A journey through 'infraspace': The financial architecture of infrastructure[1]

Luke A. Heslop

Luke A. Heslop, Department of Social Anthropology, London School of Economics and Politics and Science, Houghton Street, London, WC2A 2AE, United Kingdom. E-mail: l.heslop@lse.ac.uk

Abstract

This paper challenges dominant governance paradigms by exploring the world of infrastructure investment, referred to by the industry as the 'infraspace'. Starting with financial institutions and multilateral development agencies that steer global infrastructure money, it will trace the financial, technical, bureaucratic and aspirational journey of infrastructure and infrastructure planning. Examining the sociofinancial architecture of infrastructure and development pulls into focus the relationship between states, state-owned enterprises, and multilateral financial institutions. Rather than focus primarily on the social and cultural consequences of infrastructural change, however, or how the political promise and aspiration of infrastructure measures up to its everyday use, the point of departure for this paper is the social, economic, and political relations that produce infrastructure. Such an examination requires a journey beyond the state and through infraspace.

Keywords:

Infrastructure; finance; performance; asset class; development; Asia.

Introduction

In recent years, geographers, social scientists, political scientists, and scholars of international relations have feverishly set out to document the scale, scope, and speed at which connective infrastructures are being developed globally. In Asia, particular attention has been paid to China's Belt and Road Initiative (BRI), transnational highways connecting India and Myanmar, and economic corridors that cross borders and boundaries, and push global geographic frontiers to take new goods to new markets. Academics have been 'enchanted', to quote Harvey and Knox (2012), by the magnitude and ambition of these mega projects.

The International Finance Corporation (IFC), the Global Infrastructure Fund (GIF), Heads of Government, and a plethora of Multinational Banks tell a different story about the scope and scale of current infrastructure developments. According to the IFC and the GIF, the energy and

[1] The research leading to these results has received funding from the European Research Council under the European Union's Seventh Framework Programme (FP/2007-2013) / ERC Grant Agreement n. 616393.

mobility requirements of a growing population are not going to be serviced by the developments we are seeing in the projects academia has marvelled at thus far.[2] So much more needs to be done, in fact, that methods of leveraging finance and cultivating partnerships that can scale-up what we are seeing infrastructure do currently, must be reconsidered. Infrastructural metaphors help us imagine a 'gap' in infrastructure financing across Asia that has to be 'plugged' or 'bridged' (McKinsey, 2016) to bring forth the ports and power-stations, mega-highways, corridors, and rural roads required. As multilateral development agencies that steer, discipline, and govern global infrastructure finance look toward institutional investors and the private sector to meet theses supposed needs, new finance mechanisms and investment partnerships are being explored. Unlike enchanting physical infrastructures, new relations of capital and infrastructure financing have received significantly less attention.

Ethnographies of infrastructure have typically asked critical questions about how the promise and aspiration of infrastructure measures up to its everyday use, and how infrastructures are owned, managed, and accessed through politics, protest and (re)appropriation (see Anand, 2017, 2015 for an excellent example of this). This paper, by contrast, examines infrastructure from the perspective of architects of the infrastructure investment space, referred to henceforth as the 'infraspace', an emic industry term. In so doing, it brings together fragments of an ethnographic project to unpack the logics and circuits of finance as it is geared toward the production of roads and other grand energy and connectivity projects.[3] By analysing an ethnographic engagement with the global infrastructure investment scene, the paper brings current thinking on infrastructure finance (Weber & Alfen, 2010; Wittington, 2012; McKinsey, 2016; Bhattacharyay *al.,* 2014), the role of infrastructure as an 'asset class' (Bayliss & Van Waeyenberge, 2018), and the critique of financialization from economics and economic sociology (Fine & Hall, 2012; Watson, 2009; Wilson, 2004; Morgan, 2009), as well as economic geography (O'Neill, 2009, 2010; Torrance, 2009) into conversation with a critique of development, resource extraction, performance and speculation from anthropology (Bear, 2015, 2017; Anand, 2017; Weszkalnys, 2011, 2016; Li, 2007, Appel, 2017; Tsing, 2015; Ferguson, 1994). The paper approaches infrastructure as an exploitable resource, and demonstrates how infrastructure materialises not first and foremost by the grand gestures of

---

[2]Andrés *et al* (2014) forecast that 'the South Asia region needs to invest between US$1.7 trillion and US$2.5 trillion (at current prices) to close its infrastructure gap' (Andrés *et al.,* 2014). See also, Bhattacharyay *et al.,* (2014).

[3] Echoing a definition proposed by Massey (1994), Wilson (2004, p. 529) suggests, 'instead of envisioning roads as neutral lines of penetration going from centre to periphery, or point a to point b, they should be visualized as stretched-out places where intersecting social relations cluster and adhere'.

state performance but through technical processes that prioritise facilitating financial investors' entry into the market.

The paper makes intentional leaps from site to site and through scales to examine the shifting *telos* of an economy of infrastructure, drawing on a diverse range of sources and informants on a global journey befitting (and perhaps revealing of) an ethnography of infrastructure. From the offices of contractors in Malé, a finance summit in Singapore, interviews with risk analysts in London and Hong Kong, and meetings with exiled politicians in Colombo, the paper draws on a broad cross-section of ethnographic engagements mutually implicated in the production of infrastructure. The paper tacks between the minutia of financial facilities and the implications they have for materialising particular types of project; in this sense it mirrors infrastructure's potential to shift scales in capturing the tenacity of global capital and the ambitions of local contractors. The central focus is developed from attendance, interviews, and meetings around an infrastructure investors summit in Singapore, a recognisably 'global' space, but the foundations for the inquiry are laid on the low-lying coralline islands of the Maldives archipelago. Looking critically at events which are explicitly positioned as 'global', the paper develops a methodological question about the sort of social science we are doing when we 'do' infrastructure. How do we engage with events and techniques that circulate as nodal sites for the performance of power?

Beginning with a pitch from a Finance Minister in Singapore, the paper examines infrastructural projects of development through their appeals to financialised forms of global governance. It is not the logic of 'the state' at the forefront here, but that of global capitalism, 'constituted not by static sets of institutions but by distinctive trajectories that are institutionally conditioned' (Hall, 2007, p.76; cf. Morgan, 2009, p. 582). Notably, these are forms of financial governance institutionally conditioned to permit or prohibit vast material change. They do so by invocation of what Hannah Appel has referred to elsewhere as the 'national economy form' (Appel, 2017): an epistemological project of multilateral institutions such as the International Monetary Fund (IMF) and the World Bank, as well as institutional private investment vehicles, that configure economies within bounded units of nation states, and in this form renders 'the economy' intelligible and compelling.

The central section of the paper addresses the calculation of risk in infrastructure. Here, I illustrate how post-colonial cultural projects are at the heart of the formation of speculative and spectacular infrastructure. Drawing on an example of 'best practice' in Myanmar, the final section of the paper illustrates how finding the right sort of partnerships also work to mitigate risk, while obfuscating forms of project ownership and control blurs the lines between state and non-state. International financial processes, particularly in large infrastructure projects that cross borders, are imagined (and performed) as thoroughly delinked from national control. At the same time, infrastructure projects can present national personas to domestic publics while private, international, and parastatal partners remain backstage.[4] State Owned Enterprises (SOE), meanwhile, perform as companies with explicit commercial interests, removed discursively from 'the state' *per se* (as a distinctly private sector entity) yet buttressed by its authority. Despite misrepresentations of the distance between the state and 'the economy' (metonymically read as the private-sector) – as Appel (2017) has described in her work in Equatorial New Guinee – national governments can be 'exceptionally coterminous with the private sector' (Appel, 2017, p. 314). According to Appel, when we think about national economies, we are always already thinking about the state and political collusion with the private sector/non-state (Appel, 2017, p. 315). While roads may materialise the imposing power of the state for many; for financial engineers at the World Bank and the GIF, a road can also be the end-product of a state's compliance to regulations and protections dictated by the private sector.

The financialisation of sovereign debt in the 1980s-90s, Laura Bear argues, marks a notable shift in fiscal control from governments, to banks and financial markets (Bear, 2017, p. 3). In the early 1980s, constraints to public sector finance was accompanied by an increase in privatisation and of contractual relationships between government parties and private sector entities (otherwise known as public private partnerships or PPPs). Throughout this time the role of the private sector was usually limited to subcontracting through the construction phase (Nataraj, 2007). Since then, PPPs have become a formal mechanism for promoting private sector participation in development (World Bank, 1981; cf. Bayliss &Van Waeyenberge, 2018 Bear, 2017). By the beginning of the twentieth century PPPs were celebrated by planners as vehicles for economic revitalisation (Frieden & Sagalyn, 1989; Syagalyn, 2000) that might also

[4] In South Asia, infrastructure development schemes are explicitly branded as programmes of 'national development' and ethnic or religious historical narratives have been evoked to accompany these projects. A Janus-faced endeavour, wherein development is not just the domain of the state machinery, but what constitutes development harks back to an imagined national past that comes to stand for an inevitable future. The silk routes of China, irrigation projects in Sri Lanka, and the village awakening in India, are among many examples that come to mind.

alleviate the underestimation of large project costs (Flyvbjerg *et al*., 2003). At the same time, it had become orthodoxy among multilateral agencies within the development industry that support from the donor community to PPPs in low-income economies would bring about efficiency and productivity.

In their important analysis of the PPP revival today, Bayliss & Van Waeyenberge illustrate how PPP policy is 'driven far more by the availability of global finance than by the previously perceived potential for efficiency gains through privatisation' (Bayliss & Van Waeyenberge, 2018, p.581). What is remarkable about the resurgence of PPPs, according to Bayliss &Van Waeyenberge (2017), is the enthusiasm for it – as a formal policy model – from the donor community (see also, Languille, 2016), and the use of donor and government funds to leverage private finance. Public private partnerships and joint-ventures lie at the core of the Maldivian business model – kickstarted by the tourist industry in the 1970s – and it is here we turn next.

Money is 'out there': an island view

From April 2016 - 2017 I examined roadwork, expertise, and capacity development in state-owned enterprises (Heslop & Jeffery, forthcoming), and the impact of Chinese infrastructure development in the Maldives (Heslop & Jeffery, 2020). The ethnographic work I was doing at roadsides and work sites with Sri Lankan and Bangladeshi construction crews who were bringing the Maldives national infrastructure and connectivity plans to fruition was hands-on. This offered an ethnographically grounded perspective into the world of infrastructure development at the point of project bidding, implementation, and local-level planning. I spent my days with the work crews on-site, mixing and laying asphalt, or in the site office in Malé drawing up costings for potential projects and observing outsourcing negotiations to local contractors for smaller parcels of work. The construction companies I worked with were outsourced: sub-contracted to do the work of a state-owned enterprise called the Maldives Road Development Corporation. These projects were developed around a contractor-finance model for infrastructure, whereby contractors who undertake the work also arrange or provide the finance for it.

Few infrastructure projects were allocated directly from sovereign financing out of the national budget.[5] Funding for public infrastructure projects, according to the Vice President of the Maldives National Chamber of Commerce and Industry, came 'through the assistance of the international donor community' (Latheef, 2002, p. 252), an arrangement which was thought to pave the way for private-sector participation in Maldivian economic life more broadly.[6] As well as Overseas Development Assistance (ODA) for project finance, Maldives receives a large amount of Export Credit Agency financing.[7] Leading in this finance stream is China's Exim bank. Projects developed from this form of finance were also larger in scale: bridges and link-roads connecting the islands across deep water channels (Heslop & Jeffery 2020).

Striking in all of this – though perhaps not necessarily surprising – was the 'can-do' attitude of government officials, CEOs of state companies, and small-scale contractors, to attract finance. With external finance streams from ODA, Export Credit Agencies, regional bilateral lending, and contractor financing deals, it was understandable that a recurring theme in my work with construction managers, planners, and officials was that money for infrastructure projects was '*out there*'. The amounts of money in question were not merely those required for smaller projects, but those that could allow millions of tons of reclaimed sand to be dredged from the bottom of the ocean and dumped onto the reef flats to make entirely new islands, and amounts that could build an enormous bridge from an entirely constructed island to the capital, Malé (Bremner, 2012; Saeed, 2018). At the same time companies, councils, and political candidates were jockeying for Export Credit Agency financing and contractor-finance deals for infrastructure, and the Bank of Maldives was setting up an investible development fund for infrastructure and its first real-estate financing facility: Housing Development Finance Corporation Plc.[8]

---

[5] There are generally four types of infrastructure financing: (i) Sovereign financing (where the state raises the funds from within its budget), which is not common in Asian markets; (ii) Overseas Development Assistance; (iii) Project finance, when private lenders, including banks and investment vehicles, will provide capital; and (iv) Export Credit Agency financing, which is increasingly the case in Asia, particularly in Southeast Asia, where China's Exim bank is leading.

[6] The central role of the government in enabling the participation of the private sector in infrastructure development was outlined specifically in the 2002 Maldives National Development Plan, referred to as 'Vision2020'. Vision2020 largely reflected the World Bank's imperative for public private partnership (PPP), which gained consensus within development discourse in the early 1990s (Latheef, 2002, p. 242).

[7] This is increasingly the case in Asia, particularly Southeast Asia.

[8] 51pe cent of the HFDC shares are held by the International Finance Corporation (IFC) of the World Bank Group, Asian Development Bank (ADB) and HDFC Investments Ltd. of India. See: https://www.hdfc.com.mv/hdfc-bond-prospectus-2018/.

Whilst work with contractors and construction crews at the roadside helped me to understand the mechanics of the construction process, it did not particularly help me to understand why the fragile coralline structures that make up the Maldives archipelago were being covered in asphalt; or, indeed, what social, political and economic relations sit behind large-scale dredging that leads to entire islands being created on demand. In short, there remained a large question mark over how what I was seeing take place on the islands of the Maldives was possible. These questions, it seemed, were not fully answerable from my vantage point on the islands, or indeed from within the archipelago itself. To understand the structures that condition large-scale infrastructure project implementation required a slightly different approach.

It was in a crowded café in Malé that my friend and colleague, Nasir - a Maldivian contractor - encouraged me to attend an upcoming infrastructure finance summit in Singapore.[9] Pointedly, Nasir asked me to go to Singapore to find a financier at the conference who might want to 'do something in Maldives'. To 'do something in Maldives' invariably meant invest in a construction project that Nasir would then be able to make a reality. I organised meetings and interviews with conference delegates and industry specialists in advance of the summit, however, I could not quite imagine myself scouting for foreign investment at the cocktail reception – much to Nasir's disappointment. Conjuring finance this way was a possibility much more easily imagined for my contractor friend. Like the finance 'experts' I draw on later in the paper, Nasir somehow knew there was money out there; money that was looking to meet the right kind of project.

Operating on the wrong frequency at the Singapore investors summit

Plugging the gap in infrastructure financing was the hot topic (and title) of the 2016 Global Infrastructure Investors Summit in Singapore, which Nasir encouraged me to attend. Some of the largest institutional investors, fund managers, asset managers, 'capital market intermediaries' (Folkman *et al.,* 2007), banks, and government representatives gathered to explore co-lending platforms, discuss new multilateral banks joining the infraspace, share perspectives on investment, network, and drink. The 'plug' required for the infrastructure financing gap in Asia alone, according to the CFO of the World Bank and ex-Finance Minister

[9] World Bank-Singapore Infrastructure Finance Summit 2016. The event was organised by the World Bank Group, the Singapore Ministry of Finance, the Monetary Authority of Singapore, and the Financial Times.

for Brazil, Juaquim Levy, was about US$80 billion. The question of how to raise capital seemed answerable: through global private capital. But the bigger question was how to create the sort of conditions in the world of infrastructure finance that will bring in new investors with the capacity to deliver long-term financing.

At the podium of the grand ballroom in the Westin Hotel, the Indonesian Minister of Finance, Sri Mulyani Indrawati, told the audience that Indonesia is ready and waiting with 'priority projects' - 225 'priority projects' to be exact - many of them roads. Mulyani told the group that Indonesia needs trillions of dollars of investments in infrastructure, that her government can only do so much, and that the private sector *must* do the rest.[10] 'Investment in industry', the Minister told us, 'is investment in people and it should have a poverty focus'. This was a plea to the pantheon of the infraspace, but the message ran against a clear statement from the World Bank: that infrastructure is about development and *not* aid.

While Mulyani's plea represents a state demand for 'priority infrastructure', it was couched in terms of poverty alleviation, social development and public provision.[11] Multilateral banks, the private sector, and institutional investors, however, were interested in return considerations, risk profiles, and 'bankability'. The emphasis on return considerations resurfaced during an interview I conducted with Tofiqua Hoque, a Senior Investment Specialist at the Global Infrastructure Fund, the following day in downtown Singapore. We met in a sky-scraper overlooking the plush regenerated Marina Bay area of the city; an apt location for such a discussion as the bay was built on reclaimed soil, like many of the large infrastructural developments taking place in the Maldives that I was also there to discuss. Tofiqua described the Marina Bay area as a 'showcase space' developed as part of Singapore's fifty-year plan, where planners, developers, and country leaders are brought to see what 'good planning' can achieve. When it came to discussing the summit, she told me that Finance Minister Mulyani was a long way from delivering the sort of message that *should* be given to the private sector at this time.

[10] 'Trillions' is, I imagine, hyperbole from the Minister.
[11] Elsewhere Laura Bear has noted Prime Minister Narendra Modi's invocation of the Dalit Leader B.R Ambedkar in an appeal to the shared nationalist emphasis on the 'common man' at the first Maritime India Summit (Bear, 2017, p. 6).

The private sector has return considerations to look at, you have multiple markets. Nobody is just going to go to Indonesia for the sake of developing Indonesia, not even the World Bank.

Here, talking quite frankly as an investment specialist, Tofiqua echoed sentiments shared by many delegates from investment finance during the networking coffee break that followed Sri Mulyani's presentation. Many thought it laughable that the state should look to the private sector for investment in poverty alleviation. By paying attention to the scope and importance of infrastructures to pursue social objectives, and talk of global responsibility, the Finance Minister failed to present a case for investment in the right terms. Sri Mulyani's plea was something delegates appeared shocked by in discussions over lunch, not least as the Indonesian Finance Minister had held a high position in the World Bank for some time and should be well aware of its current institutional thinking. But today at least, it was clear that she had not presented a case that spoke sufficiently to a specific requirement of the lenders: notably, timely financial return. The Minister had not made the right sort of 'spectacle' (Tsing, 2015, p. 57), nor at the right sort of scale to conjure investment capital on this particular platform. Though ostensibly plugged into the right circulatory network, she was operating at the wrong frequency. While assembling finance is a key concern in this forum, the 'enactment of infrastructure', as AbdoMaliq Simone has argued, also 'entails a complex process of assembling sentiment' (Simone, 2016, p.16). The 'affect intensity' (Dutton, 2012) of Sri Mulyani's call for investment did not illicit a response from the circulatory system of the infraspace; beyond ridicule. Sri Mulyani evoked the wrong public sentiment to talk to of public goods.

While the case for infrastructure has been made on its appeal as a public good, Fine and Hall (2012) have pointed out how recent changes in infrastructure financing models see the 'public good' as 'subordinate to the imperative of designing a commercially viable contract' (Fine & Hall, 2012, p. 58). The consequences of financialisation and speculation on infrastructure – the wreckage, hollowing-out, disestablishing and selling-off piecemeal of a once thriving industry – are presented in Bear's critique of austerity measures on the River Hooghly, India (Bear, 2015). Here, Bear illustrates the ruinous outcomes that befall public resources when they come under the economic governance of austerity, and when infrastructure becomes a special purpose vehicle for speculation.[12] The ever-changing differentiation between notions of the 'public' and the 'private' in the complex and multi-levelled processes that large 'public-works' require, is equally well documented by Harvey and Knox in the context of the Peruvian Transnational Highway (Harvey & Knox, 2012). In this case, the negotiation between corporations, the state, and local people taps into key concerns about the notion of ownership over the very materials that are produced and used in the process of production. In a similar vein, others argue that infrastructure is neither, by nature, a 'public' nor a 'private good'. O'Neill, for instance, argues that '[Infrastructure] has property and value characteristics that are fought over by private capital, consumers, workers and by the state' (O'Neill, 2013, p. 452).

That the state's national budget lacks the capacity to meet the high start-up investment costs for infrastructure assets appears evident in Sri Mulyani's plea, but a steady reduction in state infrastructure investment in all Organization for Economic Co-operation and Development (OECD) countries has also been documented over the last three decades (Weber & Alfen, 2010, p. 1). The growing demand for infrastructure development globally was stressed at the summit, as was the increasing inability of national budgets to meet this demand. The state, it seems in this rendering of the infrastructure supply conundrum, is increasingly dependent on private partnerships to fund, design, build, and in some places regulate and own (see also Whittington, 2012, p. 271).

A second proposition, that seemed to have consensus amongst all present, was that there is a liquidity surplus in Asia and money *is* available. Institutional investors, as well as private capital funds, were looking to invest in Asia, particularly, as was claimed, at a time of low bond yields in European markets.[13] The roads, bridges, harbours, highways and power plants of Asia were discussed as the profitable destination for an accumulation of global savings. In the words of the Chief Investment Officer at AustralianSuper, '*give me a trans-shipment port over a Government Treasury Bill any day*'. The way in which infrastructure financiers discussed pairing relatively cheap money with the 'right project' echoed the way contractors in the Maldives made – what I assumed at the time to be highly speculative – declarations of just needing to find the right funder.

[12] See also Bear (2017).
[13] Low interest rates in the United Kingdom, as a result of quantitative easing, were cited as a specific driver of investments moving away from government bonds and towards infrastructure, with stronger yields only a few points up the risk curve.

Evoked at either end of the infraspace, by contractors and financiers, was the sense that there are billions of US dollars encircling the Asia region in search of commercially viable and bankable investment projects. All that was required was to pitch the right project. The major challenge of most greenfield emerging market infrastructure projects, however, continued to be the 'risk profile': the cost of insuring investors against possible risks, especially early on in any project. Without new measures being put in placeto mitigate risk, there is thought to be a problem with luring new institutional investors such as pension funds and sovereign funds into the Asian infraspace.

How 'problems', constituencies, and society are defined has a much longer history in political thought, but technocratic framing has had a particularly powerful resonance in the anthropology of development.[14] 'Open almost any study of Egypt', Timothy Mitchell proclaims, 'and you are likely to find the question of Egypt's economic development is almost invariably introduced as a problem of geography versus demography' (Mitchell, 2002, p. 209). What Mitchell suggests here is that the way in which the development 'problem' is 'enframed' – in the case of Egypt, the topographic river, the desert surrounding it, and the population jammed within its banks - works to make certain types of solution desirable, in particular, solutions amenable to the practitioner.

With the invocation of the 'risk profile', the problem of attracting global finance is defined, enframed, and 'rendered technical' (Li, 2007). The global infrastructure investment environment is the domain to be governed, and, as in Li's ethnography of Indonesian development initiatives, it becomes 'an intelligible field with specifiable limits and particular characteristics' (Li, 2007, p. 7, p.123).[15] If 'rendering technical' (Li, 2007, p. 123) is to 'enframe' (Mitchell, 2002), bind, and dissect an arena of intervention, then at the summit, the infrastructure investment space was being measured for growth and weighed for risk, and the corrective measures being devised would reduce risk faced by private-sector investors and ensure their commercial returns. Defining a development problem requires constructing an intelligible field onto which solutions are prescribed and implemented. As Li describes, a

[14] See Foucault's (2003) Collège de France lecture, 'Society must be defended', for a critical examination of the techniques that lie behind certain forms of reasoning and the conditions for conditioning.
[15] In her challenge to the *telos* of development programming, Li reconfigures the rationalities of planned change in conservation, and stresses the search for new ways of asking questions about 'improvement' and bettering livelihoods (Li, 2007, p. 280).

narrative is constructed 'connecting the proposed intervention to the problem it will solve' (Li, 2007, p. 126).

Beneath the 'anti-politics' of technical intervention that runs through Ferguson's (1994),[16] Mitchell's (2002), and Li's (2007) analyses, is the boundary work demarcating who can - and who cannot - implement solutions. Institutional financialisation of infrastructure 'enframes' a negotiation in which the terms of ownership and risk are dictated by the narrow interests of investors. In so doing, public infrastructures are transformed from the realm of public sector provisioning into private sector purchasing. Private sector investment-led infrastructure becomes the concern, if not the responsibility, of project-companies, operating-companies and service-companies.

Beginning with Sri Mulyani's plea for investment in Indonesian infrastructure, this section has introduced the idea of return considerations and risk-positions as prohibitors of infrastructure financing, and outlined how the commercially viable project is now a development prerogative. Those in the infrastructure investment space were working through two key questions: how to create the sort of conditions in the world of infrastructure finance that will bring in new investors; and how to structure infrastructure projects so that they are 'bankable' and can be 'brought to market' in a way that provides the service and protects investors. Inability to calculate, measure, and mitigate 'political risk' constrains the financial flows into infrastructure. Few deals, it seems, come out where the risks are allocated in such a way that the private sector is willing to take on a project. The following section will explore the changing role of institutional investors and their increasing role in dictating the narrowing terms of infrastructure.

Pitching, risks, and project partners

A question put forward by the architects of the infraspace is: how 'scalable' is a capital infrastructural asset class? There are three tiers to an infrastructural asset class: commercial now; commercial later; and commercial never. In discussion about scale and potential for the infrastructure asset class, financial investors in the infraspace were quick to point out that,

[16] James Ferguson's 'anti-politics machine' famously engages with this idea and argues - using the example of the conceptual framing of Lesotho as a 'less developed country' – that the technical way development 'problems' are conceptualised is central to depoliticising development interventions whilst simultaneously bolstering the bureaucratic processes.

although infrastructure in Asia is a US$50 trillion market, 85 per cent is government owned and only a small part in the developing world is ‘commercial now’. The pitch here, is to claim the financial facilities available for low-income countries to entice the big private funds required to ‘finance the demand’ for infrastructure in Asia contain insufficient risk-mitigation. A further claim is that the returns would not be fast enough to interest private finance either; as one institutional investor offered rhetorically, ‘*why invest in a costly and risky road project in Indonesia when we could buy a port in Australia*?’. The growth-potential and scalability of projects in low-income ‘economies’/low income geographies of the global economy, return time, and risk-return-ratios were powerful ‘*truths*’ of the infraspace emphatically deployed on grand stages, and put to work efficaciously to marshal the contours of possibility. Such ‘truths’ narrowed the potential fields of intervention and collaboration and made it difficult to imagine other kinds of financial arrangement for ‘must have’ infrastructure, much-less to negotiate an arrangement that might be favourable for the counterparty. The forceful elicitation of how things *should be* precludes disagreement about what *could* or *might* be; it prevents a scenario of exploring different ways of being which Elizabeth Povinelli has termed ‘the otherwise’ (Povinelli, 2012, 2014).

At the summit, the message from the institutional investors (pension plan managers, etc.) was clear: they are not interested in putting ‘their money’ into what they called ‘commercial later’ projects. Here, large-scale investors could dictate new scales of ‘infra-time’ on the infraspace. This point was made by the Senior Vice President of the Ontario Teachers’ Pension Plan (OTPP) and Head of the Canada Pension Plan (CPP) investment board. Capturing the attention of all in the main ballroom, he stood on the stage holding up his hands to the audience. Like a magician presenting an empty sleeve, he instructed us to inspect them closely and search for calluses on his palms. ‘You’ll find none’, he declared proudly, and then paused before engaging his audience once more: ‘I work on greenfield sites, but when I *go in* I don’t hold a pick axe’, the magician paused again, ‘I *go in* armed with a calculator’. The calculator here has two key functions: calculating return and calculating risk. The emphasis on the phrasal verb ‘*go in’* served to depict the feasibility assessment as a much more adventurous activity, akin to the work of prospecting and evoking the imaginary of colonial exploration. Feasibility assessments in turn mobilise and reproduce notions of barren or wild spaces awaiting the capital investments of the knowledgeable, if not the brave. The colonial metaphor is not only relevant to feasibility assessments, it has resonance with the broader ideologies and patterns of activity in the infraspace which could be read as a post-colonial cultural project, in particular, risk analysis.

In an excellent critique of imperial nostalgia, Paul Gilbert argues, 'the tools used by political risk analysts and insurers function as "technologies of the imagination" that provoke continued anxieties about the consequences of investing in sovereign, post-colonial nations' (Gilbert, 2018, p.2). The anxieties Gilbert refers to here concern 'unruly' investment landscapes.

Cultivating the infrastructure asset class as a kind of investible resource in global markets – materialising the 'developing world's' infrastructural dreams in a fund – speaks to the kind of 'resource making' from nature (Weszkalnys, 2011, 2015, 2016; Escobar, 1999), that, as Mandana Limbert and Elizabeth Ferry have shown in the context of Omani oil, are shot-through with affective and generative moral sentiments (Ferry & Limbert, 2008, p.12). Similarly, Gisa Weszkalnys' work on 'petroleum potential' in São Tomé and Príncipe (STP) and the kind of speculative epistemologies at play to prolong extraction, could be usefully employed to question the assumptions of infrastructure and the value of an infrastructure asset class as an investible resource (Weszkalnys, 2015; Appel & Mukul, 2015). Speaking of the capacity of 'first oil' to make 'indeterminate potential readily apparent' Weszkalnys states, 'It acts on forms of speculative knowledge—knowledge that is necessarily incomplete, based on uncertain and partially obscured evidence, and that occasionally makes 'less than rational connections between means and ends' (Comaroff & Comaroff, 2000, p. 310). (Weszkalnys, 2016, p. 612). When infrastructure as an asset class becomes a site of calculation and speculation for fund managers in ways which dictate relations of ownership and access (O'Neill, 2013), financial and contractual machinations of infrastructure are not easily delinked from the affective sentiments broader publics invest in infrastructure.

The VP's claim to preference OECD/'commercial now' projects signalled a clear message to heads of state and national governments hoping to encourage institutional investment for their respective infrastructure projects: OTPP and CPP are only interested in investing in infrastructure in *non*-OECD countries and 'commercial later' projects if the terms are favourable. For my friends in the Maldives hoping to attract funding, such finance might only become available under conditions that make the contractor and the government counterparty overly exposed.

Institutional funds like the Ontario Teachers' Pension Plan (OTPP) have invested in infrastructure since the mid-1990s. Generally, institutional investors put their capital into producing infrastructure products outside of their national contexts. In earlier times, institutional lenders would participate in infrastructure markets via investment funds and as co-investors, relying on information from infrastructure fund managers, who in turn rely on portfolio managers and research analysts who access local partners offering geographically specific 'local knowledge'. However, many pension funds now engage directly in the infraspace, and have 'in-house' teams of bankers, lawyers, economists and engineers (see Torrence, 2009, p. 87; Weber & Alfen, 2010, p. 23). The development of favourable terms for lenders, and the development of facilities that mitigate risk – though posited as a development solution to increase much needed early-stage investment in infrastructure, particularly in the 'global south' – could also be seen to be the result of the financial funds' increasing capacity to negotiate favourable terms for investors. Some fund managers, like the VP of the Ontario Teachers' Pension Plan, travel the world with calculators held in callus-free hands to gauge potential assets, and, importantly, potential partners to make direct investments.[17] A priority characteristic in a partner is perceived capacity to deliver; a history of malpractice did not deter managers, as it was put to me by one portfolio manager when talking about finding the 'right' local partner: '*every demon has a future and every angel has a past*'. The social networks and one-to-one meetings with partners have been well documented as heavily influencing fund manager decision-making (see Watson, 2009, p. 257). Here, knowledge (about risk) becomes an asset of infrastructure fund managers with access to 'relational geometries' (Torrence, 2009, p. 94) of local knowledge and power through partners, contractors and specialists.

On stage in front of us, ready to share their insights, were four men representing the major stakeholders in the showcase project for the summit - a gas-fired power plant in the Central Myanmar district of Myingyan. This was a signal to governments, multinationals, and international financiers that private-led infrastructure can be undertaken successfully. The proponent was a private Singapore-based utilities company called Sembcorp Industries Ltd, which owns energy assets all over the world.[18] Sembcorp has a small majority public share, but the principle 'substantial shareholder' is a commercial investment holding company called Temasek Holdings Plc. The sole shareholder of Temasek Holdings Plc. is the Singaporean Ministry of Finance.[19] Private sector investment came from a financial institution called

[17]Torrence points out that investors who make direct investments often do so in consortia with others who invest through fund managers (Torrence, 2009, p. 87).

[18] Sembcorp won an owner-operator contract. It will build the plant and then operate it commercially at a pre-agreed power purchasing price for the next twenty-two years before handing it over to the government.

[19] https://www.sembmarine.com/scm2016/wp-content/uploads/2017/03/09-2016-Shareholders-Info-and-Investor-Relations.pdf

Clifford Capital, which provides asset-level, long-term project financing. If we scratch away at the surface a little more, we see that Clifford Capital is a subsidiary of the same investment holding company (Temasek), making it very much a state-backed capital investment vehicle; in other words, a company through which the Singaporean government can finance, build, own, and operate infrastructure in Myanmar on a commercial basis.

The design characteristics on display here are not those of the perfect power plant, but rather, this is positioned as secondary to the design of the financial product developed in collaboration with the right partners. The point is not simply that the private sector profits from state support, but rather that the shareholder make-up of special purpose companies and investment vehicles make the separation of 'the state' and 'private' sector actors less clear cut. Similarly, the lines between state and non-state become obfuscated through forms of project ownership and control. Though much praise was piled on to private investors entering infrastructure markets – throughout the summit generally and in the context of this project specifically – the journalist next to me tutted, 'without the government of Singapore being so heavily involved in this project, it would never have worked'. Implied here is that regional state diplomatic influence is put to work to pave-the-way for the negotiations and assure investor confidence.

The 'development problem' from the perspective of those in the infraspace, is creating risk mitigation products to encourage financing in the early years to cover the risks that usually prevent investors, such as bondholders or institutional investors, from participating. That is, the challenge ahead is to identify, to quantify, and to allocate the risk of large infrastructure projects in such a way that it protects private investors. One form of risk mitigation is to work with the 'right partner'. In a sense, this brings us back full circle to the Maldives and the kind of project Nasir was seeking when advising me to attend the summit in Singapore, and the talk of 'demons with futures' espoused by the portfolio manager when talking about finding the 'right' local partner. However, when it comes to much larger infrastructure projects, having a 'local-partner' *in-situ* is not necessarily a sufficient guarantee. While infrastructure brokers in Maldives, like Nasir, managed risk in ongoing projects, rather than provide a way to counter risk, they were a source of information about the possibilities of risk. There is a place for such actors in the architecture of infrastructure, but contracts for much larger infrastructural endeavours have to be underwritten and guaranteed by states.

When large institutional investors, like pension funds, insurance companies, and sovereign funds, turn to infrastructure in search of growth opportunities, as has been explored in this section, it strips investment from other less 'commercial now' projects that may be of greater social importance (O'Neill, 2010, p. 11). The colonisation of the infraspace by private investment also narrows the use of infrastructure to serve a commercial function while reconfiguring the role of the state, whereby it no longer dictates how infrastructure is used and instead manages the risk of assets (Bayliss & Van Waeyenberge, 2018). Pre-conditions, such as Power Purchasing Agreements under Build-Operate Transfer (BOT) models, set access, ownership and the control of a resource (like energy) in a private contract.

Conclusion

In many ways, the paper, and the infrastructure game itself, is about selling the infrastructure brand and telling a particular infrastructure story. Everybody at the conference, and conferences just like it around the world, are there to tell an infrastructure story. In Singapore, it was about how to create the sort of conditions in the world of infrastructure finance that will bring in new investors. Here, mitigating risk for investors and meeting private sector financiers' expectations for commercial return on their investments, form two significant narratives structuring the revived form of PPPs. This, as I have demonstrated, is part of a broader agenda within infrastructural economics that sees infrastructure materialise through restructuring projects toward facilitating financial investors' entry into the market.

The paper has considered infrastructure as an exploitable resource and demonstrated how infrastructure materialises not first and foremost by the grand gestures of state performance but is imbricated in technical processes that create ways to calculate, measure, and mitigate 'project risk'. In examining how infrastructure projects are structured so as to be 'bankable' and 'brought to market', I have presented the world of infrastructure as both an 'asset class' and a new speculative frontier for global finance. What I contribute to anthropological theorising on infrastructure and the state, here, is a journey beyond the politics of national development, state control and the grandstanding of government ministers, central though that is, and put the architecture of infrastructure-financing in focus. Closer examination of the global financial mechanisms that sit behind the production of infrastructure, the contracts that make it bankable, the tools that value it, and evaluate the risks, lead to a different understanding of the relationship between infrastructure and the state.

The paper helps us to understand the complex interplay of forces which lead to some projects being funded and others not, regardless of what might be seen as 'higher order' issues such as poverty alleviation/development, or technical/engineering advancement, etc. which are commonly thought to be the drivers of infrastructure development. Read as an alternative infrastructure story, 'a journey through infraspace', is a journey through the strategies and machinations of the financially powerful, who have very little to do with concrete and sand, but influence what others are able to do with it.

Acknowledgements

The research for this article was funded by a grant from the European Research Council under the European Union's Seventh Framework Programme (FP/2007-2013)/ERC Grant Agreement n. 616393. I owe a debt of gratitude to Rebecca Rotter, whose close reading and critical comments greatly improved this paper. An earlier iteration of this paper received many helpful comments at the SOAS Infrastructure roundtable, organised by Ed Simpson and Elisa Tamburo.

References

Appel, H. (2017). Toward an ethnography of the national economy. *Cultural Anthropology, 32*(2), 294-322.

Appel, H. & Mukul, K. (2015, September 24). Finance: The infrastructure toolbox. In H. Appel, N. Anand & A. Gupta (Eds.), *Theorizing the contemporary*, *cultural anthropology*. Retrieved from https://culanth.org/fieldsights/series/the-infrastructure-toolbox.

Anand, N. (2017). *Hydraulic city: Water and the infrastructures of citizenship in Mumbai*. Durham, NC: Duke University Press.

Anand, N. (2015). Leaky states: Water audits, ignorance, and the politics of infrastructure. *Public Culture, 27*(2), 305-330.

Andrés, L., Biller, and Matías Herrera Dappe. (2014). *Infrastructure gap in South Asia: infrastructure needs, prioritization, and financing*. Washington, D.C.: The World Bank. https://openknowledge.worldbank.org/handle/10986/20327.

Bhattacharyay, B,N., Kawai, M. & Nag, R. (2014). *Infrastructure for Asian connectivity*. Cheltenham: Edward Elgar.

Bayliss, K. & Van Waeyenberge, E. (2018). Unpacking the Public Private Partnership revival. *The Journal of Development Studies, 54(*4), 577-593.

Bear, L. (2015). *Navigating austerity: Currents of debt along a South Asian river*. Stanford, CA: Stanford University Press.

Bear, L. (2017). 'Alternatives' to austerity: A critique of financialized infrastructure in India and beyond. *Anthropology Today, 33*(5), 3-7.

Bremner, L. (2016). Thinking architecture with an Indian Ocean Aquapelago. *GeoHumanities, 2*(2), 84-310.

Comaroff, J. & Comaroff, J.L. (2000). Millennial capitalism: First thoughts on a second coming. *Public Culture, 12*(2), 291–343.

Dutton, M. (2012). Fragments of the political or how we deal with wonder. *Social Text, 30*, 109-141.

Escobar, A. (1999). After nature: Steps to an antiessentialist political ecology. *Current Anthropology, 40*(1), 1-30.

Ferguson, J. (1994). *The anti-politics machine development, depoliticization, and bureaucratic power in Lesotho*. Minneapolis: University of Minnesota Press.

Ferry, E. E. & Limbert, M.E. (2008). Introduction. In E.E. Ferry & M.E. Limbert (Eds.), *Timely assets: The politics of resources and their temporalities* (pp. 3-24). Santa Fe, NM: School for Advanced Research Press.

Fine, B. & Hall, D. (2012). Terrains of neoliberalism: Constraints and opportunities for alternative models of service delivery. In D. McDonald & G. Ruiters, (Eds.), *Alternatives to privatization: Public options for essential services in the Global South* (pp. 45-70). London: Routledge.

Flyvbjerg, B., Bruzelius, N. & Rothengatter, W. (2003). *Megaprojects and risk: An anatomy of ambition*. New York, NY: Cambridge University Press.

Folkman, P., Froud, J., Johal, S. & Williams, K. (2007). Working for themselves? Capital market intermediaries and present day capitalism. Business History, 49(4), 552–572.

Foucault, M. (2003). 'Society must be defended': Lectures at the Collège de France, 1975–1976. M. Bertani & A. Fontana (Eds.). David Macey (Trans.) New York, NY: Picador. p.13.

Frieden, B. & Sagalyn, L. (1989). *Downtown, Inc.* Cambridge, MA: MIT Press.

Gilbert, P. R. (2018, June 12). *The risks of others: Imperial nostalgia and technologies of the financial imagination*. Public Seminar [Weblog article].

Hall, P. (2007). The evolution of varieties of capitalism in Europe. In B. Hancke, M. Rhodes & M. Thatcher (Eds.), *Beyond varieties of capitalism: Conflict, contradictions and complementarities in the European economy* (pp. 39-85). Oxford: Oxford University Press.

Harvey, P. & H. Knox. (2015). *Roads: an anthropology of infrastructure and expertise*. Ithaca, NY: Cornell University Press.

Harvey P. & H. Knox. (2012). The Enchantments of Infrastructure. *Mobilities*. 7 (4), 521-536.

Harvey, P. (2007). Expertise, technology and public culture. *The Sociological Review, 55* (1), 1-4.

Heslop, L.A & Jeffery, L. Roadwork: Expertise at work building roads in the Maldives. *The Journal of the Royal Anthropological Institute*. DOI: 10.1111/1467-9655.13236.

Heslop L.A & Jeffery, L. (2020). Encountering Chinese development: A case study from the Maldives. In L.A Heslop & G. Murton (Eds.), *Highways and hierarchies: Ethnographies of mobility from the Himalaya to the Indian Ocean*. Amsterdam: University of Amsterdam Press.

Languille, S. (2017). Public private partnerships in education and health in the global South: A literature review. *Journal of International and Comparative Social Policy*, *2*(33), 142-165.

Languille, S. (2016). Public-private partnerships in education and health (Africa, Asia and Latin America): A literature review. mimeo.

Latheef, M. (2002). Public-private partnership for development in the Maldives. *South Asia Economic Journal, 3* (2), 241-252.

Li, T.M. (2007). *The will to improve: Governmentality, development, and the practice of politics*. Durham, NC: Duke University Press.
Massey, D. (1994). *Space, place and gender*. Cambridge: Polity Press.
McKinsey. (2016). *Bridging global infrastructure gaps*. McKinsey Global Institute.
Mitchell, T. (2002). *Rule of experts: Egypt, techno-politics, modernity*. Berkeley, CA: University of California Press.
Morgan, G. (2009). Globalization, multinationals and institutional diversity. *Economy and Society, 38*(4), 580-605.
Nataraj, G. (2007). *Infrastructure challenges in South Asia: The role of public-private partnerships*. ADBI Discussion Paper 80. Tokyo: Asian Development Bank Institute. Retrieved from http://www.adbi.org/discussionpaper/2007/09/27/2364.infrastructure.challenges.south.asia/, accessed DATE.
O'Neill, P.M. (2009). Infrastructure investment and the management of risk. In G.L. Clark, A.D. Dixon & A.H.B. Monk (Eds.), *Managing financial risks: From global to local* (pp. 163–188). Oxford: Oxford University Press.
O'Neill, P.M. (2010). Infrastructure financing and operation in the contemporary city. *Geographical Research, 48*. 3–12.
O'Neill, P.M. (2013) The financialisation of infrastructure: The role of categorisation and 1324 Urban Studies 56(7) property relations. *Cambridge Journal of Society, Economy and Regions*, 6. 441–454.
Povinelli, E. (2012). The will to be otherwise/the effort of endurance. *South Atlantic Quarterly, 111*(3), 453-475.
Povinelli, E. (2014, January 13). Geontologies of the otherwise. Fieldsights-theorizing the contemporary. *Cultural Anthropology Online*.
Saeed, T. (2018). *Embodied place(s): Emotional landscapes and senses of self in the Maldives archipelago*. MScR dissertation, University of Edinburgh, United Kingdom.
Sagalyn, L. (2000). Times Square roulette: Remaking the city icon. Cambridge, MA: MIT Press.
Savage, M. & Williams, K. (2008). Elites: Remembered in capitalism and forgotten by social sciences. *Sociological Review*, *56*(Suppl. 1), 1–24.
Simone, AM. (2016). Attention to infrastructure offers a welcome reconfiguration of anthropological approaches to the political. In S. Venkatesan, L. Bear, P. Harvey, S. Lazar, L. Rival & A. Simone (Eds.), *Critique of Anthropology*, pp. 1-50. ISSN 0308-275X
Torrance, M. (2009). The rise of global infrastructure market through relational investing. *Economic Geography, 85*, 75-97.
Tsing, A.L. (2015). The economy of appearances. In, *Friction: An ethnography of global connection* (chapter 2, pp. 55-81). Princeton, NJ. Princeton University Press.
Watson, M. (2009). Investigating the potentially contradictory microfoundations of financialization. *Economy and Society 38*(2), 255-277.
Weber, B. & Alfen, H.W. (2010). *Infrastructure as an asset class: Investment strategy, sustainability, project finance and PPP*. John Wiley & Sons.
Weszkalnys, G. (2016). A Doubtful hope: Resource affect in a future oil economy. *Journal of the Royal Anthropological Institute, 22*(S1), 117-136.
Weszkalnys, G. (2015). Geology, potentiality, speculation: On the indeterminacy of 'First Oil'. *Cultural Anthropology*, *30*(4), 611-639.
Weszkalnys, G. (2011). Cursed resources, or articulations of economic theory in the Gulf of Guinea. *Economy and Society, 40*(3), 345-372.

Whittington, J. (2012). When to partner for public infrastructure? Transaction cost evaluation of design-build delivery. *Journal of the American Planning Association, 78*(3), 269-285.
Wilson, F. (2004). Toward a political economy of roads: Experiences from Peru. *Development and Change, 35*(3), 525-546.
Wittington, J. (2012). When to partner for public infrastructure? Transaction cost evaluation of design-build delivery. *Journal of the American Planning Association, 78*(3), 269-285.
World Bank. (1981). *Accelerated development in Sub-Saharan Africa*, Washington, DC: World Bank.
Venkatesan, S., Bear, L., Harvey, P., Lazar, S., Rival, L., Simone, A. (2016). Attention to infrastructure offers a welcome reconfiguration of anthropological approaches to the political. *Critique of Anthropology* (pp. 1-50). ISSN 0308-275X.

Luke Heslop is Fellow in the Anthropology Department of the London School of Economics and Political Science, United Kingdom. He has conducted research across South Asia and published widely on trade and mercantile kinship, as well as infrastructure and connectivity in the Indian Ocean.