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Beyond the boom. Genealogies of corridor urbanism in the making of the Lithium Triangle, Argentina and Chile

Alberto Valz Gris

Inter-University Department of Regional & Urban Studies and Planning (DIST), Politecnico di Torino, Viale Mattioli, 39, 10125 Torino (TO), Italy

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ABSTRACT

Since 2015, the Atacama region has emerged as the Lithium Triangle, a global hotspot for lithium extraction marked by the establishment of new mines and the expansion of existing ones. Adding to recent studies that document the adverse localized impacts of this booming economy, in this article I grapple with the layered geographies of logistics infrastructure that have historically enabled and materially sustained the process of resource extraction, probing the co-production of extraction and logistics. I propose to explore this intersection through the notion of corridor urbanism as proposed by Silver (2021) and chart its underexplored aspects in a context of extended urbanization and resource extraction. Through a mobile ethnography along a segment of the lithium trade's logistical network across the Atacama, I engage with the layered genealogies of three infrastructural elements that have been crucial in the development of this extractive landscape: the upgraded cross-border road and customhouse at Paso de Jama, the recently repaired Huaytiquina railway and the expanded port of Mejillones. Reflecting on these genealogies and their associated dynamics of smoothing, repair and securing, I locate some defining features of corridor urbanism, its extractive dimension, layered temporalities and selective character whereby socioecological wellbeing is unevenly distributed. In conclusion, I argue how a closer engagement with the situated genealogies of corridor urbanism can contribute to a sharper understanding of present and near-future extractive landscapes, especially in the context of a global expansion of resource frontiers and wider technological restructuring.

1. Introduction

Across the last decade, the Northern territories of Argentina and Chile and the Southern portion of Bolivia have been increasingly known as the Lithium Triangle, a formula conceived by mining companies who bear extractive interests in the region (Observatorio Plurinacional de Salares Andinos 2021), evoking the unique concentration of lithium resources in this area (Fig. 1). These territories are in fact under the attention of several transnational mining companies on a quest for lithium, a key industrial resource in the production of rechargeable batteries for electric vehicles, portable electronic devices and grid storage applications (USGS 2022). While Chile's Salar de Atacama has been an established site for the production of lithium carbonate since the 1980s, Argentina's Puna de Atacama has seen a wave of geologic exploration and the establishment of new mines since 2015, when the first industrial-scale lithium mine started production in the Salar de Olaroz. Northwestern Argentina's emerging lithium boom can be partly explained through the geomorphological structure of its territories, as its mineral reserves are scattered across a vast number of deposits, generally associated to its numerous *salares* (salt flats). As a result, these high-altitude salt flats are increasingly enmeshed into a diverse array of economic interests, mining permits, drill holes and extractive infrastructures. As a territorial metaphor, the Lithium Triangle identifies both the mineral bounty to be found in its Andean territories and their increasing role amidst the global scramble for new key industrial minerals (Bustos-Gallardo, Bridge, and Prieto 2021; Pitron 2018). Through this accelerating global rush for lithium, the broader Atacama region has emerged as the most dynamic global hotspot for lithium mining (USGS 2022).

This has not occurred without cost. Both international press outlets and an emerging literature in political ecology and geography have been devoting their attention to the accelerating extractive economies of the Atacama, charting the multiple inequalities associated with the making of this extractive landscape. Scholars have traced the multiple contradictions and adverse impacts on population and the environment associated with the expansion of this resource frontier. Long-term ethnographic encounters with lithium extraction in Chile's Salar de Atacama (Babidge 2021; Babidge et al. 2019) have shown how the

E-mail address: alberto.valzgris@polito.it.

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industrial-scale extraction of lithium across the last thirty years has produced forms of environmental exhaustion and harm to local indigenous populations, both in economic and cultural forms, mainly identifying the issue of water depletion, the survival of a complex yet fragile local biodiversity, and shifting patterns in local lifeways (Lorca et al. 2022). Quite distinctly, the 'problem of lithium' is becoming particularly well-known even beyond academic circles due to its particular form of mineral processing through evaporative extraction, which uses intense solar radiation and dry winds to obtain lithium salts from subsurface brines (Bustos-Gallardo, Bridge, and Prieto 2021). And while water overconsumption is a frequently discussed issue across all mineral economies, lithium extraction takes a particular toll on water resources in a hyperarid region such as the Atacama. Together with a focus on the complex socioenvironmental effects of lithium extraction both in the more established Chilean mining sector and across the nascent Argentinian production (Fornillo 2015; Marchegiani, Höglund Hellgren and Gómez 2019), a political ecology perspective has shed light upon the articulation of power relations involved in the process, since the making

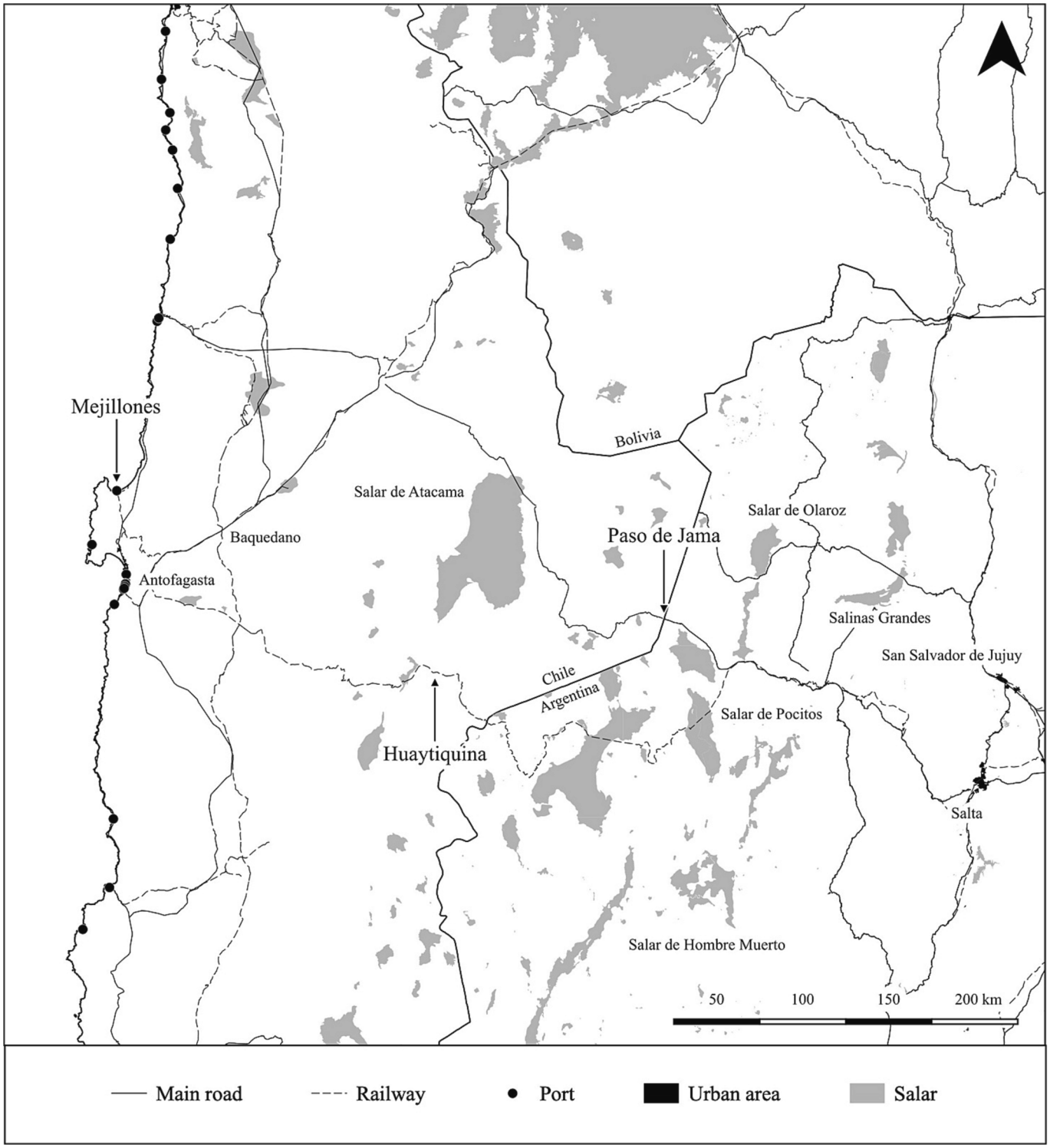

Fig. 1. The part of the Atacama region framed by transnational mining companies as the Lithium Triangle.

of this extractive landscape necessitates the participation of mining companies, the state and indigenous communities (Dorn and Gundermann 2022; Gundermann and Göbel 2018). The power asymmetries between the mining-state conglomerate and local populations have a substantial potential for driving both latent and actually emerging socioenvironmental conflicts in the region (Dorn and Ruiz Peyré 2020), which has been experiencing forms of both spontaneous and coordinated opposition to lithium mining (Temper et al., 2015). In general, scholars involved in this emerging research agenda adopt the lens of extractivism for charting the adverse impacts of lithium extraction on local environments and populations (Jerez, Garcés and Torres 2021), albeit in a renewed and 'greened' form hinged upon positive narratives centered on its sustainable unrolling (Voskoboynik and Andreucci, 2022).

Along these lines, the prevailing interests of this emerging literature have remained circumscribed to the localised impacts and multiple socioecological inequalities associated with the process of lithium extraction in the region, leaving a distinct knowledge gap on the role of transnational logistics infrastructure in the co-production of this extractive landscape. There are two key reasons for focusing on the role of transnational logistics infrastructure. First, mining economies (and extractive economies in general) are transnational in their nature, being tied into and dependent upon global production networks that extend far beyond the locales of bare resource extraction (Dorn and Huber 2020), and that drive the geographical expansion of resource frontiers (Horner et al. 2018). In this sense, important questions must be asked not only regarding how minerals are mined and which local impacts are produced, but also how these resources are circulated, and how this circulation comes to produce the daily materiality of extractive landscapes. Second, extractive landscapes are naturally articulated around mineral reserves and the mines that exploit them, but also around an entire ecosystem of industrial and logistics infrastructures that facilitate their distanciated movement to places of processing and production into, in the case of the Lithium Triangle, rechargeable batteries. Here, the multiple discovery notices published by junior mining companies across the region offer an intriguing impression of the circulatory dimension of the mining economy of the Lithium Triangle. Alpha Lithium, for example, promotes the favorable location of its Tolillar project on the front page of its website by noting its proximity to the port of Antofagasta. Similarly, Neo Lithium Corp. locates its Tres Quebradas project's connectedness to a cross-continental network that spans from the fluvial port of Rosario to the Pacific port of Copiapó through both highways and railways. Argentina Lithium Corp., in more detail, states its Rincon West project's immediate adjacency to the Ruta Nacional 51 in the Argentinian province of Salta. The maps and diagrams employed by these companies reveal an omnipresent description of the already existing infrastructural systems capable of collecting and transporting the operations' prospective industrial output. Proximity to established road arteries, possible connections with transcontinental railways, and distances from ports are common key elements across these documents, and central arguments in proving the feasibility and profitability of a prospective mine. In other words, mining firms not only describe in detail the specific object of their quest through measures of volume, purity and concentration, but also prefigure its practical insertion into global markets from remote areas such as the Puna de Atacama. The infrastructural web increasingly wrapping the seemingly untouched landscapes of the Atacama is thus recurrently presented as a supportive grid for present and future mining operations, allowing for the shipment of extracted minerals towards other steps of their global commodity chain.

In this article, I propose to investigate such infrastructural dimension of resource extraction through the concept of corridor urbanism. Proposed by Silver (2021), the term stimulates a heuristic framework on the multiple and uneven urban dimensions of economic and infrastructural corridors. In Silver's view, corridors are transnational in nature and act as conduits for material and human flow, channeling economic investment and resulting in distinct yet related spatial arrangements across a diverse range of elements such as gas and oil pipelines, economic enclaves, trade networks, information channels and associated infrastructures. Silver's leading assumption is that the planning of and investment in such large-scale, planetary-oriented infrastructures are set to determine "new patterns of global urbanism" (254) that urban researchers should grapple with. In particular, corridor urbanism renders untenable clear-cut distinctions such as North/South, urban and non-urban, circulation and disconnection, thus contributing to the multiplicity and openness of what "the urban" of global urbanism (Sheppard et al., 2013) means. As a global urbanism resulting from "multiple corridor-configured regional urbanisms" (p.254), the conceptual effort of corridor urbanism is to draft a framework to examine these emerging geographies of global circulation in relation to urban built environments. Such urban dimension of corridors is, in fact, legible within an increasing interest in infrastructural networks in the field of urban studies, defined by Dodson (2017) as an "infrastructural turn" in the discipline. Notably, this emerging concern is marked by the emergence of several cognate terms such as, for example, supply-chain urbanism (Danyluk 2021) infrastructure-led development and Silk Road urbanization (Apostolopoulou 2021a). The contours of this scholarship on infrastructure-led urbanization as a context for corridor urbanism will be examined in the following section. Three aspects of corridor urbanism offer substantial opportunity to expand its analytical purchase. First, despite corridors being "neither city-centric nor planetary in its composition" (Silver 2021, p.254), the concept has been so far operationalized by locating the role of cities as hubs in the infrastructural-economic flow of corridors, such as the uneven outcomes produced by Belt and Road investments in Athens and Gwadar (Silver 2021), London (Wiig and Silver 2019) or Colombo (Apostolopoulou 2021b). What is left of the 'extended' urban dimension (Castriota and Tonucci 2018; Simone 2019) that these corridors embody and rely upon? How are concentrated and extended urban forms related through corridors themselves? Second, the concept is set to understand emerging spatial formations associated with contemporary political-economic transitions, such as the shift of geopolitical power to the Pacific, the rise of China and the integration of recent technologies of circulation and value extraction (Silver 2021). Given the timeframes usually associated with large-scale infrastructure planning and deployment - many of which span across decades such as, for example, the TAV in Val di Susa - the analytical purchase of corridor urbanism should consider the layered geographies that come to constitute infrastructural corridors. How are corridors prefigured, built, reimagined and repurposed by transforming built environments across decades? What is the duration of corridor urbanism itself? Which histories inform the articulation of corridor urbanism on the ground? Third, the extractive dimension of corridor urbanism is hinted at (Silver 2021, p.252), but never fully exploited. Among the many possible forms of value extraction, recent literature on development corridors has shed light on their association with natural resource extraction (Lesutis 2019b) configuring a sort of corridor extractivism. How does the progressive layering of extended urban forms grant the possibility to operationalize upcoming resource booms? If corridor urbanism is set to chart "a new epistemology of global urbanism" (Silver 2021, p.254), its geographically extended, historically layered and extractive dimensions offer directions for expanding the analytical purchase of this concept.

By exploring the concept of corridor urbanism through the geographies of the Lithium Triangle, in this article I ask which patterns of infrastructure deployment contributed to producing this emerging landscape of resource extraction. Although not directly associated to the

linear dimension that an institutional definition of corridor would grant,[1] its primary function is oriented towards channeling a key industrial resource from the underground into the circuits of global circulation, as one of the starting points of the rechargeable battery commodity chain. Despite being an area and not a line, in other words, it performs the primary function of a corridor. Not only: the Lithium Triangle is also traversed by an institutional corridor, known as the Capricorn corridor, one of the ten 'integration and development axes' promoted and financed by the Iniciativa para la Integración de la Infraestructura Regional Suramericana (IIRSA) (Kanai 2016). As it will be explored in detail below, many of the crucial infrastructures that materially constitute the Lithium Triangle have been financed through the Capricorn corridor, thus shedding light on the layered dimension of corridor urbanism. As an extractive hinterland set to feed planetary markets with a key industrial resource (Brenner and Katsikis, 2020; Arboleda, 2020), the geographies of the Lithium Triangle hint at the extended urbanization of corridor urbanism, intended both as those geographies which materially count in sustaining the metabolism of urban agglomerations (Angelo and Wachsmuth 2015) and the possibility to theorize about the urban from anywhere (Robinson 2016). Finally, the weaving of logistics and natural resource extraction sheds light upon the extractive dimension of corridor urbanism.

In what follows, I focus on the genealogies of corridor urbanism through an account of the spatialities and temporalities of infrastructure-led development that led to the formation of the booming landscape of the Lithium Triangle along the Capricorn corridor. In describing three infrastructures promoted under the Capricorn framework and currently working as key elements in the articulation of the Lithium Triangle, I chart the layered genealogies that contribute to the co-production of the present territoriality of the Lithium Triangle, although not originally designed around this particular mining economy. The upgraded Paso de Jama customhouse, the re-activated Huaytiquina railway and the expanded port of Mejillones (see Fig. 1) show how their spatialities have both been restructured by and allowed for the emergence of the lithium economy across the Atacama. Moving along this logistics infrastructure that channels lithium into transnational trade networks, my primary argument is that the planning and deployment of logistics corridors is a constitutive dynamic in the making of extractive landscapes, and that, in turn, the layered genealogies of corridor urbanism are a critical heuristic tool in charting the *trans*-scalar articulation and controversial development of extractive landscapes. In showing how development corridors and natural resource extraction are tightly woven together, the findings developed in this article contribute to a better understanding of the emerging transcalar spatialities of corridor urbanism, the importance of which lies beyond the geographical space of Latin America in the context of planetary-scale resource booms and wider technological and economic restructuring. More broadly, by placing logistics infrastructure squarely at the center of the study of extractive landscapes and reading corridor urbanism in a context of natural resource extraction, I respond to calls for charting a global "political ecology of urbanization" (Angelo and Wachsmuth 2015), overcoming urban political ecology's almost exclusive focus on the traditional city at the expense of other aspects of contemporary urbanization. The first section frames the role of logistics infrastructure in shaping extractive landscapes by contextualizing corridor urbanism within recent scholarship on infrastructure-led development, charting its intersections with analyses of extractive landscapes and proposing a methodological orientation based on a genealogical and situated approach to logistics infrastructure. The article then turns to an empirical analysis of the three infrastructures outlined above.

[1] See, for example, the projects promoted by the Trans-European Transport Network (TEN-T), an initiative set to improve the interconnection, interoperability and accessibility of transport in the European Union, which is primarily built upon the figure of transport corridors.

2. Genealogies of corridor urbanism and resource extraction

Beyond the increasing attention in critical social theory devoted to logistical circulation as the defining feature of contemporary capitalism (Mezzadra and Neilson 2019), infrastructure has gained significant traction in urban studies as an object of inquiry. Speaking of a global infrastructure turn, Dodson (2017) proposes to better understand the centrality of infrastructures, including logistical infrastructures, as a leading driver of urbanization processes worldwide. On a simple material level, the rapid and growing urbanization of the planet can be connected to the proliferation of hard and soft infrastructures, set to fulfil the growing service demand by an increasingly urban population, whereby the diffusion of urban infrastructures would be broadly proportional to a growing urban population globally. Such a global infrastructure turn is currently being explored and conceptualized through several overlapping yet distinct conceptual keys that can help texturing the framework of corridor urbanism.

The notion of infrastructure-led development locates infrastructures of connectivity as the leading axis along which urban and regional development unfolds. More specifically, this concept illustrates an emerging developmental regime with neoliberal characteristics geared towards the production of functional transnational territories that can be 'plugged in' to global networks of production and trade (Schindler and Kanai 2021). From a political-economic standpoint, large-scale transnational infrastructures thus become the recipients of large public and private financial investments as a pathway to socioeconomic development, whereby the participation of globally-oriented, so-called infrastructure states is an increasingly defining feature (Schindler & Di Carlo 2023), yet often resulting in highly uneven value distribution. Grounded analyses of infrastructure-led development have recently shown how these investments mostly end up exacerbating existing socioeconomic difference (Enns 2018, 2019). A focus on the uneven distribution of value is common across this scholarship, broadly addressing infrastructure deployment from a critical standpoint, showing for example how mega-projects have often reinforced marginalization in historically disenfranchized spaces (Mosley and Watson 2016), replicating patterns of highly uneven urban development by distributing costs and risks in an unequal way (Kirshner and Power 2015, Wiig and Silver 2019) and ultimately providing limited opportunities for socioeconomic development (Bridge 2008) despite the often associated win–win scenarios. A commitment to examine patterns of uneven development (Smith 1984) and to observe the seesaw geographies of advanced capitalism is a shared concern for corridor urbanism. Perhaps what is less explored in the current state of research around this concept are the extended geographies of urbanization of corridor formation, dimensions that are often evoked but are latent as an empirical site of research. In the present time, this sets corridor urbanism apart from extant scholarship on one of the key sociomaterial forms associated with this infrastructure-led regime that has gained increasing geographic interest - development corridors. The definition of development corridors seemingly stems from an institutional perspective, as a set of linearly interlinked economic investments in hard and soft infrastructures. One key element of the scholarship on development is that it most often intersects rural (or seemingly non-urban) economies and landscapes. By performing as "dreamscapes of modernity" (Müller-Mahn 2020) development corridors interact with non-urban economies through dynamics of infrastructural rearrangement and technological upgrading, often with highly mixed outcomes (Scholvin 2021). Enns' research (2019), for example, shows how the construction of the Lamu Port, South Sudan, Ethiopia Transport (LAPSSET) Corridor significantly hinders land access for local populations and associated rural economies, thus illuminating a contradictory dialectic between the proposed mobility of development corridors and their resulting immobilities. Drawing on evidence collected along the same corridor, Lesutis (2020) illustrates how corridors privilege certain lives over others, engendering forms of spatialized dispossession. From an urban studies perspective, it remains to be asked

how the corridor urbanism performed by development corridors, as an expression of global urbanism unfolding along lines of economic investment and infrastructure deployment, interacts with rural economies and landscapes. Which politics of circulation (Stepputat and Hagmann 2019), for whom and for what, does corridor urbanism perform or inhibit? One of the interactions between these logistical networks and rural economies and landscapes is that of natural resource extraction. As extensively shown by Lesutis (2019a, 2020, 2022), corridors are set to open up historically landlocked areas and to connect their natural resources to global markets, configuring a sort of corridor extractivism privileging the movement of raw materials over that of people. On cognate terms, Danyluk (2021) proposes the concept of supply-chain urbanism to describe efforts that attempt at remaking urban space in the name of smooth and efficient circulation. While this conceptualization is once again susceptible to the methodological cityism (Angelo and Wachsmuth 2015) that scores corridor urbanism in its present form, it points valuably to processes of standardization, synchronization and alignment that the making of logistical landscapes relies upon. As Wiig and Silver argue (2019), standardization has long been the focus of research on infrastructure-led development, focused on locating the practices that make logistics systems interoperable. Supply chain urbanism, distinctively, balances a focus on the apparently smooth practices of standardization by pointing to the contested materialities that emerge – ironically – where technologies of synchronization and securitization are projected onto urban environments. Referring to the turbulent dimension of logistical landscapes (Chua et al., 2018) and understanding logistics as a violent practice (Cowen 2014), supply chain urbanism asks how efforts in rendering the politics of circulation more efficient are met with increasing resistance, refusal and opposition, highlighting the heterogeneous and contested nature of these spaces. Taken together, the conceptual cues variously associated with the global infrastructure turn point to the heuristic role of logistics infrastructures as urban phenomena, charting their sedimented histories and uneven outcomes as a contested and plural everyday grammar of an increasingly urbanized planet. Logistics infrastructures are then not only a realm of circulation per se, ever more pervasive and violent (Cowen 2014), but also machinic, material assemblages through which the articulation of urban realities can be more finely understood (Amin and Thrift 2017) in ongoing theorizations about the global urban.

It is surprising that this blossoming literature at the nexus of urbanization and infrastructure – extensively published on the pages of this journal (see Enns 2018, Folkers and Stenmanns, 2019, Lesutis 2019a, Müller-Mahn 2020) – has only been marginally considered in emerging analyses of extractive landscapes. Conceptual analyses have championed, for example, a Global Production Network (GPN) approach to the extractive industries, where the spatial and temporal articulation of extractive industries come to the fore (Bridge 2008), a useful approach to examine natural resource extraction beyond the naturalized container of the state and to reveal its decidedly relational character. However, the material and historical articulation of these inter-firm networks is often receded from view, as this is hardly the goal of the GPN approach in economic geography. On the other hand, case-based studies of extractive landscapes have focused on multiple issues such as the nexus between resources and political power (Branch and Martiniello 2018), or the violence and suffering associated with mining enclaves (Lesutis 2019a, 2019b, 2022). The work of Kirshner and Power on Mozambique's booming coal landscapes (2015) does provide a brief analysis of the growing infrastructures of circulation structured around Tete's mineral economy. Despite its lurking presence and structural role, logistics infrastructure thus remains in the background in studies of emerging extractive landscapes, leaving several questions open. What is the role of logistics infrastructure in the co-production of extractive landscapes? In particular, how do established trade routes actively shape the possibilities of extracting and circulating new resources? How do layered planning histories influence the developmental outcomes and spatial possibilities of mineral extraction? In other words, how is the ground prepared in case a new mineral resource boom emerges? How is a resource frontier anticipated? In an effort to both understand the territorial dynamics that came to produce the Lithium Triangle in its current form and to advance an understanding of corridor urbanism, I propose two methodological moves focused on a genealogical approach to infrastructural histories and on a situated material analysis of their present outcomes. The first move seeks to address extractive landscapes beyond the booming dynamics they are often associated with, instead focusing on the *longue durée* of their making and the layered materialities that provide the logistical groundwork to make resources accessible across decades. This approach is best exemplified through the recent work of Kanai and Schindler, which have been focusing on the historical evolution, sedimented planning histories and ideological regimes that materially constitute these cross-border infrastructures (Kanai 2016; Schindler and Kanai 2021). Similarly, Enns and Bersaglio (2020) have responded to a preference for short-term histories in research on the infrastructure turn by researching the constitutive dynamics of infrastructure-led development in Kenya in the country's colonial past. Through a focus on the *longue durée* of infrastructure deployment, they argue, the present shortcomings of extant infrastructures become more clearly legible. Through a critical reconstruction of specific infrastructure-led initiatives, this approach seeks to underline the role of layered infrastructure building in shaping highly uneven developmental outcomes. The second move seeks to respond to recent calls for more situated research to explore these issues across specific locales (Silver 2021). One methodological advancement that Silver proposes through the notion of corridor urbanism is to render the textured everyday materialities of logistics infrastructures, complementing both dominant narratives and extant geographical approaches to this question that equal corridors to standardization. By referencing feminist and post-colonial approaches, an analysis of these trade networks "begin[s] not with epistemological abstraction but rather with situated, textured accounts of everyday relations of infrastructure" (*ibid*, p.257).

Following these two methodological cues, the next three sections of this article focus each on a particular infrastructure whose role has been determining in the emerging spatial articulation of the Lithium Triangle: the upgraded customhouse and associated road network in Paso de Jama, the re-activated Huaytiquina transnational railway line connecting Salta and Antofagasta and the recently established port of Mejillones on the Chilean coast. As a response to the questions outlined above, each of these spaces is the result of both established trade networks, of long-term planning strategies and of alternating moments of functioning and decay. The empirical material presented in what follows is the result of fieldwork carried out in November and December 2018 across the Atacama region spanning the borders of Northernwestern Argentina and Northern Chile. The very field of this fieldwork eschews the territorial and bordered categories of regional and urban scale and instead focuses on the relational space of logistics as its leading axis and field contour. In practice, it takes the form of a mobile, relational and multi-site ethnography (Desmond 2014, Marcus 1995, Streule 2020) performed along an ethnographic line that follows lithium along its regional commodity chain. Taking cues from scholarship on "following things" (Cook 2004, 2006), this approach seeks to retrace the emerging geographies of the Lithium Triangle through the circulation of its leading mineral commodity. Despite the scant deployment of thing-following methodologies as an orientation in urban inquiry, the circulation of matter can provide a heuristic framework to explore the geographies of contemporary urbanization across the city-centric and the planetary (see, for example, Ibañez et al., 2019). From a simple material standpoint, matter circulates through logistical networks reaching far corners of the planet, yet always composed of specific agglomerations. The material infrastructures that come to constitute extractive landscapes, and the specific modalities through which minerals shape infrastructures, can thus be positioned as the extended fields along which corridor urbanism unfolds. The nodal infrastructures that form the empirical case studies of this paper are the result of a progressive understanding of the lithium

commodity chain acquired while on the field and of their embodied observation, their progressive layering documented through interviews with public officials and private actors, spontaneous conversations and an engagement with published materials on local histories.

3. Jama: Smoothing out the border crossing

Resting at 4.200 m in altitude, Paso de Jama is an Andean mountain pass on the border between Argentina and Chile, a mandatory crossing point for goods and people moving across the two states. Approaching it from the Argentinian side, the road winds through the high altitude flatlands of the Puna, their brown landscape occasionally stained by the clear water lagoons and white salt flats that are now known to signal precious yet mostly untapped lithium deposits. One of these is Salar de Jama, adjacent to both the village and the pass that bear the same name. Although still marked by relatively invisible signs such as sparse vehicle tracks on its white surface, the Salar de Jama is one of the salt flats which has been undergoing a campaign of geologic exploration. I had been there a few weeks earlier, observing the activity of a team of Argentinian engineers who were using the salt flat and its resources as a test site for experimenting with low water usage techniques for lithium extraction, which they sought to expand to the industrial scale. The small-sized well that these workers opened with their shovels in the white crust of the salt flat revealed an almost immediate presence of mineral-rich brine, later pumped into a water tank and transported to a nearby area for an evaporative test. The people I shadowed on the salt flat, however, were not the only ones bearing an interest in the rich underground brines of Salar de Jama, as at the time of my visit two other companies were requesting exploration permits in its vicinity. Their shovels excavating the white surface bear witness to the rudimentary beginnings of extractive landscapes.

Beyond the mineral interests that insist upon the white surface of this salt flat, a more pervasive role in co-producing this emerging extractive landscape is played out by the eponymous mountain pass. Paso de Jama is a strategic border crossing joining the Chilean region of Antofagasta with the Argentinian province of Jujuy through the 27-CH road on the Chilean side and the Ruta Nacional 52 in Argentina. It is currently the sole viable possibility for import and export flows across the transnational Atacama region between these two countries for a particular configuration of both physical and infrastructural elements. On the one hand, its role as the most heavily used border crossing in the region ties into the comparative advantages offered by its geographical position, as its desert location allows for continuous operations throughout usually dry winters, despite its altitude and latitude. During the time in which the other Andean passes around this latitude are covered in snow, Jama operates. On the other hand, its success is not only connected to the advantages enabled by physical geography. Rather, it is also the result of planning and investment strategies that sought to equip this mountain crossing with suitable infrastructural arrangements. As a former schoolteacher in Susques recalled[2] the border crossing itself was opened in 1991, yet at this time the road leading to it through the Argentinian Puna was comparable to the few others that sparsely cross the plateau, unpaved and riddled with potholes and ensuing maintenance costs. Its paving was finally completed only fourteen years later, resulting in a continuous and smoother transport infrastructure from San Salvador de Jujuy to Antofagasta. Moving along the Ruta Nacional 52 from Humahuaca, it is likely to cross several heavy load vehicles, as waiting for a rare bus at the entrance of Susques is. Truckloads of minerals, especially borates, but also commodities from far away agricultural regions and further industrial areas intensely crisscross these otherwise sparsely populated landscapes. Beyond its surface treatment with asphalt, it is also the very shape of the Ruta Nacional 52 that responds to the technical challenges of having heavy load vehicles climbing up Andean gradients: its width is never less than a few meters, its switchbacks always designed around a sufficiently wide radius, its grade never too steep even for fully loaded trucks. Further up the road, the upgrading of the Paso de Jama customs building at the border crossing has been, until now, the last step in the composition of an effective import–export system between Argentina and Chile at this latitude. Its renovation was concluded in 2009, only after completing the paving of the Argentinian section of this leading road artery (IIRSA 2017). Traveling on a passenger bus from Susques to San Pedro de Atacama, the stop is mandatory for both goods and people in order to perform border control procedures. Among the barren hills that surround this solitary outpost, the customhouse is located in a building on the roadside, where passenger and commercial flows are neatly separated. In fact, border crossings of the commercial type have been transferred to a separate lane, a design choice that came together with the entire renovation of the customhouse, granting more efficient import–export operations between the two countries by expanding its capacity for fiscal control of up to 120 heavy load vehicles a day and by separating passengers from inert commodities.

As one of the sparse border crossings between the Northern territories of Argentina and Chile, Paso de Jama has been a pivotal point in the articulation of the Capricorn corridor. As documented in the IIRSA project portfolio (2017), two separate funding schemes have contributed to produce the smoothing of import–export flows through this path: on the one hand, the CAP01 project financed with US$54 million the upgrading of the Ruta Nacional 52 in Argentina, while the upgrading of the Jama customhouse was realized under the CAP02 project, granting an additional US$4 million. Within the vision of IIRSA, this center would function as the pivotal point of a bi-oceanic system channeling the entire transit of goods from the North of Chile, both for consumption in the Brazilian and Argentinian markets and for the shipment towards the European and U.S. East Coast markets. Notably, this trade includes metallic mining products, copper, gold and non-metallic minerals. Conversely, Paso de Jama would channel the opposite traffic from the Argentinian Northeast and the the Eastern region of Paraguay, as well as primary commodities and industrial products from the Argentinian Northwest and the Brazilian South towards the Asian-Pacific and U.S. West Coast markets. As reported by Safarov (2019, 287), however, the logistical role of Paso de Jama predates the IIRSA initiative. Its emergence within the modern rearrangement of the region can be traced back to the 1970s, when local and regional actors from both Chile and Argentina seeking to strengthen the transport integration between the two jurisdictions located the Paso de Jama as the lowest in altitude between the then-used alternatives of Paso de Zapaleri and Paso de Poques. Following this choice, the then-called Ruta Provincial n°16 was extended from Purmamarca, first to Salinas Grandes and then to reach Paso de Jama. As a result of these deeply layered infrastructural improvements investing this transport system across its road and customs components, the Ruta Nacional 52 now functions as the leading backbone along which the most dynamic section of the emerging lithium landscape of the Atacama is being produced, clearly highlighted across mining companies' discovery notices. As an established trade route recently upgraded through a transnational integration and development program, Paso de Jama illustrates both the territorial persistence of transport networks and the processes of smoothing that compete to the making of corridor urbanism. Smoothing, here, not only refers to the physical material conditions of the newly paved road, but also to the politics of circulation (Stepputat and Hagmann 2019) enacted through the customhouse-road system through its renovation as a crucial condition in building efficient forms of commodity exchange and in accelerating trade. In this sense, the inclusion of Paso de Jama in the IIRSA initiative points to a radical rescaling produced by these processes of smoothing, as its long-lived history as a regional transport hub is now extended to the transcontinental scale, rather bi-oceanic than cross-border. The process of smoothing points to the ability of corridor urbanism to create the preconditions for efficient circulation and thus

[2] Interview, November 24, 2018.

connecting distant locales through local and regional hubs. As the Huaytiquina case illustrates, however, this process of connection is highly selective.

4. Huaytiquina: Repairing the railway line

Walking through the city of Antofagasta, the terminal point of the lithium commodity chain in the Atacama region, it is impossible not to notice the many train tracks that score its urban ground. These tracks unroll from the outskirts of the city, through the barren hills facing the Pacific Ocean and to the entrance of the Port of Antofagasta. They articulate the urban landscape in front of the city's first building, now the Regional Museum, facing the historic saltpeter dock, now a monument too. Connected as they are to the city's both historical and contemporary port ecosystem, these train tracks evoke connections to distant places, acting as one of the infrastructural backbones of the region's deep-seated mineral economy. Estación Baquedano, 70 km northwest of Antofagasta, is one place where the increasing use of rail transport by emerging lithium producers becomes legible and thus a privileged point to observe the making of corridor urbanism in the region. Inside the station, a surreal calm reigns. The bustling exchange of minerals that one can associate with cargo trains gives way to an eerily silent landscape, composed of steel wagons slowly creaking along dusty iron tracks. As a Ferronor engineer recalls,[3] the railway connection to the Argentinian Northwest had been out of service between 2009 and 2016 due to some damage to the infrastructure on both sides of the border between Chile and Argentina. After years of failed maintenance and stall, Antofagasta is now connected to Salta via rail through the Socompa Pass, itself a secondary road pass compared to Paso de Jama.

The new railway connection between Antofagasta and Salta crosses several lithium-rich deposits, both on the Chilean and on the Argentinian side. Wholly functional since 2016 (IIRSA 2017), it allows companies to ship lithium products in a more direct way to the port of Antofagasta, saving between four and seven days in both ground transportation and sailing to East Asian countries compared to shipping through the Atlantic ones. At the time of my visit in December 2018, new agreements between the Argentinian lithium companies and Chilean railway operators were being experimented with and further prefigured. As a concrete example, Minera del Altiplano (also known as FMC corporation), Argentina's first lithium operation established in the 1990s, had struck an agreement with Ferronor in order to ship part of their lithium production to the port terminals of Antofagasta. As a result, a 14-wagon train travels between Puerto Antofagasta and the FMC plant in the Salar de Hombre Muerto, moving sodium and lithium carbonate between the two. This trade alignment is however not limited to the more established mining companies of the areas, as new lithium producers are also seeking agreements with the Chilean railway company and had been experimenting with test loads as they increased their industrial output. Furthermore, various companies engaging in new geologic explorations in the area seek to promote the feasibility and success of their prospective operations by tying into this established infrastructural system, noting its key nodes and anticipating logistical flows across their maps, discovery notices and promotional leaflets. Beyond bare train tracks, the growing lithium trade along the line and the new agreements established with emerging companies in the area also result in an expansion of the railway infrastructure beyond the railway itself. This is demonstrated, for example, by the recently established logistics area at Salar de Pocitos, located in a remote Andean valley of the Argentinian Northwest. This area is operated by the aforementioned FMC company, itself mining and refining lithium in the Salar de Hombre Muerto. Located approximately 130 km from their extraction and refining site, this area functions as a fenced transshipment center where lithium is collected from trucks and moved onto train wagons. Strategically positioned in proximity to the rapidly expanding operations in the Olaroz and Cauchari basins and connected by established dirt tracks, the Salar de Pocitos interchange area prefigures itself as an important node for the collection of lithium products from emerging Argentinian producers in their effort to ship more rapidly and efficiently towards the port terminals of Antofagasta.

Observed from Estación Baquedano, however, these infrastructures demonstrate a much more layered history, as their presence largely precedes the lithium boom in the area. Baquedano and its associated railway line is not only a site where the increasing industrial flow of lithium products across these territories is revealed. Connected to the main roads traversing the Atacama Desert, this train station lies on the long-established Salta-Antofagasta railway - also locally known as the Huaytiquina - an infrastructural endeavor originally built for accessing and transporting the vast mineral bounty of the Chilean Atacama region. The first idea of a westward railway connection across the region in fact emerged in 1888, propelled by the growing interest in its saltpeter deposits and the growing demand for foodstuffs by the incoming population working in the mining sector (Benedetti 2005). At that time, the railway line only connected Antofagasta with San Antonio de los Cobres - a partial venture into the vast mineral potential of the area. It was only towards the end of the XIXth Century that a fully transnational connection between Antofagsta and Salta was established, between the high-altitude territories of Northwestern Argentina and the Chilean ports on the Pacific coast, its original reason being premised upon physical geographic considerations. An engineer from Salta named Manuel Solá described the Northwestern territory of Argentina in a 1905 article as: "closer to the Pacific than to the Atlantic, it indicates as its natural ports those of the Western coast: Antofagasta or Mejillones" (Benedetti 2005, 6). After a winding infrastructural history marked by progress and failure, by accelerations and delays, the railway was finally inaugurated in the first months of 1948 (*ibid.*).

As one of the historical logistical backbones of the area, the Huaytiquina forms a central feature in the multidimensional program of the Capricorn Corridor. A new and expanded geography of trade and logistics has been superimposed upon this historical train line, both extending its reach and connecting it with other functional infrastructures, its inclusion into the IIRSA initiative signifying its upscaling from cross-border to bi-oceanic as in the case of Paso de Jama. Two matching projects set to restore the railway line within the Capricorn Corridor demonstrate the transnational dimension accompanying the restoration of this long-underused railway line: the Corredor Ferroviario Bioceánico, Tramo Chile (Antofagasta - Socompa), and the repair of the Ramal Ferroviario C14: Salta - Socompa. Together, the two projects absorbed a total of US$527 million, with the former using the vast majority of the funding. Despite the all-encompassing claims of intra-regional connectivity promoted by the IIRSA initiative, minerals remain the key driver for keeping this corridor up and running. From the Huaytiquina and across its long history, this is further proved by the absence of a cross-border passenger service, limited in this area to the relatively well-known but practically limited *Tren a Las Nubes*, a tourist service spanning the section between Salta and San Antonio de Los Cobres. No passenger service, to my knowledge, existed on the Chilean side at the time of my visit in December 2018 despite the evident difficulties for local population to move across the border: the quest for mineral resources continues to be the key reason for repairing, upgrading and maintaining the railway line across. The swinging genealogy of the Huaytiquina, dwindling between historical phases of activity and stall, of decay and repair, is telltale of the monocultural character that marks the making of corridor urbanism. Despite the substantial investment involved in its inclusion into the Capricorn corridor, the enduring absence of a passenger service capable of providing to the scarcely integrated high-altitude settlements of the region and its exclusive focus on mineral transport reminds, the reactivation of the Huaytiquina highlights the highly selective nature of corridor urbanism. This is likely not specific to the geographies of the

[3] Interview, December 6, 2018.

Lithium Triangle but may be a characteristic of cross-border corridors, be they materialized such as the US/Mexico border or projected as the TAV in Val di Susa. As noted in development corridors scholarship (Enns 2019), the distinct connectivities they enable are fragmented, whereby certain goods or bodies are accelerated and others are immobilized.

5. Mejillones: Securing shipment at sea

On July 30th 1995 at 01:11 AM, residents of the Northern Chilean region of Antofagasta were awakened by a grade VII earthquake. This seismic event significantly compromised housing across several municipalities, injured some and caused widespread displacement. The earthquake was immediately followed by a light tsunami, itself impacting again roads and transport infrastructures. Among the damaged installments, the at the time only port terminal of Puerto Antofagasta was brought on the brink of destruction by a combination of these two events (Taboada Rodríguez, 2005). The port was, and still is today, strategically positioned in a South-facing bay and thus protected from Northern swells by the Mejillones promontory. Not only the city's only ocean connection for decades, Puerto Antofagasta is where the city's original urban core can be traced, founded in 1868 as a rudimentary berth for shipping its rich mineral bounty overseas (Bermúdez 1966). A direct legacy of its historical importance, at the time of the 1995 earthquake Puerto Antofagasta maintained its central role as the city's leading gateway for the same kinds of mineral shipments, which dramatically expanded in volume across the many decades since its founding. The tsunami hence posed a serious threat to Antofagasta's economy, exposing the fragility of an export-oriented primary sector of both regional and national importance based on a single gateway to international trade networks. As a local former official recounted,[4] the need to diversify its maritime infrastructure was publicly recognized and led to the production of a new strategic analysis over the region's capacity to handle its mineral cargo and, in particular, to the development of its port ecosystem. As a result of this strategic analysis, attention turned 60 km to the north, to the bay of Mejillones, itself once a vital and competing port hub for the export of guano, which later succumbed to the economic and strategic power of its rivaling neighbor, Puerto Antofagasta (Bermúdez 1966).

Fast forward to today, and Antofagasta's economic matrix has remained deeply tied to the extraction of natural resources from its neighboring land-locked regions: the mineral-rich Atacama (Fernández and Atienza 2011; Grappi and Neilson 2019). This is even visible along the city's shores, where the presence and density of logistics infrastructures signals an expansive mineral trade. The expensive high-rises along the coast, contrasting with the shantytowns built on the surrounding hills, witness the materialization of this underground bounty, as does the intense traffic of red pickup trucks - the same ones that can be seen entering mining sites several times each day. This enduring economic performance is premised upon the existence of a differentiated, specialized and interconnected port ecosystem, a vital feature for the circulation and export of mineral commodities across the region. Since its foundation in 1868, this regional-scale infrastructure has evolved from a simple dock to a complex of four major ports: Puerto Coloso to the South of the city, Puerto Antofagasta, Puerto Angamos and Puerto Mejillones in the municipality of Mejillones to the North. Taken together, these four "handled 11.45 million tons of cargo in 2011, making them [the] largest port complex in all of Chile, with 18 percent of the country's total port volumes" (Arboleda 2020, 130). Among these four, the Mejillones port complex is where both the majority of lithium exports from South America and the major investments in port infrastructure through the Capricorn Corridor have converged. The expanding port infrastructure in Mejillones is in fact not only essential to Antofagasta's mineral economy as its logistical outlet towards the Pacific, but also a centerpiece of IIRSA's Capricorn hub. The bi-oceanic images of trade that have long animated the project could in fact never be realized without a reliable access to the ocean itself. In terms of its general articulation, the port complex in Mejillones consists of an open and modular plan that allows it to operate and expand through several independently managed terminals, planned and coordinated through a 50-year masterplan (Plan Maestro Portuario).[5] The whole complex project is monitored by Complejo Portuario Mejillones (CPM), a subsidiary of the Chilean State-owned copper enterprise CODELCO, established in 1996 with the specific purpose of consolidating a port and logistics pole in the bay of Mejillones following the 1995 earthquake. At the time of my visit, the port complex consisted of two functional terminals: Puerto Angamos and Terminal Graneles Solidos. Both these terminals have been financed within the IIRSA framework. Puerto Angamos has been built through a US$120 million investment, a combination of a loan by the Inter-American Development Bank and private capital and Chilean state funds in smaller proportions. The construction of the second terminal has instead been possible through an US$80 million private fund, also channeled through the IIRSA initiative (IIRSA 2017). The operational details of the port's two terminals point to a tighter integration between mining and logistics infrastructures. The latter, a bulk-loading terminal completed in 2010, operates in close connection with the nearby coal-fired Cochrane thermal power plant owned by AES Gener, which sells its resulting electricity to the mining companies operating in the region. However, it is not only here that the interconnected nature of natural resource extraction, energy production and circulation comes to life. Puerto Angamos in fact has been the first infrastructure of the port complex, built in 22 months between 2002 and 2003.[6] Since its four docks allow for the mooring of post-Panamax ships with their unprecedented capacity, its premises have handled the majority of the cargo in the region for at least five consecutive years and, significantly, the majority of Chile's copper exports (Puerto Angamos, 2019). In 2017 Puerto Angamos passed 2 million tons of bulk transferred thanks to the increase allowed by the company's adoption of a flip-up container system in 2014, a technology which allows it to load loose materials in a direct way between container and ships through a safer procedure. It is through the channeling infrastructures of Puerto Angamos that the expanding lithium trade finds its gateway to the ocean.

When I visited the port premises in December 2018, several trucks stood in line in front of the port gates, waiting for their turn to unload cargo. Many of them were hauling copper plates, simply stacked on their rear flat-bed, a testament to the ordinariness of mineral cargo being handled here. Some of them however - as talking to their drivers through the queue reveals - hauled bulk bags of lithium carbonate, tucked away inside containers and receded from view. Driving his truck between Mejillones and Antofagasta, a driver described to me his daily trips to transport containers from the lithium-refining chemical plants in La Negra to the Puerto Angamos premises in the Mejillones Bay.[7] Once inside the port facilities, Puerto Angamos public relations manager gave me a tour of its indoor and outdoor installations. As the docks protrude into the blue ocean, black flip-up containers pile up waiting for the next cargo ship. A vast portion of the port's ground is occupied by neatly stacked copper plates, also waiting to be shipped overseas. As immobile as the terminal appeared during my visit, its premises were actually undergoing prospective transformations: fast-growing projections in the lithium trade were driving significant shifts in spatial and industrial organisation within the premises of Puerto Angamos. Confronting data from Chile and Argentina's national lithium exports in 2018 with the port's declared handled cargo noted by a local engineer, it appeared that Puerto Angamos already handled the vast majority of the entire South

[4] Interview, December 5, 2018.

[5] Interview, December 7, 2018.

[6] Interview, December 7, 2018.

[7] Interview, December 9, 2018.

American lithium products in that year.[8] However, as trade projections steadily increased, the port management sought strategies to further expand its business and to better adapt its own infrastructure to host these predictably larger mineral volumes. On the one hand, as the regional volumes of extracted and exported lithium steadily grow, Puerto Angamos is planning a special storage space to transport lithium compounds in bulk,[9] that is without the use of bulk bags and containers as they have recently shifted to for their copper exports. On the other hand, lithium hydroxide is considered dangerous cargo in Chile, hence its handling within the port premises requires a different spatial and temporal organization throughout its handling, a separate deposit and storage transfer location and a finer coordination between entrance in the port and loading on ship. Although, at the time of my visit, lithium hydroxide was the preferred output of only one of the lithium producing companies - with the others delivering lithium carbonate - port officials were preparing to experience more frequent handling of this chemical compound hand in hand with its wider adoption among battery manufacturers. Finally, Puerto Angamos was planning to start an import line of sodium carbonate, itself a way to attract lithium exports. Mining and logistics companies in fact seek agreements to both export their mineral output and import their necessary chemical input from the same port in order to minimize empty container trips.[10] This is the case with sodium carbonate, a key chemical ingredient in the production of lithium carbonate. At the time of my visit, it was Puerto Antofagasta who was leading the import of sodium carbonate, hence positioning itself as an intermediate step between mining companies and Puerto Angamos. Importing sodium carbonate directly in Puerto Angamos, in its managers' view, could outplay the neighboring ports and further integrate it within the growing lithium trade. The port of Mejillones secures the primary function of the Lithium Triangle in multiple ways. Historically, it provides an operating alternative to the susceptible port of Antofagasta and its potential infrastructure failure by diversifying the port capacity of the region. In more recent terms, its spaces are increasingly adapted to both the technical and regulatory dimension of lithium transport, acting as a flexible infrastructure regulated by an open masterplan. The recent history of Mejillones shows a defining feature of corridor urbanism as observed across the extraction-logistics network: the infrastructures it projects show an interplay within an open spatial organization, as charted by the Plan Maestro Portuario, and the ability to undergo spatial modifications to host particular commodity trades as in the case of bulk lithium. Tellingly, the spatial adaptation consequent to trade expansion is also a harbinger of new safety risks as in the case of the special regulation and organization needed to handle lithium hydroxide. The original reason for establishing an entirely new port terminal in Mejillones – mitigating the risks posed by storms to the Antofagasta mineral gateway – translates into other health and safety risks in the surrounding environment. This is evidential of the contradictory nature and uneven distribution of socioecological harm and wellbeing intrinsic to corridor urbanism.

6. Conclusions

The booming mineral economy of the Lithium Triangle and its emergence as a new resource frontier has stimulated research primarily focusing on the adverse socioenvironmental impacts of extraction upon local livelihoods and ecosystems, rightly responding to the urgency of understanding a rapidly evolving situation. In the case of the Lithium Triangle, the material experiences and multiple socioecological impacts of lithium extraction across these territories are increasingly well documented. In this article, I have proposed to metaphorically take a step back, by asking instead how these extractive territorialities become materially produced over time through layered histories of infrastructure planning and economic investment. What is missing from these emerging political ecologies of the Lithium Triangle, I have argued, is an appreciation of the role of logistics infrastructures as a defining element in the co-production of this particular extractive landscape. In this article, I have proposed to understand the Lithium Triangle by interrogating the progressive construction of transnational infrastructure well before the global lithium boom, using the conceptual framework of corridor urbanism, standing to highlight the role of urban built environments in materially shaping the geographies of global circulation. Exploring the contours of this conceptual framework from this emerging resource frontier, I have proposed a genealogical approach to three infrastructural elements that are critical in its making – the Jama customhouse, the Huaytiquina railway and the port of Mejillones.

By learning distinct yet interrelated dynamics from these three cases, this article contributes to expand the analytical category of corridor urbanism. Differently from previous studies on the subject, which have been mostly concerned with the role of urban agglomerations as nodes in the multi-scalar geographies of development corridors (Silver 2021, Wiig and Silver 2019, Apostolopoulou 2021b), this study has explored this conceptual framework across territories of extended urbanization (Castriota & Tonucci 2018; Simone 2019). The dynamics associated with the making of corridor urbanism across the Lithium Triangle outlined below provide an empirical case study toward enriching the contested notion of extended urbanization in its possible spatial and historical articulations. Another difference against which this article operationalizes corridor urbanism is in its close association with natural resource extraction. As demonstrated by these three cases, the primary goal of establishing efficient circulation of commodities clearly sets its predominant orientation: the logistical infrastructures that lurk in the background of discovery notices across the Lithium Triangle are there to set this resource in motion and to channel it into global markets, defining corridor urbanism as an extractive type of urban project. While this is evident across a resource extraction economy such as the Lithium Triangle, city-centric explorations of corridor urbanism might in turn benefit from a perspective centered upon extractivism and its different forms across urban environments (Vasquez Duplat 2017). In the explored cases, high priority is given to the movement of commodities, often at the expense of other types of transport such as passenger service as highlighted in the case of Huaytiquina or with increasing conflicts concerning risk-tolerance as in the case of the Mejillones port terminal. The mobilities set in motion by this type of urbanism may at first sight be all-encompassing, as they are often represented as globally win–win political endeavors, yet the selected cases show clear distinctions between the mobilities that are enabled and those which are prevented. The urbanism of corridor urbanism is a project characterized by splintered, fragmented geographies of circulation and accessibility, engendering a highly uneven distribution of socioecological wellbeing and harm. If the spatial dimension of corridor urbanism is marked by the unevenness, so is its temporal one. Despite the apparently rapid timeframes through which these infrastructures are adapted to host specific commodities and associated handling requirements – as in the case of lithium – this is only possible through the long-term planning and preventive establishments of spatial openness and modularity, as it has happened in the Mejillones port terminal, for example, or in the long-term process of planning and financing more efficient circulation as demonstrated by the case of the Paso de Jama frontier hub. The long temporalities of infrastructure planning and deployment form the material and institutional preconditions for their rapid revival as backbones of extractive booms. Rather than being a homogenous project of logistical integration, corridor urbanism sets in motion distinct yet complementary temporalities. The cases of Paso de Jama and the Huaytiquina clearly show how investments into infrastructure standardization aimed at smoothing circulation employ a re-scaling of these environments from the regional to the continental scale, depicting corridor urbanism as a globally-oriented project formed by the interlinkage of several, regional-

[8] Interview, December 9, 2018.
[9] Interview, December 9, 2018.
[10] Interview, December 9, 2018.

scale development corridors (Silver 2021). As a situated analysis of one of these regional corridors turned global, this article seeks to provide a valuable comparative basis for future explorations of corridor urbanism across other geographical contexts.

On the other hand, the specific trajectories of corridor urbanism outlined above contribute to a sharper understanding of emerging extractive frontiers such as the Lithium Triangle. The extended genealogies that define each of these elements show how resource booms do not happen in a void, but instead the possibilities of an extractive landscape are built over time not only through the discovery of bare mineral deposits, but also through the progressive layering of logistics infrastructures. All the three examples discussed in this article show how their economic role and physical arrangement have both been restructured by and allowed for the emergence of the lithium economy across the Atacama, in a mutually constitutive relation between corridor urbanism and extractive landscapes. Despite not being designed around the recent lithium economy, all these key transport nodes that allow the material insertion of lithium products into the global market were restored well before their new centrality in the global scramble for strategic industrial minerals. Moreover, the three examples show how infrastructures of connectivity do not necessarily need to be maintained as functional across decades to result in being strategic gateways in case of a new resource boom, as the long periods of decay of, for example, the Huaytiquina railway show. This persistence of infrastructure across swinging histories of decay and renewal shows how once infrastructures are laid out, their re-territorialization might occur at any given time. Despite traversing alternating destinies, logistics infrastructures create a geographical-historical precedent to further extend – by vertically deepening or horizontally extending – processes of capitalist valorization, in this case expressed through the exploitation of mineral resources. By showing how the long-term dynamics of infrastructure development lay the groundwork for extractive economies to exploit localized resources through the case of the Lithium Triangle, this article joins the so far disconnected scholarships on infrastructure-led development, corridor urbanism and resource extraction. Not only the conjunct analysis of these domains contributes to a sharper understanding of emerging extractive frontiers, by shedding light on the *longue durée* of spatial phenomena well before the boom occurs and its often-adverse socioecological impacts are already in place. By having shown the infrastructural preconditions for a particular resource boom, this article also evokes the anticipatory power that results from focusing on the layered genealogies underpinning the making of corridor urbanism. This is of particular relevance through current global expansion of resource frontiers, either connected to new strategic minerals, to previously unexploited territories, or both.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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