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Getting the territory right: Infrastructure-led development and the re-emergence of spatial planning strategies

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Abstract: In this paper we argue that infrastructure-led development constitutes an emergent international development regime whose imperative is to 'get the territory right.' Spatial planning strategies from the postwar era are increasingly employed in contemporary attempts to integrate territory with global networks of production and trade. Large-scale infrastructure projects link resource frontiers and sub-national urban systems – oftentimes across national borders – in ways that constitute spatially articulated value chains geared toward the extraction of resources, logistical integration and industrial production. We chart the emergence of this regime, analyse its spatial manifestations and evaluate its developmental outcomes.

Keywords: Infrastructure Development Regional planning Neoliberalism

I. Introduction

Saudi Crown Prince Mohammed bin Salman announced the development of Neom in the Kingdom's northwest on the Red Sea coast in 2017. It is not only expected to diversify the national economy but the glossy materials produced by Saudi Arabia's Public Investment Fund promise that Neom will also become the most exciting place to live and work on the planet.[i] While media reports focused on how the proposed 'megacity' will dwarf New York and London, Neom is actually a territory slightly smaller than Belgium that will incorporate parts of Jordan and Egypt. It will supposedly enjoy semi-autonomous status, a rather liberal governance regime and have world-class infrastructure to attract firms in strategic hi-tech sectors. Ambitious projects such as Neom are emblematic of an emergent development paradigm whose aim is to create and integrate dynamic sub-national urban systems into transnational territories through networked mega-infrastructure projects. While Saudi Arabia seeks to cultivate hi-tech sectors, many of these transnational schemes integrate resource frontiers, agribusiness and production nodes with large-scale connective logistics infrastructure. There is a bewildering number of examples of such initiatives and some of the most illustrative include the Programme for Infrastructure Development in Africa, the Lamu Port - South Sudan - Ethiopia Transport Corridor, the Initiative for the Integration of the Regional Infrastructure of South America, the Abidjan-Lagos Transport Corridor Project, the China - Pakistan Economic Corridor, the New International Land-Sea Trade Corridor between Chongqing and Singapore, the Greater Mekong Subregion, India's five demarcated development corridors and China's signature Belt and Road Initiative.

In this article we advance the argument that these initiatives constitute an emergent regime of infrastructure-led development whose ultimate objective is to produce functional transnational territories that can be 'plugged in' to global networks of production and trade. Large-scale infrastructure projects such as railways, highways, dams, ports and regional power grids underpin comprehensive territorial development plans geared toward extracting resources, producing commodities, and moving goods to manufacturing facilities and finally to market. These initiatives include strategies reminiscent of regional planning programmes and practices from the mid-twentieth century, such as river basin developments, development corridors, new towns and metropolitan master plans. However, in contrast to the postwar period in which many newly-independent countries employed 'spatial Keynesianism' in pursuit of the creation of an integrated national space economy that could foster import substitution industrialisation, the contemporary regime privileges cross-border connections and integration with global value chains (GVCs). The imperative of this emergent regime, as demonstrated by policy discourse and investment priorities, is to "get the territory right" in order to attract foreign investment, foster industrial upgrading and export-oriented growth. By mobilizing spatial planning strategies from the postwar era in pursuit of neoliberal objectives, infrastructure-led development offers an increasingly hegemonic rationale for spatial planning and development policy in the Global South.

Infrastructure-led development highlights the durability of globalization and the ongoing expansion of GVCs to emerging and frontier economies (Horner et al., 2018). It was borne out of the 2008 economic crisis which served to discredit earlier aspatial varieties of neoliberalism. In response to the crisis, the World Bank (2009) embraced state-led spatial

planning under the leadership of Chief Economist Justin Yifu Lin who advocated a "global Marshall Plan" (Yifu Lin and Wang, 2013). Meanwhile, China sought to stabilize its economy by funding infrastructure projects, while a decade of low interest rates in the U.S. encouraged investment in infrastructure worldwide (Tooze, 2018). Infrastructure-led development is currently driven by a "global growth coalition" that includes multilateral development banks, multinational corporations, multilateral governmental institutions, consultancies and some of the most powerful governments in the world such as China and the U.S.

The paper is divided into four sections. In the following section we situate the emergent regime of infrastructure-led development historically. We identify its origins in the consensus surrounding regional planning in the postwar era, which unravelled with the rise of neoliberalism. We then recount the imperatives and spatial manifestations of successive rounds of neoliberal reform. In Section III we show how the current regime of infrastructure-led development emerged as a result of the 2008 economic crisis and is driven by a global growth coalition whose primary imperative is to "get the territory right." We provide quantitative data that illustrates how spending on large-scale connective infrastructure increased tremendously in the past decade, and we introduce three mini-case studies of contemporary infrastructure-led development initiatives. In Section IV we conclude by introducing a series of questions surrounding the emergence of infrastructure-led development regarding its developmental outcomes and impacts.

II. The rise and fall (and re-emergence) of regional planning

In the decades following World War II the creation of a well-integrated national urban system and balanced space economy was considered a necessary precursor to the structural transformation and modernization of newly independent countries. Planners in many newly independent countries sought to address regional imbalances in national economies that were a legacy of colonialism (Horton and McNulty, 1974, p. 178; Logan, 1972). These efforts included river basin development schemes, new towns, development corridors and comprehensive metropolitan plans, which, when taken together amounted to "spatial Keynesianism" (see Brenner, 2004: Ch. 4). Many of these projects were components of competing American and Soviet development aid and technical assistance programs which constituted a second-wave of regional planning that was applied to what was then known as the 'Third World' (Lippman, 1959; Berliner, 1958). The Soviet Union's aid programme drew on its domestic experience building industrial new towns in its vast hinterland and its "hydraulic mission" in Central Asia (Shkvarikov et al., 1964; Suyarkulova, 2014), while American assistance programs were modelled on the early-twentieth century first-wave of regional planning epitomised by the Tennessee Valley Authority (TVA) (Ekbladh, 2002; Sneddon, 2015). The TVA's director celebrated the democratic incorporation of labourers, who he euphemistically referred to as "dreamers with shovels" (Lillienthal, 1944), while the Soviets celebrated the selfless worker willing to sacrifice for the realization of five-year-plans and a utopian society (Kotkin, 1995). In practice American and Soviet foreign aid programs sought to implement similar spatial planning strategies as the superpowers competed for the loyalty of client states (Adas, 2006).

The UN Habitat's first Urban Agenda passed in 1976 (p. 3 & 7) is illustrative of the consensus surrounding spatial planning that had formed in the postwar era. It states that a national human settlements policy should be "led by public sector action" and promote "balanced development for all regions." In order to ensure balanced regional growth, UN Habitat advocated the development of "a system of intermediate settlements" and "growth poles for relatively undeveloped regions" (ibid.: p. 11). The World Bank endorsed "integrated rural development" plans, and it argued that "the advantages of a coordinated effort, focused on a national plan or program for rural development, are almost self-evident" (1976, p. 33). In a similar vein, its 1979 *World Development Report* urged governments to steer investment to second-tier cities and achieve balanced regional growth. Leading regional planners John Friedmann and Clyde Weaver (1979, p. 1) were understandably self-congratulatory when they noted that regional planning had become "part of the established machinery of government" and that there was "a growing consensus about theory and doctrine." Unbeknownst to them the world was on the cusp of political upheaval, and the electoral success of Margaret Thatcher and Ronald Reagan catapulted proponents of supply-side neoclassical economics from obscure think tanks to positions of power.

The rapid rise of neoliberalism shattered the post-war consensus surrounding regional planning, and the role of the state in newly independent nation-states more generally. In the remainder of this section we trace the evolution of the objectives, policies and spatial manifestations of successive rounds of neoliberal reform. We apply the framework of adaptive neoliberalism developed by Peck and Tickell (2002), which periodizes neoliberalism's constant iterations into an initial roll-back of postwar institutions followed by a subsequent roll-out of "neoliberalized state forms, modes of governance, and regulatory relations" (ibid., p. 384).

A. Neoliberal roll-back: "get the prices right"

Proponents of neoliberal policies were steadfastly opposed to state-led regional planning for ideological reasons, but it was a series of events in the Middle East and the North Atlantic that sent shockwaves through the global economy and forced newly-independent countries to abruptly abandon spatial planning initiatives. The successive oil crises in the 1970s forced many developing countries to dramatically increase borrowing levels (Krueger, 1987a). This was sustainable because of high inflation, which meant that "the real rate of interest was negative for several years" and there "were even some years in which developing countries' real debt outstanding declined despite significant borrowing" (Krueger, 1987b, p. 180). This changed when the US and UK began pursuing anti-inflationary monetary policy in an effort to combat persistent stagflation – i.e. high inflation coupled with unemployment. The US Federal Reserve raised interest rates from 10.5% in April 1979 to a whopping 20% in 1980 (Trading Economics, 2018), and this led to significant capital flight from developing countries as investors chased higher returns in the OECD. Many developing countries struggled to service existing debt payments and ongoing infrastructure development projects were abandoned (see Krueger, 1987a; 1987b). The first full-blown economic crisis triggered by neoliberal reforms began in 1982 when Mexico defaulted on its sovereign debt, and it was quickly followed by a host of other countries.

International financial institutions responded to the debt crisis with the ostensible objective of achieving macroeconomic stability, and they subsequently imposed 'structural adjustment' as a condition on countries that received emergency financial assistance. Structural adjustment loans (SALs) were established by the World Bank in 1980 and typically imposed a series of roll-back reforms that represented a repudiation of the postwar consensus surrounding spatial planning, such as "fiscal adjustment, getting the prices right, trade liberalization, and, in general, a movement towards free markets and away from state intervention" (Easterly, 2005, p. 3). In a remarkable about-face from its 1979 *World Development Report*, the World Bank – and the Washington Consensus in general – suddenly prioritized "getting the prices right" over balanced regional development.

The development strategy endorsed by the Washington Consensus was aspatial (see Williamson, 1990), but it impacted the spatial distribution of settlements. Agglomeration tendencies were reinforced by policies that relied on market forces to distribute goods and services (see Anyinam, 1994; Mattos, 1999; Grant and Nijman, 2004). By isolating regions that policy makers had previously sought to integrate into national space economies (Mkandawire and Soludo, 1998), the introduction of neoliberal reforms had "an inherent bias towards the reinforcement of the colonial pattern of intra-national spatial disparities" (Owusu 1998, p. 19). The rollback of postwar development strategies was accompanied by the devolution of power to more local levels of government (Faguet, 2014), while civil society organizations were empowered vis-à-vis the state (Edwards and Hulme, 1996).

By the late 1980s state-led development strategies had been so thoroughly rolled back that, according to Colin Leys (1996: 24), "the only development policy that was officially approved was not to have one." However, it became increasingly apparent that weak local governments were not the best guarantors of free markets. In an effort to establish the conditions in which 'free' markets could be realized, the Washington Consensus began to roll out a series of market-oriented institutional reforms.

B. Neoliberal roll-out: "get the institutions right"

The World Bank's 1989 report entitled *Sub-Saharan Africa From Crisis to Sustainable Growth* began by acknowledging the durability of the prolonged economic crisis in many African countries. While it insisted that "[t]he countries that have persisted with [structural adjustment] reforms since the mid-1980s are showing the first signs of improvement" (pg. 1), it also noted that "[i]t is not sufficient for African governments merely to consolidate the progress made in their adjustment programs" (p. 1). The report asserted that in addition they must foster an "enabling environment" for private enterprise: "Africa needs not just less government but better government – government that concentrates its efforts less on direct interventions and more on enabling others to be productive" (p. 5). Thus, the World Bank became a staunch supporter of the "good governance" agenda (Woods, 2000), whose imperative to "get the institutions right" (Rodrik, 2007) became a further conditionality of structural adjustment loans. While the basket of reforms varied from country to country, these institutions typically included measures to reduce corruption, ensure transparency, enhance private property rights and foster an investor-friendly regulatory environment (McCarney, 2000).

The "good governance" agenda became the lens through which all development issues were understood, including the growing awareness that infrastructure had entered a general state of decline during the neoliberal roll-back period. The World Bank devoted the 1994 *World Development Report* to infrastructure, whose "poor performance" was cited as a factor that could inhibit economic growth. The report concluded that "the performance of infrastructure derives not from general conditions of economic growth and development but from the institutional environment" (ibid. 6). The report stated that "a consensus is emerging on a larger role for the private sector in infrastructure provision" (p. 7) and in instances where state-led involvement in infrastructure was necessary the World Bank advocated "applying commercial principals of operation" (p. 20). Thus, the role of the state was to establish an institutional environment that would encourage private investment in infrastructure, and if this was not possible the World Bank advocated that states assume the guise of an enterprise. This refrain was repeated two years later in the 1996 *World Development Report*, which targeted formerly planned economies. Again, the World Bank advocated privatizing state-owned enterprises and assets, but commercialization was considered a second-best option that "involves creating enterprises that, although still public, are similar in structure and operation to private enterprises. Enterprises should be removed from the control of ministries and converted into joint-stock companies reporting to a board of directors" (World Bank, 1996, p. 57). The articulation of the good governance agenda culminated with the 2002 World Development Report entitled *Building Institutions for Markets*, and it maintained the position that the role of the state is to introduce "competition as much as possible in those infrastructure sectors where it can substitute for regulation" (World Bank, 2002, p. 152).

The good governance agenda resulted in the privatization of public infrastructure across the Global South throughout the 1990s. The World Bank (2002, p. 151) noted that although "private sector provision of infrastructure rose tremendously during the 1990s in all sectors in all regions," the growth in private investment in infrastructure "has been smaller than might be possible" due to incomplete regulatory reform. There was scant contingency planning to address the shortfall of private investment in infrastructure because most national institutional reforms lacked a spatial component (see Barca et al., 2012). Impatient with the slow pace of regulatory reforms and lack of investment at the national scale, policy makers established zones with particular regulatory regimes designed to counter the country-specific barriers that inhibited foreign direct investment. Indeed, the spatial manifestation of neoliberalism's roll-out period is the proliferation of demarcated territories within which market-supportive institutions were established (e.g. special economic zones, free trade zones, export processing zones) (see Ong, 2006). One study published by the World Bank notes that "in 1986, the International Labour Organization's (ILO's) database reported 176 zones in 47 countries; by 2006, it reported 3,500 zones in 130 countries" (Farole, 2011, p. 17). The quantitative proliferation of zones was accompanied by a qualitative shift, in which zones progressively incorporated more and more aspects of economy and society (Easterling, 2014; Shatkin, 2017; Murray, 2017).

The establishment of zones largely failed to meet the ambitious economic expectations of planners. A recent global survey of SEZs found that "on the whole [SEZs] cannot be considered as a growth catalyst in emerging countries," and that typically "their overall economic dynamism does not exceed that of the countries where they are located"

(Frick et al., 2018, p. 26). A study on African SEZs notes that they "are not yet contributing to any significant dynamic benefits to their [national] economies," and they "may shift permanently and prematurely to a low-growth path" (Farole, 2011, p. 62). Similarly, the vast majority of India's special economic zones contribute little to export-oriented industrialization and "SEZs occupying 10 per cent of the land are responsible for 90 per cent of the total exports" (Jenkins et al., 2015, p. 3). Thus, even relatively modest attempts to get the institutions right within demarcated enclaves largely failed to result in industrial upgrading or export-oriented growth.

In addition to the establishment of zones, other innovative approaches to territorial planning were piloted as part of the good governance reforms. Their focus was on fostering endogenous growth factors and locally-embedded forms of institutionalized cooperation, and they were a reaction to the deepening of uneven development engendered by decentralization and the creation of strategically-designated export-processing zones (Pike et. al, 2017). These approaches constitute a third-wave of regional planning – sometimes referred to as 'new regionalism,' global city-regions, and the growth-with-equity movement (Scott, 2001). This new regionalism was particularly influential with activist local governments, and progressive academic promoters have theorized its possibilities in both Northern and Southern contexts. They argue it holds potential to improve conditions of rural development as well as metropolitan management (Boisier, 2000). Important contributions to this 'third wave' of regionalism have come from Latin America, a region where neoliberal reforms occurred alongside, and may have been buffered by, a wave of democratization and the deepening of social and economic rights over the past several decades (Chapple e al., 2012). But even within this context of institutional innovation and political empowerment, spatial strategies reminiscent of second-wave regional planning, and predicated on large-scale infrastructure investments and connectivity upgrades for logistics, have made a remarkable comeback in the twenty-first century. As demonstrated by the example of IIRSA that we introduce below, infrastructure-led development is largely embraced by national governments, promoted by supranational institutions that remain extremely influential in the region, as well as consultancies, financiers and new global actors such as Chinese state-owned enterprises and new centres of finance.

In conclusion, the neoliberal period witnessed the expansion of global trate, but economic activity that was offshored from the OECD became highly concentrated in a small number of developing countries (Baldwin 2016). While these countries attracted FDI, many other developing countries experienced deindustrialization (Rodrik 2016). This led to a backlash against the Washington Consensus (Grugel and Riggirozzi, 2012; Svampa, 2015; Behuria, 2016; England, 2018), and the 2008 economic crisis created a political opportunity for those who favoured a renewed role for the state in planning and governance.

III. Infrastructure-led development goes global

There is a growing global consensus among national governments and supranational institutions surrounding the merits of large-scale networked infrastructure such as roads, bridges, pipelines, regional energy grids, railways, ports, airports and zones dedicated to production and transportation. In this section we demonstrate that this consensus is animated

by a global growth coalition whose hegemony is shaping an emergent regime of infrastructure-led development. Large-scale infrastructure projects underpin coordinated spatial planning initiatives reminiscent of strategies from the postwar era, and their primary objective is to 'get the territory right.' Centralized spatial planning is meant to constitute functional territories that can be 'plugged in' to GVCs in order to foster industrial upgrading and export oriented growth. We conceptualize this regime and show how the 2008 economic crisis created the conditions for development policy to be re-spatialized. We will identify its primary objectives, planning strategies and the key actors responsible for its hegemony. We then present quantitative data that demonstrates a dramatic surge in spending on large-scale connective infrastructure initiatives in the past decade, and we present three mini-case studies of contemporary infrastructure-led development initiatives.

Table 1: Infrastructure-led development in historical perspective

	Imperative	Strategy	Spatial manifestation
Post-war consensus	Create an integrated and balanced national space economy	Spatial Keynesianism and state-led planning	Enhanced integration of national economic space and balanced regional growth
Neoliberal roll-back	Get the prices right	Market liberalization, privatization, deregulation	Reinforcement of colonial-era spatial patterns
Neoliberal roll-out	Get the institutions right	Good governance reforms, devolution and empowerment of civil society	Proliferation of zones with particular legal regimes
Infrastructure-led development	Get the territory right	Transnational spatial planning and inter-city infrastructure projects	Transnationally-networked territories designed to extract resources, move and make commodities

A. From the 2008 financial crisis to infrastructure-led development

The rediscovery of space and uneven development within neoclassical economics was pioneered by Paul Krugman, whose research explained, among other things, how imperfect competition and increasing returns could result in uneven development rather than lead to a convergence of factor prices (1991; 1993). While Krugman's research confirmed what geographers had long known, his influence on economics doctrine should not be

underestimated. By awarding Krugman the Nobel Prize in 2008, the discipline's elite establishment signalled its approval of the spatialization of neoclassical economics.

The spatial turn in neoclassical economics was translated into development policy by Justin Yifu Lin, who was in the unenviable position of becoming the World Bank's Chief Economist just three months before the dramatic collapse of Lehman Brothers and the onset of the 2008 financial crisis. Born in Taiwan and educated in China, Lin was the World Bank's first non-Western Chief Economist. While Lin was well trained in neoclassical economics orthodoxy, his understanding of development was informed by China's rapid transformation. He refined a theory of "new structural economics" whereby proactive governments augment comparative advantage through deliberate investment in hard and soft infrastructure (Yifu Lin, 2012). In this context, Lin argues that it is helpful to think of infrastructure "as one more component of an economy's [factor] endowments," and purposeful investment in infrastructure reduces transaction costs and "allow[s] the economy to reach its new production-possibility frontier" (ibid.: 111-112). The ideas of Krugman and Lin contributed to the 2009 World Development Report entitled *Reshaping Economic Geography*, in which spatial planning was reintroduced in development policy making. The report began "by elevating space and place from mere undercurrents in policy to a major focus" (pg. 3). It stated that "spatial disparities in income and production are inevitable" (pg. 6), so rather than an instrument designed to deliver balanced regional growth, it embraced spatial planning as a complement to market-oriented institutions. Thus, while the World Bank maintained that "the bedrock of integration policies should be spatially blind institutions" (pg. 23), it advocated spatial planning in some instances: "[A] foundation of institutions must be universal and come first, investments in connective infrastructure should be both timed and located well and come second, and spatially targeted interventions should be used least and last" (pg. 25). Spatial planning was thus presented by the World Bank as a last resort, when getting the prices and institutions right failed to have the desired effect.

Policy makers turned to this last resort in response to the 2008 financial crisis. The US Treasury Department embraced loose monetary and fiscal policy, and offered fourteen central banks near-unlimited access to dollars (Tooze, 2018). The availability of cheap capital and low interest rates fuelled a global rush of investment in infrastructure – particularly in "emerging markets" – which was bolstered by assessments of financial institutions and intermediaries (e.g. sovereign wealth funds and pension funds) that infrastructure is a sensible investment (Torrance, 2007; 2009; Clark, 2017). Meanwhile, as the world reeled from the financial crisis, China experienced a dramatic decline in demand for its exports. The Chinese Government responded swiftly and with conviction, and launched an unprecedented spending program that "was the first truly large-scale fiscal response to the crisis worldwide" (Tooze 2018, p. 243). Much of this stimulus was initially channelled into domestic infrastructure, such as an extensive high-speed rail network, and according to Adam Tooze (ibid., p. 251) "for the first time in the modern era, it was the movement of the Chinese economy that carried the entire world economy." The Chinese stimulus took on a global dimension in 2013 under the leadership of Xi Jinping, with the inauguration of the Belt and Road Initiative whose objective is to establish Sino-centric global production and trade networks (see below).

Infrastructure deficits remain in many developing countries despite America's monetary and fiscal policies and China's unprecedented program to build infrastructure globally. The UN (2015, p. 8) estimates that between $1-$1.5 trillion is needed annually to "bridge the infrastructure gap," and the signatories of the Addis Ababa Declaration committed to "facilitate development of sustainable, accessible and resilient quality infrastructure in developing countries through enhanced financial and technical support." This provided an impetus to the ongoing activities of international institutions and governments to invest directly in infrastructure. The World Economic Forum (2013), Asian Development Bank (Bhattacharyay et al., 2012; Mitra et al., 2016), the African Union (2015) and the African Development Bank (2019) have prioritized large-scale infrastructure investment that promises to enhance connectivity and economic integration. Furthermore, a host of institutions situated at various scales seek to encourage private-sector investment through the implementation of regulatory mechanisms designed to generate revenue streams from privately-owned infrastructure (O'Neill, 2013). The Institute for International Finance (IIF) established an Infrastructure Working Group which "represents an important step towards bringing together key stakeholders, with the goal of finding and promoting practical solutions to financing the infrastructure gap."[ii] The G20 established the Global Infrastructure Hub (GIH) in 2014 to coordinate infrastructure initiatives and facilitate private investment. It operates a database of existing infrastructure projects in eight stages from "initial government announcement" to "operations phase / construction phase,"[iii] which serves to match potential investors with opportunities. The G20 subsequently established the Global Infrastructure Connectivity Alliance in 2016 which is headquartered at the World Bank Hub for Infrastructure and Urban Development, and whose mission is to "work across regions and disciplines to promote cooperation, knowledge exchange, and meaningful progress in the field of global interconnectivity."[iv] The Asian Infrastructure Investment Bank (2018, p. 1) – a global multilateral development bank that is essentially under Chinese leadership – announced that one of its long-term aims is to "develop emerging market infrastructure as an asset class." Finally, key stakeholders in the private sector complement the efforts of international institutions and powerful nation-states (Torrance, 2009; Dodson, 2017). Most illustrative is the global consultancy McKinsey (2016: 3), which established the Global Infrastructure Initiative (GII) in 2012 to identify "ways to improve the delivery of new infrastructure and to get more out of existing assets."

The international institutions, multilateral development banks, powerful nations-states and key stakeholders in the private sector that are financing and financializing infrastructure constitute a global growth coalition. Policy makers at the forefront of this emergent dirigisme reject unbridled markets characteristic of the neoliberal era whilst remaining committed to its objectives, namely the pursuit of industrial upgrading and export-oriented growth through ever-enhanced global economic integration. Spatial planning – and infrastructure development in particular – is identified as the missing ingredient in earlier rounds of neoliberal reform. The World Bank Group's consultancy service (n.d.) portrays spatial planning as an antidote that can correct market and governance failures:

> In recent years, a number of countries have experimented with various strategies to correct market and governance failures within and across industries. One approach

> is to work with spatial strategies such as growth poles, growth corridors, and special economic zones (SEZs).

Spatial planning is thus represented as a turnkey component of contemporary development policy, and World Bank consultants offer to "help countries custom-design spatial growth strategies" by "identifying the spatial growth tools available; and selecting the best tool and optimizing implementation of the chosen approaches" (ibid.).

The aim of contemporary spatial plans is to 'get the territory right' through internationally-coordinated investments in networked infrastructures, and to produce territories that can be 'plugged in' to competitive global networks of production and trade. Territorial designs resurrect regional planning strategies from the developmentalist era, such as the creation of development corridors (Enns, 2018; Athukorala and Narayanan, 2018), growth poles (World Economic Forum, 2013) and new towns (Lynch, 2018; Côté-Roy and Moser, 2018). In contrast with the postwar era in which these strategies were deployed to create or enhance national economic space, spatial planning is increasingly geared toward the production of transnational territories.

Infrastructure-led development is first and foremost an industrial strategy that integrates production processes across expansive geographies stitched together with extensive logistics networks (Cowen, 2014; Danyluk, 2017). Indeed, signatories of the Addis Ababa Declaration (2015, p. 9) affirm a commitment to advancing "the linkages between infrastructure development, inclusive and sustainable industrialization and innovation." Similarly, the African Development Bank (2018: 64) asserts that "African countries can jump directly into the global economy by building well-targeted infrastructure to support competitive industries." These initiatives integrate extended rural landscapes (Zoomers et al., 2017) with a network of urban nodes geared toward specific value-addition activity. Ultimately the infrastructure-led development regime is giving rise to functional territories that constitute a globally-oriented geography of resource extraction, production, urbanization and integrated logistic networks.

Despite consensus surrounding the practice of infrastructure-led development, infrastructure construction and spatial planning is increasingly a field of great power rivalry. The primary protagonists are China and the U.S., and they are engaged in a race to connect isolated places through the expansion of infrastructure networks. Although the U.S. and China are in competition to integrate far-flung territories into their respective spheres of influence, they are largely in agreement on the practice of infrastructure-led development. China's involvement in the global infrastructure sector is well known, and we explore the Belt and Road Initiative below. In contrast, the U.S. had forsaken the global infrastructure sector until recently. A bi-partisan initiative signed into law by Donald Trump in October 2018 established the International Development Finance Corporation (IDFC), whose mandate is to provide affordable loans for infrastructure projects to low-income countries that are American allies (US Congress, 2018). The IDFC's objective is to "provide countries a robust alternative to state-directed investments by authoritarian governments and United States strategic competitors" (ibid.). This thinly veiled reference to China was echoed in a more explicit fashion by the U.S. Department of Defense (DoD) (2018, p. 2), which argues that the Belt and Road Initiative is "indicative of [China's] intention to use economic means to

advance its interests and enhance its global role by integrating hard infrastructure development with trade and financial architecture." In summary, superpower rivalry is enhancing connectivity and shaping how places are connected to the global economy.

B. A decade of enhanced connectivity

The implementation of infrastructure-led development presupposes continuous flows of investment capital to support the construction of connective infrastructure projects in emerging and frontier economies. Data from the World Bank's Public Participation in Infrastructure Database[v] demonstrates that there was a decisive shift from a focus on the privatization of city-based infrastructure in the 1990s, to the current emphasis on the construction of inter-city infrastructure. Over the past decade infrastructure projects have been concentrated in connectivity-oriented sectors in the Global South. In low- and 'low middle income' countries the largest sector of investment was electricity. Approximately 80% of initiatives were greenfield projects, about 40% of which were in excess of $1 billion. The case of Sun-Saharan Africa (SSA) is illustrative. Privatization of existing infrastructure accounted for approximately 40% of projects in low and low middle income countries in SSA in the 1900s, and ICT-related projects were the most numerous. In the past decade privatization represented a fraction of total investment in the same countries, and the two leading sectors in terms of investment and number of projects were electricity and ports. The cost of individual projects, on average, has also increased significantly.

Such investments are part of the global proliferation of infrastructure space (Easterling, 2014) and while they are reconfiguring geographies of inter-city and transnational connectivity, many initiatives fail to get off the ground, are perpetually unfinished or have unintended consequences. The article began with the example of Neom, which was thrown into jeopardy as a result of the state-sponsored murder of journalist Jamal Khashoggi. In contrast, many projects never materialize for mundane reasons. Indeed, large-scale infrastructure projects have historically faced challenges because many firms deliberately underestimate costs and risk in order to secure contracts (Flyvberg, 2007). Furthermore, according to Swiss Re and the Institute of International Finance (2014) there are a number of particular challenges in developing countries including underdeveloped capital and bond markets, a lack of domestic institutional investors and outdated legal and regulatory frameworks. Existing risks are amplified when infrastructure is transnational, but they are offset by the potential for transnational infrastructure to generate lucrative returns. The Global Infrastructure Hub highlights the advantages of investing in cross-border infrastructure projects:

> including access to a bigger market and potentially reduced demand risk. Multiple studies have shown that there are many opportunities to be gained in upgrading cross-border infrastructure, including benefits for trade and economic growth, which will trigger further demand for better connectivity, and hence, more opportunities for investment.[vi]

Finally, according to the AIIB (2019), some infrastructure investments are only viable if they are transnational in scope. A recent AIIB report (2019: I) stated that "many connectivity infrastructure projects would only make economic sense if linked up as a network to other countries and regions." Thus, transnational infrastructure projects involve heightened risks that inhibit investment, while they continue to be embraced by policy makers and planners given their potential returns. Multilateral institutions such as the AIIB are increasingly preoccupied by the challenges of coordinating transnational infrastructure networks and securing private-sector investment. Nevertheless, the grandiose visions and rhetoric surrounding large-scale projects tend to outpace their actual construction and connectivity. In these instances the conceptualization of seamlessly integrated regions is often not realized in practice, and instead there is a patchwork of selective connectivity (Liu, 2018; Kanai and Schindler, 2019; Macrorie and Marvin, 2019). In the remainder of this section we present three mini-case studies which are illustrative examples of infrastructure-led development that demonstrate its global scope.

Belt and Road Initiative

China's Belt and Road Initiative (BRI) is by far the most ambitious and geographically expansive example of infrastructure-led development. Its immediate objective is to cultivate Sino-centric global production and trade networks through the development of intra-city and logistics infrastructure. It was inaugurated by Xi Jinping in 2013 and its initial geographic scope on a Eurasian 'belt' and maritime 'road' in the Indian Ocean, has been expanded significantly and it now incorporates European and Latin American countries.[vii] This has required China to increase its state-directed outward investment (see Collier, 2018), which eclipsed inward FDI in 2015 (England, 2018). Many multilateral development banks and other institutional lenders have committed to supporting the BRI by undertaking or financing large-scale infrastructure projects (Dunford and Liu, 2019). The result of China's outward pivot and its inexorable influence on global capital, has led to a bewildering array of spatial planning schemes that integrate development corridors, special economic zones and an extensive network of ports (Song et al., 2018; Meleckey et al., 2019; Wei et al., 2018).

In many ways the BRI represents continuity with regard to the central government's reversal of market-oriented reforms from the 1980s, in favour of the state-led urban-based strategic sectors of the economy (e.g. construction and steel) (Huang, 2008). Its international focus is novel, however, and according to Xi Jinping the BRI represents an inclusive variant of globalization and addresses global deficits of peace, development and governance (Dunford and Liu, 2019; Liu et al., 2018). However, it remains unclear whether the BRI will facilitate a rebalancing of the global economy, and accelerate its reorientation toward East Asia. While a host of BRI projects are indeed underway and Chinese state-owned enterprises have proven resilient in uncertain economic times (Kwan Lee, 2018), the transfer of policy, standards and spatial planning models represent significant challenges (Song et al., 2019; Wiig and Silver, 2019). Furthermore, it is also too early to determine the impact of the BRI on partner countries. While poverty rates have decreased and urbanization has accelerated in Eurasian countries incorporated into the BRI (Chen et al., 2019), it is unclear if the BRI was a catalyst for these changes. Certain places and sectors are ultimately likely to benefit from

their deepened integration with the Chinese market, while places with competing manufacturing sectors may experience industrial decline (Bastos, 2018).

Initiative for the Integration of the Regional Infrastructure of South America (IRSA)

Launched in the year 2000, IIRSA constitutes an unprecedented effort to link South American infrastructure networks across national borders. Initiated by Brazil's Fernando Henrique Cardoso administration, the scheme received broad support from virtually every country in the region. It initially aimed to coordinate infrastructure investments in the transportation, telecommunications and energy sectors, thereby strengthening continental-scale axes of integration and development. During the first decade, IIRSA was an effective institutional vehicle for the realisation of modest cross-border roadway projects, and the consolidation of bi-oceanic corridors that cut across erstwhile remote Amazonian and peri-Andean regions (Théry, 2005). The scheme evinced a strong emphasis on corporate logistics seeking to reduce intra-regional transportation costs and improve the global competitiveness of South American exports through faster, more reliable and cheaper access to coastal ports servicing global markets. Under the political leadership of Brazil's federal government and influence of related investment institutions, IIRSA served to export Brazilian capital and corporate construction capacity to nearby countries (Hochstetler, 2014). Despite major opposition in the local communities where infrastructure projects bore a direct impact, IIRSA survived South America's so-called 'left turn' and was incorporated to the South American Union's Infrastructure and Planning Council. The new discourse on social integration espoused in the 2010s came with few if any revisions to the territorial designs planned in the neoliberal era (Kanai, 2016). While continental integration may be disrupted by Brazil's political crisis and Argentina's impending economic crisis, extensive investment in extractive industries and a diversification of global investment sources give reason to expect further infrastructure projects designed to integrate sub-national systems across international boundaries.

Lamu Port – South Sudan – Ethiopia – Transport Corridor

As the name suggests, this ambitious project links sub-national urban systems in Kenya, South Sudan and Ethiopia via rail and road networks. It also includes nodes geared toward oil extraction and a pipeline for its shipment, as well as an airport, a port and three "resort cities." Components of the initiative date back to the 1970s and were planned under the postwar consensus but never realized (Brown, 2015). The project is now more comprehensive and has been repurposed to complement Kenya's national development strategy *Kenya Vision 2030*. Indeed, the Kenyan Government boasts that this "is the first single Gigantic, Integrated, Transformative and Game-Changer infrastructure Project the Government has initiated and prepared under Vision 2030" (LCDA, 2015: 5). It is also integrated with other spatial development schemes, such as the Equatorial Land Bridge which links East and West Africa, and the East African Community's Road Network Programme (LCDA, 2015; Japan Port Consultants, 2011). Thus, the project is designed to foster an integrated transnational territory oriented around Kenya's dynamic economy by "enhance[ing] efficient, seamless inter-modalism in the country's transport and logistics

operations throughout the country and linkage to neighbouring countries" (LCDA, 2015: 2). Kenyan President Uhuru Kenyatta stated that this project "will strengthen Kenya's regional hub status as the originator of trans-boundary transport projects, special economic zones and free trade areas" (LCDA, 2015: 1). The overall project is divided into seven components, each of which require significant private-sector investment, are at various stages of completion and face unique challenges such as resistance from local communities and civil unrest (Enns, 2019).

IV. Conclusion: Impacts and consequences of infrastructure-led development

Infrastructure-led development is geared toward the design and production of comprehensive cross-border territories that integrate resource frontiers and industrial hubs with the global economy via large-scale networked infrastructure. This regime employs spatial planning strategies from the mid-twentieth century and its proponents hope that by 'getting the territory right' they will achieve the neoliberal objectives of attracting FDI, industrial upgrading and enabling export-oriented growth. To this end infrastructure-led development integrates resource frontiers, agribusiness and production nodes with logistics networks. This represents a reversal of decades of decentralization, as national and international policy makers are once again asserting authority over the domain of spatial planning.

We demonstrated how the infrastructure-led development regime was born out of the 2008 economic crisis. A decade of loose monetary policy and low interest rates in the US, combined with China's unprecedented economic stimulus, allowed for massive investment in ambitious infrastructure projects. This precipitated a shift among investors from a focus on the privatization of city-based infrastructure systems to the construction of transnational intra-city infrastructure. Although China and the US compete to connect places and expand their respective spheres of influence, we presented three case studies that demonstrated the global scope of infrastructure-led development. Thus, there is competition to connect specific places, but there is consensus surrounding the merits of connectivity and infrastructure-led development is increasingly hegemonic. Nevertheless, research has shown that the promises of large-scale connective infrastructure projects often remain unfulfilled, and in the remainder of this section we raise questions surrounding developmental outcomes and impacts of infrastructure-led development that can serve as a starting point for future research.

The most obvious question is whether the transformation of territory will have the *developmental outcomes* that its proponents anticipate. If we assume for a moment that in some instances planners will be able to actually "get the territory right" and attract investment to historically isolated and poor regions, it does not necessarily follow that these territories will indeed be "plugged in" to global networks of production and trade, in ways that foster export-oriented industrialization and upgrading. According to Baldwin (2016), the fundamental factor underlying the success of developing countries that were able to attract industrial activity that was offshored from the OECD in the 1990s and 2000s, was their combination of hi-tech production methods with low-cost labour. Furthermore, in some cases – particularly Poland, South Korea and Mexico – industrialization was partly determined by access to large markets. Infrastructure-led development will not alter these dynamics, so the

real question is whether the enhanced connectivity of hitherto rather isolated places will offset their comparative and locational disadvantages.

We speculate that the centralization of planning has the potential to influence outcomes at the regional or national scales. Indeed, national-scale spatial planning may serve to protect biodiversity hotspots and ensure that the most productive agricultural land remains under cultivation (Schindler et al., 2018). However, we consider it likely that this centralized regime of top-down spatial planning will be unable to coordinate events and actors at scalar and spatial distance. Indeed, (inter-)national planners will most likely struggle to come to terms with the dense thicket of street-level politics that determine how and by whom urban space is used on an everyday basis in most cities in the Global South (Bayat, 2000). Similarly, even well-meaning civil servants may struggle to manage – and contain – the social and ecological impacts of investment in remote areas. Corporate-run transnationally-oriented regional economies tend to subsume local economic activity and ways of life (Li, 2018; Perreault, 2018), and as shown by collapsed dams in Laos and Brazil in recent years, poor oversight of shoddy infrastructure can have deadly consequences. Thus, ambitious *territorial forms* may be realized, but their *content* may escape the control of (inter-)national planners given their scalar and spatial distance from neighborhoods and remote areas.

In this article we have sought to situate the origins of infrastructure-led development in a longer history of spatial planning, and interpret its emergence as an outcome of the 2008 financial crisis. We have concluded by questioning its developmental outcomes and impacts. And although newly constructed rail lines, bridges, ports and airports may indeed link new towns with resource frontiers along extended corridors, it is difficult to anticipate the urban or rural worlds that these territories will incubate beyond this very rudimentary description of infrastructural connectivity. Future research should document the evolution of infrastructure-led development and undertake situated case studies in order to critically analyse its developmental outcomes, unintended consequences and impacts.

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