworks certainly have the capacity to contribute to critical social scientific understanding of the significance of the state in processes of financialization. Yet, social scientific research into financialization should be wary of the analytical limitations of 'top-down' and 'centre-out' theories of the 'whereabouts' of state power (see Allen 1999). As Davis and Williams (2017) recent agenda-setting piece on financialization research illustrates, poststructural theories of the constitutive and capillary qualities of power are now accepted as crucial to understanding the decentred and contingent assembly of financial market agencies, or what those who retain analytical concerns with systemic logics prefer to call the 'operations of capital' (Mezzandra and Neilson 2015). Nonetheless, for Davis and Williams (2017), it is adequate for state elites and institutions to be understood as possessing and wielding sovereign power when furthering processes of financialization. As developed here, the conceptual pairing of diagram and *dispositif* provide a route for understanding the significance of the state in financialization processes as a series of situated power plays that, constituted through combinations of sovereign and biopolitical modes of power, are at once strategic and diagrammed and experimental and assembled. Accordingly, the concepts enable research that unpacks the generative force of economic knowledges, techniques and socio-

technical practices in rearticulating sovereign practices and configuring contemporary governmental agendas and initiatives that seek to further financialization processes.

To develop and illustrate this conceptual argument, the paper's second aim is to offer an analysis of the financialization of urban infrastructure that focuses on the United Kingdom's first ever National Infrastructure Plan (NIP), enacted between 2010 and 2015. Unlike much of the financialization literature, the significance of the state is already an important theme in research into the financialization of urban infrastructure (e.g. Allen and Pryke 2013; Ashton, Doussard and Weber 2012; Desai and Loftus 2012; Hall and Jonas 2014; Kirkpatrick and Smith 2011; O'Neill 2009, 2010, 2013; Torrance 2009; Weber 2010). For Philip O'Neill (2013), for example, the financialization of urban infrastructure is carried forward through the structurally necessary but contingent creation of extensive state regulatory and legal provisions for capital. Such provisions are essential for the establishment of specific urban infrastructural property rights, the monetized future income streams that they potentially generate, and the leveraging of debt finance in the present (against future income streams) to fund investment in urban infrastructure (see also Allen and Pryke 2013; Hall and Jonas 2014; Weber 2010).

Providing our focus here, the UK's first NIP of October 2010 was followed by annual updates in 2011 and 2012 (HMT 2011, 2012), a fully revised Plan in 2013 (HMT 2013), and a further up-date in 2014 (HMT 2014b). The NIP is not of interest to us because it was successful at actually furthering the financialization of urban infrastructure (see below). Neither is it of interest solely because it featured the forms of structurally necessary governmental interventions in urban infrastructural property rights highlighted by O'Neill (2013) and others. Rather, the paper focuses on the formulation and enactment of the NIP

between 2010 and 2015 precisely because, in effect, it provides an opportunity to analyse a situated play of power wherein a state explicitly strategized how wide-ranging sovereign techniques and practices could further the financialization of urban infrastructure. In this respect, the NIP contrasts quite sharply, for example, with the uncertainties surrounding the Trump administration's prioritization of new infrastructure investment to 'make America great again'. The UK state continues at present to be 'hands on' in seeking to advance the financialization of urban infrastructure: since 2015, the planning and implementation responsibilities that the NIP centralized in a dedicated unit of HM Treasury have become shared, respectively, by the National Infrastructure Commission (NIC) and the Infrastructure and Projects Authority (IPA). Nonetheless, 2010-2015 was the period in which the UK state explicitly addressed and worked on its own role in the financialization of the nation's urban infrastructure.

What follows is divided into three main sections. The first section contextualises the NIP by briefly introducing the financing of the mixed economy of urban infrastructure in the UK. The novelty of the NIP is shown to turn not only on its centralization of strategic authority in HM Treasury, but on the specific way in which it problematized the future of the UK's urban infrastructure as an issue of unlocking private debt finance. The NIP thus marked something of a step change in the UK state's approach to the governing of ostensibly public urban infrastructure, one that sought to reconfigure privately owned, market operated and privately financed urban infrastructures as a 'new asset class' to be prospected for value by global investors. The second and third sections of the paper turn to analyse how this shift in governmental rationality and practice can be understood as a manifestation of change in modalities and relations of power. The second section develops Deleuze's concept of 'diagram' to show how a biopolitical mode of power reframed both the socio-economic

significance of urban infrastructure and the role of sovereign practices in addressing the apparent limit points of financialization processes. The final main section turns attention to the concept of *dispositif*, and identifies three experimental apparatuses that, in effect, sought to push back the frontier of financialization processes in the UK's urban infrastructure.

The NIP and the UK's mixed economy of urban infrastructure

Taking office as the global financial crisis settled out as a sovereign debt crisis, the Conservative-Liberal Coalition Government unveiled the NIP in October 2010 (HMT 2010). It was the product of Infrastructure UK, a new unit within HM Treasury (HMT) that worked in concert with the Economic Affairs Committee of the Cabinet, chaired by the then Chancellor of the Exchequer, George Osborne. With the publication of the NIP, Infrastructure UK took overarching responsibility for 'coordinating infrastructure planning, prioritisation and policy' (HMT 2010, 3). Prior to the NIP and given that the UK's urban infrastructure is wide-ranging – it includes physical built environments for transportation (e.g. road, rail, bus, shipping), telecommunications (e.g. telephone, broad band), and energy (e.g. electricity, gas) and other 'public utilities' (e.g. water, sewerage) - a host of separate government departments and public and quasi-public agencies were responsible for provision, regulation and long-term planning. The NIP, however, set a course for action wherein – for the next five years, and until the election of the Conservative government in 2015 heralded the winding down of Infrastructure UK - the provision of new and renewed urban infrastructure became a centralized process consolidated across government departments.

In addition to these new institutional arrangements, the NIP was notable because it gradually arrived at a step-change in the state's approach to governing ostensibly public urban infrastructure, problematizing the future of the UK's urban infrastructure as an issue of unlocking private debt finance. As the revised NIP of 2013 put it (HMT 2013, 85), key to addressing 'the infrastructure gap' was action on the 'finance gap'. This turn to private finance was, of course, something of a continuation of the privatized and marketized approach to 'modernizing' and 'greening' the UK's ageing urban infrastructure that, since the early 1980s, had gained ground amidst the more-or-less perpetual 'fiscal crisis' which is common to the liberal states of the Global North (O'Connor 1973; Schäfer and Streeck 2013). Nonetheless, the NIP programme also heralded a new rationale for government, one that sought to reconfigure privately owned, market operated and privately financed urban infrastructures as a 'new asset class' to be prospected for value by global investors.

That the targeting of the 'finance gap' by the NIP was a step-change in the government of urban infrastructure becomes apparent when we consider the development of the UK's mixed economy of urban infrastructure and, in particular, how it has been variously financed over time. Key elements of the urban infrastructure presently in use in the UK can be dated to the seventeenth- and eighteenth-centuries (e.g. water, road), and especially to rapid industrialization during the latter half of the nineteenth-century (e.g. rail, sewerage, electricity, gas). As it initially consolidated, then, urban infrastructure in the UK was a mixed economy, a patchwork of private, public (municipal and national) and hybrid provisions that reflected the complex histories of particular infrastructure development. This changed somewhat in the middle of the twentieth-century when the problem of urban infrastructure was posed in new ways (O'Neill 2010). There was a growing awareness of the importance of urban infrastructure to national economic competitiveness, a focus on infrastructure in

Keynesian economic policymaking that regarded public investment as a tool for pump-priming economic growth, and a commitment to universal supply and access. The nationalization of privately-owned urban infrastructures that began in the UK prior to the Second World War – for example, for telephones, electricity and public transport in London – intensified in the three decades that followed, especially for transportation and energy infrastructures.

The series of privatisations that took place during the 1980s and 1990s ensured that today's urban infrastructure in the UK is, once again, a thoroughly mixed economy of public and private ownership. While roads are largely publicly owned and maintained at present, for example, railways, telecommunications, energy and other public utilities are not. Key infrastructure sectors are now privately owned by corporations that typically enjoy monopoly/oligopoly supply rights, and are populated by supposed market consumers who pay supply fees and usage charges. Privatized and marketized urban infrastructure is also less monolithic in character. The 'unbundling' of items of infrastructure (e.g. a toll bridge, a power plant), alongside their 'networking' and incorporation into complex systems, is manifest in spatial selectivity and inequalities of access that Graham and Marvin (2001) term 'splintered urbanism'. Indeed, the UK's mixed economy of urban infrastructure is arguably characterized at present by obsolescence, inadequate and unevenly distributed capacity for ever-expanding demands, and ecologically damaging carbon intensity.

To be clear, the raising of debt to finance investment in the UK's mixed economy of urban infrastructure has long employed an array of financial market instruments. Particular forms of finance have prevailed during different periods when private or public provision has been to the fore. For example, mortgages were widely used by Turnpike Trusts to finance toll road

construction from the late eighteenth-century, stocks and shares were key to financing the railway boom during the early decades of the nineteenth-century, and Keynesian deficit spending and sovereign debt sustained the nationalized infrastructures of the post-1945 period. Meanwhile, since the 1980s, the economy of privatized and marketized urban infrastructures has been financed through a proliferation of instruments and techniques of debt financing, including the raising of equity finance and issuing of bonds by the corporate owners of the UK's urban infrastructure.

Especially significant to financing investment in new, large-scale items of privately owned, marketized and unbundled urban infrastructure in the UK since the early-to-mid 1990s has been the development and deployment of the techniques of project finance. Under project finance, what is distinctive is that debt raised to fund investment is on a limited or non-recourse basis – i.e. creditors' claims are restricted to the collateralized assets and income streams of the new infrastructure project in question, and do not extend to the wider assets and cash flows of the consortium of companies that own and operate the project (Finnerty 2013). Indeed, project finance featured strongly when, from 1992 onwards and especially after 1997, urban infrastructure projects were included (alongside new capital projects, such as schools, hospitals, police stations, and so on) within the Private Finance Initiative (PFI) programmes of successive UK governments. Under the typical terms of a PFI, a central or local government agency commissions a project consortium (usually including a construction company, facilities management company, and a bank) to build and operate a new building or item of infrastructure, and is contracted to pay for service use over a 25-30 year period using tax receipts (Froud 2003). The senior debt raised for investment in new urban infrastructure via the techniques of project finance in the UK, and particularly their application in PFIs,

typically takes the form of bank loans, although equity and bond instruments are also likely to feature for larger and more expensive projects.

Equating the ‘infrastructure gap’ with the ‘finance gap’, the NIP was certainly open to making use of the full array of public and private financial instruments to fund investment in the UK’s mixed economy of urban infrastructure. The first NIP of 2010, for example, aimed at the ‘smarter use of public funding’ alongside ‘improving private sector investment models’ and ‘encouraging new sources of private capital’ (HMT 2010, 3-4). However, the initial NIP also made it very plain that ‘the Government’s plan’ turned on ‘unlocking private sector investment in the UK’s infrastructure on an unprecedented scale’ (HMT 2010, 7). And, in what ultimately amounted to a step-change in the government of urban infrastructure, the NIP gradually signalled a new role for the UK state: rather than continue to adopt the techniques of project finance for itself (i.e. PFI and its variations), the state would seek to further their traction and uptake across the already privatized and marketized landscapes of urban infrastructure. Government was to be ‘hands on’, but it was to be neither a public owner and financier or a commissioner and user of privately financed urban infrastructure. Instead, the strategic rationale for government was to facilitate the financing of private investment in privately owned and market operated urban infrastructure, wherein project finance could be more readily levered against newly collateralized assets and potential income streams from consumer payments.

A financializing diagram for urban infrastructure

It is perhaps tempting to understand the UK state’s shifting strategy for urban infrastructure as merely a continuation of privatization and marketization tendencies, and as a pragmatic response to ‘the new normal’ of the post-global financial crisis period. The NIP was

consistent with fears over sovereign indebtedness, the apparent intensification of fiscal constraints and the government's overarching commitment to austerity (HM Government 2010). And, by 2010, it was also clear that the bank-based debt which was crucial to infrastructural project finance (and especially PFI) had been largely curtailed, as banks sought to decrease leverage ratios, respond to new regulations and improve their capitalization. However, from a perspective that draws on poststructural theories of power, understanding the NIP as a changing governmental rationality requires that we foreground the modalities and relations of power that are constitutive of its formulation. Pragmatic governmental actions are necessarily responses that are formulated and follow from particular renderings of governmental problematics (see Langley 2015).

Gilles Deleuze's (1999) concept of 'diagram' is instructive for analysing the modes and relations of power that were manifest in the NIP. For Deleuze (1999), the diagram concept was a result of his reflections on the trajectory of Foucault's later work, especially the way in which Foucault established the contours of three modalities of power that arise in, and are productive of, the ordering of Western Europe since the seventeenth century. What Foucault (1991, 102) termed the 'triangle' of 'sovereignty-discipline-biopolitics' were, for Deleuze (1999), immanent and emergent modalities of power that could be best conceived of as 'diagrams' or 'abstract machines' which operated across 'the great dualities' of 'the public and the private' (p. 33). Various descriptions stress the constitutive and immanent qualities of each mode of power, a diagram is 'a functioning abstracted from any obstacle...or friction [and which] must be detached from any specific use' (Foucault, quoted by Deleuze 1999, 30), or 'the map of relations between forces, a map of destiny, or intensity, which proceeds by primary non-localizable relations' (p. 32). And, reaching out to the more emergent properties of power, a diagram is also 'unstable, formless and fluctuating', such that, 'besides the

points which it connects up', it also includes 'certain relatively free or unbound points, points of creativity, change and resistance'.

What, then, is the biopolitical mode of power, and how were the immanent abstractions of biopolitical power manifest in the UK's NIP as a financializing diagram for urban infrastructure? For Foucault (2007, 6-8), the biopolitical mode of power slowly developed from the middle of eighteenth-century with the rise of liberalism, and has come to the fore as disciplinary societies have waned (Deleuze 1992). In contrast with sovereign and disciplinary modalities of power, the knowledges and techniques of the biopolitical rationality share a commitment to secure a valued form of life (not the sovereign state), and to do so 'at a distance' through the apparently natural and uncertain processes that are 'immanent to the population' (Foucault 1991, 100). A 'free society' becomes the 'condition and final end' of liberal government (Foucault 2008, 319). The biopolitical rationality of power is therefore marked by the continual questioning of political sovereignty because the securing of valued life is endangered by 'governing too much' (Foucault 2008, 17). And, it follows that the art of biopolitical government is an 'environmentalism' (Foucault 2008, 261; Lemke 2015) – certainly not some kind of commitment to ecological principles, but an orientation to make interventions that seek to work on the contingent conditions (e.g. architectural, regulatory, infrastructural) which might best enable the realization of the entrepreneurial opportunities for wealth, wellbeing and security that are seemingly afforded by the natural and uncertain processes of population.

Biopolitical power was manifest in the NIP as a financializing diagram for urban infrastructure in two crucial respects, serving to set the organizational coordinates for sovereign action but not determining the precise form taken by particular sovereign

techniques and policy practices. First, the NIP reframed the economic significance of urban infrastructure by rationalizing it in relation to the natural and uncertain processes of population. This is not to deny that the NIP was indeed a national economic programme that bore the hallmarks of a disciplinary mode of power – from its outset, for example, the NIP cited international organizations (e.g. OECD 2006, 2007; World Bank 2011) to underscore that investment in urban infrastructure was crucial to the UK's international competitiveness (HMT 2010, 9). However, under the NIP, urban infrastructure was not framed as contributing to national economic success by simply facilitating the machine-like movement of people and products between enclosed, 'cellular spaces' (e.g. homes, factories, industries, regions, ports) (Foucault 1977). Rather, the NIP programme also related urban infrastructure to economic life in such a way that the economic circulations enabled by the former are held to have an indeterminate and potentially expansionary quality.

Perhaps the clearest statement of this can be found in the 2013 NIP (HMT 2013, 14-15). Here the 'long-term impact' of urban infrastructure investment 'in sectors such as energy, water and waste' is not only understood as 'necessary simply to enable economic activity to take place'. Neither is improved urban infrastructure only about producing efficiency and productivity gains resulting from reduced costs and the more effective movement of goods, information and workers. Rather, a 'long-term multiplier effect' is also identified by the 2013 Plan that results from the way in which urban infrastructure 'can enable businesses to interact with a greater number of other firms'. This is not the 'multiplier effect' of government spending that informs Keynesian understandings of the economic significance of urban infrastructure investment, but the unleashing of the natural, uncertain and interactive processes of population upon which wealth, wellbeing and security would appear to ultimately rest. Increased investment in urban infrastructure is thus cast as not merely oiling

the wheels of the national economic machine, but as a key environmental intervention that will enable the dynamic, entrepreneurial and emergent forces of economic circulations which are always greater than the sum of their parts.

Second, biopolitical power was also manifest in the ways in which the NIP explicitly reconfigured privately owned, market operated and privately financed urban infrastructures as a ‘new asset class’ to be prospected for value by global investors. Once urban infrastructure is securitized in biopolitical terms as a crucial environmental condition for unlocking the dynamic circulations of socio-economic life, urban infrastructure is also securitized in a different sense as a class of financial assets. This is because the uncertain future circulations of urban life – the flows of information, people and things (including energy, water, etc.) that move through the urban fabric – are to be capitalized upon to raise debt for current investment. Whenever and wherever possible, such flows are monetized as consumer payments and as potential income streams to be levered in ways that establish claims upon the future of the city (O’Neill 2010). Urban infrastructure is refigured as a financialized economy that needs to be cultivated in and of itself, and not merely because it is an enabler of the ‘real economy’ of production and consumption.

The revised NIP of December 2013 and a dedicated twenty-page ‘finance update’ of March 2014 were crucial to the biopolitical formulation of a financializing diagram for the UK’s urban infrastructure (HMT 2013, 2014a). Between 2010 and 2012, the NIP had provided sector-by-sector analyses of the relatively specific challenges of different types of urban infrastructure: for example, need for a more efficient, secure and low carbon energy infrastructure; a more effective and sustainable transport network; and improvements in flood management and water and waste infrastructure (HMT 2010, 2011, 2012). In contrast, the

revised 2013 Plan identified a number of ‘cross-cutting themes’ (HMT 2013, 6), and included a dedicated chapter on ‘Infrastructure Financing’ (HMT 2013, 83-89). This chapter begins by drawing a distinction between ‘funding’ and ‘finance’: ‘funds are raised either from the public through taxation, from consumers through bills and user charges, or through some combination of these sources’. It follows that ‘funding is about who ultimately bears the cost of infrastructure’, and ‘finance is the flow of committed capital investment which will get a project started and support associated jobs and economic growth’ (pp. 83-84). Having drawn this distinction, the 2013 Plan then recasts differences between urban infrastructural sectors in terms of three models of ‘infrastructure financing’: (1) a ‘publicly funded’ model, where investment in roads, for example, comes largely from capital budgets of central and local government departments; (2) a ‘mixed funded’ model, which is to be found in railways and major flood defence projects, for example; and (3) a ‘privately-financed’ model that, resting on relatively predictable future income streams generated by consumer payments, prevails in the privatized water, energy and digital communications sectors.

A further and especially notable feature of the NIP is that, as it explicitly directed attention on the ‘privately financed’ model, it also identified the ostensible limit points of that model for further consideration and action. The 2011 NIP had already identified ‘the Regulated Asset Base (RAB) model’ as a core strategic consideration for Infrastructure UK (HMT 2011, 101).

As it noted,

This model has a proven track record in enabling increased investment and offering certainty to investors, thereby lowering the cost of capital. It has the effect of a long term contract between consumers and investors, but with the flexibility to review and re-evaluate prices and costs at regular intervals through an independent regulator (p. 101).

Moreover, as HM Treasury (2013, 84) put it, where ‘regulated settlements’ (i.e. guaranteed supply rights) are in place, this permits ‘customer revenues to be used to deliver efficient investment’, as debt finance can be accessed relatively easily by the ‘asset owner’ and ‘does not become a significant stumbling block’ (p. 84). We are reminded, then, that at the heart of the RAB or ‘privately financed’ model are the techniques and practices of project finance, wherein an infrastructure project is an ‘asset’ from a financial and investor point of view (HMT 2014a)

The initial intention of the NIP was to extend the RAB model ‘to sectors that have an established asset base’, but which ‘currently face large investment requirements and are heavily reliant on constrained public financing’ (HMT 2011, 101). This was consistent with the international praise received by the UK for the development and application of the RAB model in water and sewerage infrastructure (e.g. World Economic Forum 2014). The road transport network and system of flood defences were identified as most suitable in the first instance. However, in both cases, Infrastructure UK found difficulties. New toll roads were considered to be politically unpalatable for a UK population that already paid relatively high road taxes and fuel duties, and the technical and political difficulties of charging those likely to be effected by flooding in order to lever debt to finance new flood defences also proved unsurmountable. In our terms, the RAB was replete with resistances and frictions, as income streams proved to be hard to identify and debt finance hard to realise. Where the 2013 NIP concentrated its attention was thus upon moving beyond the basic RAB model that it now subsumed within the wider rubric of the privately-financed model. Under the newly minted privately-financed model, the NIP brought together and rationalized an array of experimental and piecemeal interventions that, in effect, were already beginning to confront the limits of

RAB model and extend the frontier of financialization processes in the UK's urban infrastructure.

Apparatuses for financializing urban infrastructure

While the NIP was a biopolitical and financilizing diagram that gradually realised a step-change in governmental rationality, it did not produce a step-change in the level of investment in the UK's urban infrastructure. When the new Conservative government came to power in 2015, for example, a Parliamentary report suggested that, to paraphrase from the 2013 NIP, the 'finance gap' was actually growing.¹ Based on OECD assumptions that major economies need to invest the equivalent of 3.5% of GDP per annum in urban infrastructure – and given that fiscal austerity commitments through to 2020 constrained public infrastructure investment to a level that was equivalent of around 1.5% of GDP – the report worried that the NIP had not yet persuaded private finance to take up the short fall of equivalent to 2% of GDP. We are reminded that, as Miller and Rose (1990, 10-11) would have it, liberal government is an 'eternally optimistic' and 'congenitally failing operation', and 'The "will to govern" needs to be understood less in terms of its success than in terms of the difficulties of operationalizing it'. Indeed, such operational difficulties were already the focus for the NIP from 2013 onwards, as it identified and sought to overcome limit points within the 'privately financed' model.

The concept of '*dispositif*' (apparatuses) can be fruitfully developed to understand the 'points of creativity' within the NIP's diagram for financializing urban infrastructure, that is, the initiatives that sought to facilitate the privately financed model. The concept of *dispositif* is

¹ <https://www.parliament.uk/business/publications/research/key-issues-parliament-2015/industry-infrastructure/infrastructure/>

concerned with the distributed and relational qualities of specific and relatively discrete actions (Deleuze 2006; Foucault 1980). It is a concept that later gave rise to Foucault's (2007) notion of 'apparatuses of security', and to Deleuze and Guattari's (1987) focus on 'machinic assemblages'. For Deleuze (1999), the difference between the concepts of diagram and *dispositif*, and the relations between them, are clear:

... the diagram acts as a non-unifying immanent cause that is coextensive with the whole social field: the abstract machine is like the cause of the concrete assemblages that execute its relations; and these relations between forces take place "not above" but within the very tissue of the assemblages they produce (p. 32).

Similarly, for Foucault (2007, 2008), as Dillon and Lobo-Guerrero (2008, 266) neatly put it, 'there is no biopolitics which is not simultaneously a security apparatus'. Significantly, however, and as they operate consistently with a biopolitical diagram that prioritizes the security of a valued form of life, apparatuses also rework the meaning and practice of extant sovereign techniques in the 'problem space' that they configure and address (Langley 2015).

The particular operations of the NIP's financializing diagram for the UK's urban infrastructure can therefore be seen to have taken the form of the multiple and relatively discrete actions of security *dispositif*. And, as will be shown below through three extended examples, such *dispositif* are explicit attempts to work on the perceived technical limit points of the privately financed model in order to extend the frontier of the financialization of urban infrastructure. Attempts to grapple with the frictions and resistances that arise from the congenitally failing biopolitical rationality typically take on their 'concrete' form as multiple and often quite specific actions of security *dispositif*.

An apparatus for income streams

While identifying and unlocking income streams from flood defences and roads proved to be an insurmountable obstacle for the NIP, an apparatus for income streams did emerge. Rationalized by the 2013 NIP as one of the features of the privately financed model, the apparatus worked on the problem of income streams across those sectors where infrastructural assets were already less monolithic and unbundled, most notably in energy. The apparatus acted on that problem in two main ways.

First, the apparatus made the kinds of regulatory, contractual and licensing interventions that, as O'Neill (2013) documents as taking place elsewhere, are necessary for bringing greater certainty to future income streams arising from urban infrastructure. As the 'finance update' on the 2013 NIP made plain, the lion's share of planned infrastructure developments to be solely financed by private investors on a project finance basis were in the UK's energy sector (HMT 2014a). And, as part of broader energy market reforms introduced by the Energy Bill of 2012, greater certainty was created for future income streams arising from items of renewable and nuclear energy infrastructure via so-called 'Contracts for Difference' (CFDs). In UK energy generation, CFDs are legal agreements wherein a government-owned company – the Low Carbon Contracts Company – commits to price floor subsidies deemed necessary to stabilise the future revenues of a low carbon electricity producer by reducing their exposure to volatile wholesale prices. CFDs thereby commit the government to guaranteeing a projected 'strike price' for low carbon wholesale electricity. In sum, and as the 2014 NIP puts it (HMT 2014b, 105), 'regulation is structured in a way that protects consumers, rewards efficiency and innovation, and gives investors the confidence to privately finance the infrastructure the UK economy needs'.

For example, alongside the pomp and ceremony of a controversial state visit by the Chinese President Xi Jinping in October 2015 that sealed the deal, CFDs were crucial to the high profile government plan to build two new nuclear reactors at Hinkley Point C, near Bridgwater in Somerset. Costing in excess of £20 billion and due to be completed by 2023, the Hinkley Point C reactors are a joint venture between China General Nuclear Corporation and EDF Energy of France. They are also the first investment in new nuclear energy capacity in the UK for a generation. A CFD for Hinkley Point C was approved under the European Commission's rules for state aid in October 2014, amounting to a commitment of up to £17.6 billion worth of public subsidies over a 35 year period in order to stabilise the income stream of consumer electricity payments that the project is projected to realise (Pickard 2014).

Second, the apparatus for income streams also featured a number of somewhat experimental actions that did not attempt to increase the value of consumer payment flows or install greater certainty to them, but which instead sought to make it possible to lever debt against projected reductions in income streams resulting from the renewal of urban infrastructure in the present. This is the financialization of urban infrastructure on the basis of future 'savings' – what the UK Green Investment Bank calls the 'spend to save' model. It contrasts sharply with attempts to release finance by realising additional income streams from a new infrastructural project, whether in the form of consumer charges and tolls, the sale of advertising space, or even increased taxation revenues, for example (on the latter, see Pacewicz 2013; Weber 2010). The 'savings' targeted by the apparatus are typically reductions in energy bills, and more optimistic applications extend to monetized reductions in carbon emissions or volumes of water consumed. For example, in 2013, privately-owned National Car Parks (NCP) retrofitted the lighting systems of its 150 UK car parks. 'Savings' here were projected to be two-fold: a reduction of over 11,000 tonnes of CO₂e per annum; and energy bill savings of

around 65 per cent. With involvement from the Green Investment Bank and the UK Guarantee Fund (see below), the £10 million cost of retrofitting was met by monetizing and capitalizing on these future savings. NCP themselves faced no up-front costs.² The Green Investment Bank also helped to organize the financing of similar retrofitting projects in the National Health Service (NHS).³ It also offered the so-called ‘Green Loan’ to City Councils who, like NCP, are in the process of funding the refitting of street lighting to LED through debt that is repaid through the monetization of energy savings.⁴

An apparatus for attracting institutional investors

A second apparatus of the NIP that operated, in effect, to push back the frontier of financialization processes was the assemblage which sought to lure and attach global investors to the apparent opportunities presented by the UK’s urban infrastructure. Initial attempts to elicit institutional investment in urban infrastructure focused largely on the ‘patient capital’ of UK pension funds and insurance companies (HMT 2011, 2012). However, as the NIP was rolled-out, a sustained attempt was made to connect Chinese and Middle Eastern sovereign wealth funds with UK urban infrastructure as an attractive asset class. Under the heading of ‘Inward Investment’, for example, the 2012 NIP reports that

Chinese sovereign wealth funds have begun to make sizeable strategic investments in the UK (China Investment Corporation in Thames Water and Heathrow Airport; State Administration of Foreign Exchange in Veolia Water UK) and interest from the Middle

² <http://www.fmj.co.uk/ncp-drives-low-energy-lighting-retrofit-across-its-car-park-portfolio/>

³ <http://www.greeninvestmentbank.com/media-centre/gib-news/uk-green-investment-bank-announces-programme-of-support-to-finance-nhs-energy-ef.html>

⁴ <http://www.greeninvestmentbank.com/media-centre/gib-news/smarter-cities-greener-cities-cost-less-to-run.html>

East continues to be strong (Abu Dhabi Investment Authority in Thames Water; Qatar Holding in Heathrow Airport) (HMT 2012, 33).

In the 2013 NIP, meanwhile, a table is included to detail £15 billion worth of ‘inward investment’ in UK urban infrastructure since May 2010 (HMT 2013, 88-89). However, this is accompanied by the acknowledgement that ‘sovereign wealth funds have tended to be conservative in their approach to infrastructure investment by focusing on purchases of existing assets’. The on-going challenge is thus said to be ‘working hard to encourage more investment in new “greenfield” infrastructure developments’.

To meet this challenge, a new apparatus was unveiled alongside the revised plan of 2013; namely, the UK Infrastructure Pipeline. The notion that planned infrastructure projects constituted a ‘pipeline’ was common across the earlier iterations and up-dates of the NIP, and detailed data on projects had been made previously available on-line. But, this was made explicit through the apparatus of the UK Infrastructure Pipeline which took the form of a truly huge, publicly available spreadsheet. Including all projects costing over £50 million, the Pipeline detailed all plans for new and renewed urban infrastructure in the UK. As described in the 2013 NIP, the Pipeline ‘is a forward-looking, bottom up assessment of potential infrastructure investment to 2020 and beyond’ (p. 8). It is said to provide ‘a strategic and more credible overview of the level of public and private infrastructure investment planned over the rest of this decade’, and crucially ‘enhances visibility and certainty for investors and the supply chain’.

To be clear, what is made visible by the Pipeline is both projects where finance is already arranged and projects where investment has yet to be secured. Behind the idea of ‘visibility’, then, lies a host of issues. Placed in the context of a burgeoning global asset class by

institutional investors, specific urban infrastructure projects are both difficult to identify and somewhat opaque (Torrance 2009; World Economic Forum 2014). As the 2011 NIP notes, ‘Few institutional investors have developed the capability to assess direct investment opportunities in individual infrastructure projects’. The Pipeline begins to build this capability on behalf of investors. The raw materials that it provides are abstractions: standardized and comparable data flows and projections, not plans for concrete, steel and the like. At the end of 2016, for example, the UK Infrastructure Pipeline (now administered by a private company, Barbour ABI, on behalf of IPA) had grown to include such details for over £500 billion worth of planned projects. When the first NIP was published in 2010 (HMT 2010, 3), it targeted securing \$200 billion of investment in the UK’s urban infrastructure.

When they put together the Pipeline, HM Treasury (2010, 10-11) were well aware that ‘The UK is competing in an intensely competitive global market for infrastructure funding’. New and rehashed urban infrastructure in the UK has to compete for finance with other prospective investment opportunities, both within the infrastructure asset class and across asset classes. In this regard, bringing together plans for urban infrastructure in the UK through the apparatus of the Pipeline was also an attempt to create a positive affective charge or ‘buzz’. In effect, and to paraphrase from Nigel Thrift’s (2001) account of the new economy, the Pipeline and the publicity surrounding it were a recognition that ‘it’s the romance, and not the finance, that makes the business worth pursuing’. And, in this respect, an earlier acknowledgement of the problem of attracting global investors to the UK’s urban infrastructure is revealing. Using the terminology of ‘pipeline’ and citing a 2009 report by KPMG on the views of the investment community, the 2010 Plan put it thus: ‘The lack of clarity on the future investment pipeline can undermine confidence for private investors and

businesses' (p. 11). The apparatus to attract institutional investors was thus, in short, a *dispositif* of both financial investment data and investor desire.

An apparatus to guarantee and lever debt

A third apparatus was also a prominent feature of the UK's NIP, an apparatus which sought to cajole and entice investors to urban infrastructure in a somewhat different way. This is the apparatus that, in effect, sought to extend the frontier of the financialization of urban infrastructure through a range of government spending commitments that guarantee or lever debt. The problem that this apparatus confronts, in short, is that some items of unbundled urban infrastructure are unattractive to investors, and are deemed to sit outside of a bandwidth of acceptable risk taking. Under the auspices of the 'privately financed' model, the basic RAB model is thereby triaged by the pledging of the sovereign tax base and line of credit, or through specific debt leverage strategies. As the 2013 NIP puts it (HMT 2013, 85), this is about 'using the strength of the government balance sheet to facilitate investment'.

Two examples of the work of this apparatus were especially prominent. Established in July 2012, the UK Guarantees Scheme (UKGS) committed up to \$40 billion of public money to assist in the raising of debt for new urban infrastructure projects. The precise form taken by this assistance was not defined in advance, as the Scheme allowed for 'discretion over how a guarantee is structured in terms of scale, timing, risk exposure and relationship, subject to the needs and dynamics of each individual project'.⁵ As the 2013 NIP makes plain, a wide variety of projects were initially included in the Scheme, covering a range of different urban infrastructures. One of the first projects to benefit, for example, was London Underground's

⁵ <https://www.gov.uk/government/news/chancellor-announces-uk-guarantees-scheme>

Northern Line Extension. \$1 billion of additional capital was raised for the project at a preferential rate of interest because of the Scheme (HMT 2012, 5). Other projects benefiting from UKGS included the Drax Power Station and Mersey Gateway Bridge, although the largest single commitment (£750 million) of the UKGS was to a number of projects grouped together under its Sustainable Development Capital Energy Efficiency Investments Fund (HMT 2014, 116).

Second, and also launched in 2012, was the Green Investment Bank. Calling on £3.8 billion of public money, the Bank was also permitted to itself issue debt from 2015/16. Its remit was one of ‘co-investment’ - alongside market investors and on a commercial basis - in urban infrastructure projects in renewable energy, energy efficiency, waste recycling and bioenergy. It is clear, however, that the purpose of this ‘co-investment’ was to lever debt that would not have otherwise be created. For example, in June 2014, the GIB announced plans to launch a £1 billion fund to acquire equity stakes in operational offshore wind projects in the UK as the basis for cajoling a group of co-investors into the capital raising exercise. As detailed in the 2014 NIP (HMT 2014, 117), the Green Investment Bank invested more than £1.4 billion in over 35 projects, working with over 70 co-investors.

Conclusions

As the critical social scientific literature on the financialization of economy and society has continued to grow – and especially in the wake of the unprecedented actions of sovereign monetary and fiscal institutions in the governance of the global financial crisis – attention has increasingly turned to the significance of the state to the furtherance of these processes of transformation (e.g. Davis and Williams 2017). The tendency to neglect the state when

understanding financialization processes is now much less apparent in the extant literature. Yet, as the state is brought to the fore in critical social scientific understanding of financialization processes, state power itself tends to be conceptualized as centred in the hands of public elites and institutions. This is particularly troubling given that two decades worth of cultural economy research has built on poststructural theories of power to show that financial market actions have contingent, distributed and assembled qualities. At present, what is lacking from critical social scientific understanding of the significance of the state in financialization processes is the kind of engagement with poststructural theories of power that, in recent years, has given much impetus to the study of financial markets across fields such as economic sociology, economic geography and economic anthropology.

Responding to the present state of critical social scientific understanding of financialization and the state, this paper has proposed, developed and illustrated the analytical efficacy of the concepts of ‘diagram’ and ‘*dispositif*’, taken from the poststructural power theories of Deleuze and Foucault. The conceptual pairing of diagram and *dispositif* open up an understanding the significance of the state to the furtherance of financialization which foregrounds the modalities and relations of biopolitical and sovereign power that are manifest in contemporary governmental rationalities and policy interventions. State power that furthers financialization is thus a combination of strategic rearticulation and contingent experimentation, of the allure and organizational force of new diagrams as ‘maps of destiny’ (Deleuze 1999, 32) and the assembly and trialling of apparatuses that intervene to attempt to secure a valued form of life. Moreover, as shown by this paper’s account of the UK state’s attempts to advance the financialization of urban infrastructure through the NIP, such conceptualization also opens up space for understanding how the state may actually be identifying and working on the ostensible limits of financialization processes. Rather than

responding to the new dynamics of financialized capital accumulation and the demands of financial markets, intermediaries and elites, states may actually be to the fore in attempts to secure the life of the population by extending the frontier of financialization.

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