



# Neoliberal Shock, Infrastructure Disruption, and Restructuring in Chile

Martin Sanzana Calvet  
University College London

Vanesa Castán Broto  
University College London

In this article we explore the role of disruption and restructuring of urban infrastructure networks in the context of shock policies. Our viewpoint comes from a perspective developed under critical geography, urban political ecology, and political economy. We analyze the evolution of infrastructure in Chile since the military coup d'état in 1973 up to now, linking political cycles of dictatorship and political transition to infrastructure crisis and resilience. As we problematize these concepts, our focus is on the relationship between infrastructure development policies, at national and international scale, with urban transformations, specifically in Santiago de Chile.

## 1. Introduction

We argue here for the need to redefine the concept of crisis and the consequences of doing so. The question that signaled our point of departure was: is it possible to learn from political crisis in relation to the management of materials and infrastructures? We started from the idea that both crises and the shock policies meant to overcome them were being considered generative moments in which infrastructure could be reconceptualized away from capitalist models of resource transformation (Castan Broto et al. 2014). A different perspective arises in light of Naomi Klein's "Shock Doctrine" theory, whereby destruction and crisis are pushed alongside neoliberal policies so that society adapts to the ever more exploitative demands of capitalism. Rather than exposing the faults of the system, crises and shocks can actually be a mechanism for its reproduction.

Our objective is to focus on the genealogy of material transformations that accompanied the implementation of shock policies by the military regime in Chile and how they evolved in the transition to a post-dictatorial period. While debates on the impacts of Chilean neoliberal reforms in infrastructure have been centered on changes in their financing, coverage, and management, this paper explores the political economy of infrastructure shock and resilience in a context of political and economic crisis from the 1973 *coup d'état* onwards, stressing the diversity of scales involved in the development of infrastructure and urban restructuring (Soja, Morales, and Goetz Wolff 1983). By drawing attention to the political context of regime crises and shock policies, we aim to contribute to politicizing the analysis of the role of urban infrastructure disruption, restructuring, and resilience, as well as their impacts (in the case of Santiago de Chile). With this, we undertake to participate in the debates over strategies for the neoliberalization of the urban realm.

The hypothesis we develop in this paper is that, in the case of Santiago de Chile, infrastructure shock, disruption, and resilience were crucial mechanisms in the neoliberal project of sociopolitical disciplining and reconfiguration. We suggest that shock relates to an attempt to control different material spheres, to discipline both population and resources to adapt to the new regime, while resilience refers to attempts to seek regime stabilization under a neoliberal hegemony.

Our position is informed by the following approaches. By considering infrastructure crises as key moments in which the social and political configurations become visible in the materiality of the city, we explicitly draw on Stephen Graham's (2009) critical geography of urban everyday life dependence on infrastructure and the effect of its disruption, as moments in which social and political

relations become visible, as Graham developed these ideas in *Disrupted Cities*. Our emphasis on Graham's notion of disruption of infrastructure networks as instrumental in controlling the flows of cities is linked to the work of scholars developing urban political ecologies of infrastructure. We consider the relevance of this social and material mechanism of power in regulating political modes through material and symbolic flows, as in Swyngedouw's (2006) proposal to conceptualize cities as socio-natural assemblages. We also attempt to analyze these changes in the socio-natural flows in the context of the processes of neoliberalization of infrastructure and nature, as studied by Bakker (2005).

Our methodology proposes a historical analysis of the political context of the development of urban infrastructure in Santiago de Chile, in combination with an examination of the economic and social effects of shock policies and neoliberalization, through the scrutiny of the literature, official documents, press review, and grey literature.

First, we establish how the shock resolution to the political crisis in 1973 initiated a process of urban infrastructure restructuring in Santiago, organized by principles of a National Security Doctrine (Pion-Berlin 1988), thus affecting the biophysical and social flows of the city; this disciplining was followed by the imposition of a program of neoliberalization of economy and society. Next, we examine the impact of the regime transition in unleashing infrastructure investment and the innovations in neoliberal governance by the new civilian authorities that led to a new wave of neoliberalization of the urban infrastructure and services, particularly focusing on the case of the transportation sector reforms and their urban and sociopolitical effects. Finally, along with examining our hypothesis in the light of our findings, we reflect on the implications of the political context in the analysis of the neoliberalization of urban infrastructure.

## 2. Infrastructure Shock to Discipline Urban Flows

The 1973 *coup d'état* in Chile and the resultant military government had profound and long-term effects on the way the country's infrastructure was conceived, financed, built, and used. Once the military takeover succeeded, the stabilization process did not just go back to the previous institutional framework and policies, cleansed now of leftist militants or sympathizers. Instead, the military orchestrated a violent social and economic restructuring by dismantling and reframing institutions and infrastructure, under a National Security Doctrine and a neoliberal economic paradigm. The neoliberal reforms did not follow a

linear development, and along with historical vicissitudes the neoliberal agenda had to deal with the “dependence path” of the previous state-based model.

Since the first moment of the coup, the new authorities treated infrastructure as a strategic field for the country takeover and redevelopment under a new regime, a tool for economic recovery and an indicator of the success of neoliberal reforms. Among the first measures of the military *Junta*, the generals conducted the dismantling and banning of old institutions, and the totalitarian control of movement and speech. A thorough reorganization of material and social flows ensued to reinforce the military and political control, reactivate the economy and restart—under new rules—a few chosen institutions of social life (Garretton 1998). As those policies focused on the dismantling of the old regime and its infrastructure, they also worked at securing the territories and urban spaces to allow the building of a new social project, under nationalist slogans exhorting people to rebuild the country.

Nevertheless, while the first wave of neoliberal reforms in Chile ripened in the late 1970s, the coup and the military despotic rule can hardly be separated from the neoliberal shock treatment and the building of the sociopolitical conditions for the neoliberal experiment (Klein 2008). As Foxley (1982) argues, after the overthrow of the socialist government, the totalitarianism of the regime cannot be explained only by the military character of the rulers, but also by the needs of a radical neoliberal restructuring of economy, state, and society.

In the military takeover, the main Chilean cities were treated as a theatre of war. A form of disciplinary urbanism shaped the reorganization of space (Rodriguez and Rodriguez 2009). Infrastructure—and urban infrastructure in particular—became both a target and a weapon in the armed conflict, and played a crucial role in symbolizing this narrative of “shock treatment”. Following a military logic, the cities’ main infrastructure—including roads, water and energy utilities, public buildings, commerce, factories, and communication networks and hubs—was either controlled, occupied, shut down, destroyed, or given a new symbolic function.

The repressive use of infrastructure did not end with the military takeover on September 11, 1973. A new framework for mobility and social behavior was set by the establishment of a state of siege on the day of the coup, and by a curfew that—with some periods of exception—lasted from 1973 to 1987. The military occupation established a new system of control of public and private spaces and infrastructure all over the country, during the first days by the use of a coalition of pro-putsch radios and newspapers to send official communiqués and warn-

ings, and later also by the coverage of censored television activity (Garretón et al. 1998). In Santiago and other main cities, infrastructure was fitted with fixed and mobile surveillance and control mechanisms, such as road diversions and check points in all major streets, roads and bridges, factories, energy, and communications infrastructure (Rojas 1988). The municipal authorities were dissolved by a decree even before the formal dissolution of the Congress, and the political parties and new authorities were designated months later by the military authorities. As social organizations were also banned, the urban space underwent a reorganization by the setting of new militarily conceived administrative boundaries, and neighborhoods were reorganized into numbered units, coherent with the physical and material military control of space, where the population was under new scrutiny and control (Rodríguez and Rodríguez 2009, 11).

The reorganization of the use of infrastructure considered also a new hierarchy of places with material and symbolic implications. Some buildings were totally or partially destroyed, like *La Moneda*, the presidential palace, emptied in 1973, which was restored only in 1981. Other infrastructures were simply abandoned, as was the largest Chilean hospital, built by Allende's government in a popular area of Santiago, which to this date remains unoccupied (La Nación 2013). The coup led also to the *turning* of infrastructure use for alternative purposes, such as the use of the National Stadium and the Chile Stadium as detention camps. In some cases, these reconfigurations had longer duration, such as the UNCTAD building which was turned into the military *Junta* headquarters, as well as "terror infrastructure" such as military barracks turned into permanent prison camps in the *Tres Alamos* and *Cuatro Alamos* compounds, or a network of former civilian houses used as undercover torture and extermination houses, as in the case of the *Villa Grimaldi* compound (Aguilar 2003).

By imposing a new moral order of "cleanness," the Junta sought to control both the infrastructure and the people who used it. The instruments of control extended to individuals' appearance, banning long hair and beards for men and wearing trousers for women, as well as censoring (and promoting a self-censoring of) any spoken or written language perceived as inappropriate, "political," or "extremist" (Errázuriz 2009). A discourse of social and political "cleansing" was accompanied by organic metaphors of the military rulers calling to "extirpate the Marxist cancer" and "heal the poisoned body of the country" (cited in Errázuriz 2009, 142).

A resignification of infrastructure was pursued by changing the names of streets (the modernist "Nueva Providencia" turned into September 11 Avenue), buildings (the UNCTAD conference building—Centro Cultural Gabriela Mistral—

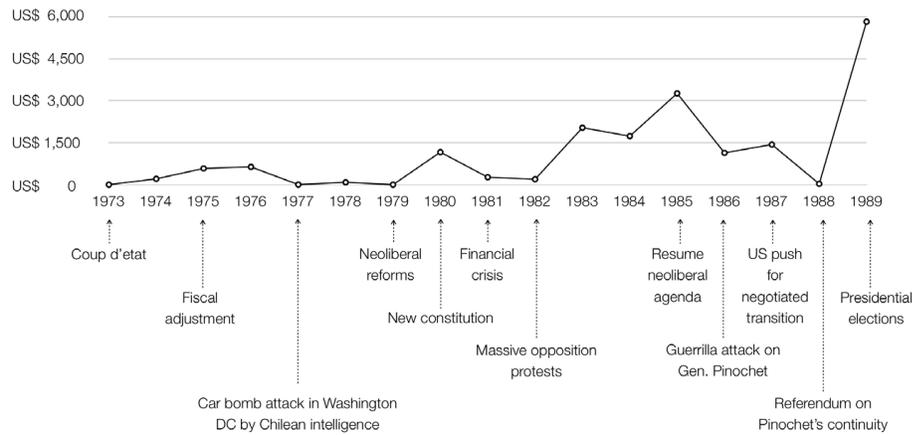
was renamed Diego Portales, a historical icon of Chilean autocratic and elitist government), as well as self-governed popular settlements originated from occupations (the “New Havana” camp was renamed as “New Dawn” by a military decree [Cofré 2007, 228]). This fits well into the notion of what Errázuriz (2009) considers an “aesthetic-cultural coup”—a military breakdown of the subjectivity developed during the rise of popular and leftist influence. This process included both the destruction and the resignification of symbols of the previous era and was extended to the appearance of infrastructures, for example, through the cleaning of walls and covering of the many urban murals painted by social organizations and artists (such as a recently uncovered mural by prestigious artist Matta in La Granja *población*), the destruction of statues (like the Che Guevara monument in La Florida), and new rules for the colors houses should be painted, avoiding black, red, and other tones the military considered as too “violent” (Errázuriz 2009, 142).

Along with usage and signification shifts, the military regime attempted to build its own mode of infrastructure as a reflection of social order and capitalist modernization. To achieve that goal, the regime relied on two mechanisms: first, directing the building of infrastructure by the state to pave the way to a new economic model of private exports and deregulated financial flows; and second, the liberalization of built environment construction to unleash the market forces that would develop new productive, commercial, residential, and service infrastructures. As we point out in the following sections, this second moment was never fully accomplished by the military regime, but rather by its center-left opposition once it came to power.

### 3. Cycles of Infrastructure Neoliberalization

At this point, we would like to contextualize the political stage on which the transformation of urban infrastructure developed. Before the military coup, the American-controlled international development institutions, such as the Inter-American Development Bank (IDB), the World Bank (WB), and the International Monetary Fund (IMF), had engaged in a financial boycott, ceasing loans to Allende’s socialist government. In 1974, after the military coup, the new government received new development loans from these institutions, with long-term credit provision for hundreds of millions of dollars (Sigmund 1977), 70% of them directed to sectors with intensive investments in infrastructure, mostly highway and road construction (29%), energy (16%), public housing (15%), water supply (6%), and urban roads and transport (4%) (IDB 2013a;

2013b; World Bank 2013). These international loans were particularly sensitive to the state of relationships between General Pinochet and the U.S. administrations (Figure 1), following a “carrot and stick” approach, and linked to different cycles of U.S. foreign policy in stabilizing, shattering, or dismissing the dictatorial regime.



**Figure 1.** Political context of the World Bank and Inter-American Development Bank loans for infrastructure to Chile (in millions of U.S. dollars). Authors’ elaboration from IDB (2013a; 2013b); World Bank (2013) and Garretón (1994).

The original structural reforms in Chile under a neoliberal ideology were a set of radical neoclassic economic policies, implemented from the early years of the military government in different intensities and modalities. The neoliberal reforms were inspired in the works of a group of Chilean economists who studied at and maintained close ties with Chicago University, and who later occupied relevant governmental places in the implementation of the policies (De Castro 1992). Their main goal was to dismiss the Keynesian state developmentalist model consolidated in Chile since the 1940s and to set an economic policy centered on “macro-adjustment, economic liberalization and privatization of both state-owned enterprises and social services” (Solimano 2009, 4).

2013b; World Bank 2013). These international loans were particularly sensitive to the state of relationships between General Pinochet and the U.S. administrations (Figure 1), following a “carrot and stick” approach, and linked to different cycles of U.S. foreign policy in stabilizing, shattering, or dismissing the dictatorial regime.

The original structural reforms in Chile under a neoliberal ideology were a set of radical neoclassic economic policies, implemented from the early years of the military government in different intensities and modalities. The neoliberal reforms were inspired in the works of a group of Chilean economists who studied at and maintained close ties with Chicago University, and who later occupied relevant governmental places in the implementation of the policies (De Castro 1992). Their main goal was to dismiss the Keynesian state developmentalist model consolidated in Chile since the 1940s and to set an economic policy centered on “macro-adjustment, economic liberalization and privatization of both state-owned enterprises and social services” (Solimano 2009, 4).

In 1975 the military government launched a radical macro-economic and fiscal adjustment, also called fiscal shock, that was set to end public debt, reduce inflation, and stimulate private capital formation (Davis 2003). This shock included measures such as cuts in the governmental budget, liberalization of most of the previous controlled prices, privatization of previously nationalized companies, and liberalization of the exchange rate. The immediate impact of these policies was a severe reduction of national GDP and public budget in the following years, which decreased governmental investments in infrastructure without replacing them with new private investments (Albala-Bertrand and Mamatzakis 2004). Within this context of investment shortage and shock fiscal policies, the military regime re-prioritized expenditures on infrastructure, abandoning policies of social welfare improvement and state-owned production. The new regime focused on spending its scarce resources to boost infrastructure oriented towards the private export sector and to modernize the central business districts of the main cities, particularly in Santiago (Rodriguez and Rodriguez 2009).

Then, from 1979 to 1981, during an intense but short economic recovery derived from export growth and the expansion of private debt, the legal and institutional foundations of the new political and economic order were set, with the enactment of a new constitution drawn under both neoliberalism and National Security Doctrine (Silva 1991). In this period, the regime reshaped the very foundations of the political and infrastructural systems through several Organic Laws and Supreme Decrees. Some principles that would have a high impact on the development of urban infrastructure remained in the constitution, such as

the state's subsidiary role, the reassurance of property rights, and the economic freedom granted to capital (Lüders 1991). Among the most important changes due to their long-term impact on infrastructure on a city scale were: the 1980-81 "municipalization" transferring public services from the central state to the municipalities, including education, health, and waste systems, without any fundamental increase of resources and attributions, which led to a spatial and social differentiation between a premium public infrastructure in the wealthy municipalities and a dilapidated one in the poorer ones (Boisier 2000); the 1981 market liberalization of health and educational services provision, allowing new profit-led private schools and universities to freely compete for public subsidies for operation and infrastructure, leading to currently more than half of the primary and secondary students in Chile attending private schools (Fundación Sol 2011); and the 1981 privatization of the pension system, which developed large funds administrated by profit-led private entities utilized to finance large private infrastructure projects (Moguillansky 1997).

While some of those policies were immediately implemented, others had to wait: a new economic crisis in 1982 hit the country and the state intervened with pragmatism to rescue the bank sector, dismissing the ministers who exposed a neoliberal ideology. From 1975 to 1984 the total investment in infrastructure, considered as a rate of the national GDP or as a rate of the Gross Capital Formation, was lower than the previous (1960-1973) and following periods (1984-1996) (Albala-Bertrand and Mamatzakis 2004, 267-268). This was also true for the rates of public investment in productive infrastructure (Cerdeña 2012).

From the second half of the 1980s, the Chilean economy recovered from the debt crisis and displayed a remarkable cycle of economic growth that has lasted until today, with the interregnum of the 1999-2001 "Asian" and 2008-2009 "sub-prime" crises (Schmidt Hebbel 2012). The economic model in which this growth is based on the private-sector-led exports of commodities, minerals, and agro-forestry goods and the increasing development of a tertiary sector of services, with high levels of participation of foreign investment and multinational firms (Fazio 1997). Then, from 1985 to 1989 the military government retook the neoliberal agenda and privatized the state-owned energy and communications companies, first calling for a "popular capitalism" by selling shares to their workers and then opening the companies to large private capital, as in the case of telecommunications, electricity generation, electricity distribution, steel production, mining, pharmaceuticals, and airlines (Marcel 1989).

## 4. The Political Transition to Democracy and a New Infrastructure Restructuring

The political transition towards a democratically elected government introduced a scenario of stabilization and an international overture that boosted economic growth and urban infrastructure development, by combining both traditional and innovating modalities of private participation.

After a failed communist guerrilla attack against General Pinochet in 1986, Christian Democrats, Social Democrats, and Socialist-inspired parties engaged in new talks with factions of the military regime supporters, under the pressure of the U.S. Department of State, leading the opposition to accept and participate in the 1988 regime Referendum (Cavallo, Salazar, and Sepulveda 1997). With the triumph of the “NO” vote against the continuity of General Pinochet, a “pact of transition” was set between the democratic opposition (and future government), the dictatorship supporters, and the military. The core of the pact, actively shaped by the main political, economic, and intellectual factions, was the acceptance of a new democratic cycle based on a totalitarian-made constitution and on maintaining the economic model (Garretón 1994).

In the 1990s the successive civilian governments deepened private participation in infrastructure development, combining more liberalization with new regulations. The main consensual goal of public and private actors was to recover infrastructure investment to overcome a “bottleneck for the economic growth” (Moguillansky 1997, 8). With strong international support for the democratically elected government and open-market economy, investment (either loans or direct foreign investment) increased far beyond the averages of the military regime (Cerde 2012). Foreign direct investment in sectors with intensive development of urban infrastructure experienced a boom, particularly sectors of energy, gas and water supply, communications, and transport, which shifted from less than a billion U.S. dollars for the whole 1974-1989 dictatorial period to nearly \$30 billion in the post-dictatorial period (CIE 2013).

While reforms during the totalitarian period had emphasized liberalization and deregulation, assuming that market rationalities would lead automatically to private-led investments in infrastructure provision, in the post-dictatorial period policies tended to combine privatization and liberalization with re-regulation of private activity. These policies aimed to boost undeveloped markets, support private investments, and guide them in an active way, all of which strengthened the framework for the expansion of the private sector and attracted foreign capital, leading to a boom in infrastructure modernization and the urban built environ-

ment. Also, while during the military regime investments in infrastructure were mainly made directly or indirectly by the state (either by direct construction and management or by transferring assets to private companies at subsidized prices), since 1990 investment in major infrastructure in Chile has been done by the private sector, and in most cases, by foreign companies backed by investment funds. These private investments have ranged from privatization subjected to a new regulatory framework, to the liberalization of the market and the removal of access barriers for new service providers, paving the way for concessions (Engel et al. 2011).

In privatizations, there was an increasing role for the local stock market and foreign companies with headquarters abroad (Marcel 1989). Also, the new center-left governments extensively implemented schemes of Public-Private Partnership (PPP) for infrastructure projects, many of them under the modality of concessions. From 1996 to 2006, more than fifty large-scale projects were developed in the sectors of highways, urban highways, airports, prisons, dams, Metro stations, and public service infrastructures, totaling more than US\$11.3 billion (Engel et al. 2009).

Where privatization or concession was not possible, the state maintained a minimal operational expenditure, leading to the degradation of the service, as in the case of the rail system (Cerde 2012). In some cases, this de-investment led to a further privatization, as in the case of the water companies. Although the framework for water liberalization and privatization was set in the early 1980s, the state-owned monopoly of water and sanitation utilities was privatized only in the 2000s, by new modalities of PPP and concessions (Fischer and Serra 2007). This privatization led to a substantial increase in the rate of water treatment and improvement of the environmental quality of surface water, as well as a price rise and concentration of utility ownership among a few private actors (Baer 2014). Privatization also entailed the liberalization of water provision in the areas of urban expansion, where new medium-size water companies filled the voids left by the large and regulated utilities and started to operate with higher prices, lower reliability, and fewer regulations (Tolorza 2011).

## 5. Transport Modernization in Santiago de Chile as a Case of Urban Infrastructure Restructuring

Changes in transport policies and mobility infrastructure are one of the clearest examples of how the new modalities of investment in infrastructure impacted Santiago. In the 1970s, a State Company of Collective Transport (ETC) ran most part of the bus transport system in the city. The neoliberal reforms first cut subsidies in 1975 and liberalized the entry rules for new operators, and in 1981 the company was dissolved (Thomson 1992). Further steps were taken in 1983 with the liberalization of fees, and in 1988 with the end of restrictions for bus operators. This market take over led to an increase of inequalities in the quality of the services and prices; fragmentation of bus owners and the formation of cartels; and a rapid increase of air pollution, congestion, and accidents due to the drivers' fierce competition for passengers. In this case deregulation did not mean purely lack of regulation, but the administration's abandonment of the public interest in favor of the hegemony of private industry, benefitting those who could afford the services (Figueroa 1990). What emerged was not chaos, but a more segregated and unequal reorganization of Santiago's urban space.

In order to tackle these issues, the civil authorities in the 1990s progressively increased the requirements for bus fleet modernization, and constrained the entry of new operators by enhancing the power of bus owners' associations. After a bus owners' strike, the government created the Transantiago, a new transport system inspired by the Colombian Transmilenio bus systems but adapted to the local conditions of administrative fragmentation and neoliberal policies. The architecture of this system was designed to be managed under technocratic parameters and technological advancements, concentrating bus ownership with a few very large operators, while the financial management was given to a consortium of private banks and the subway company (Metro). The focus was to reduce the bus fleet and create a self-sufficient and profitable system, but its full implementation in 2007 led to the collapse of the whole transport system (Figueroa and Orellana 2007). From the initial investment in the Transantiago infrastructure, estimated in some US\$800 million, only US\$100 million were state funds directed to the bus system, in contrast to the generous public investment in the Metro system, or the subsidies to the concessions of urban highways for the private sector, around US\$2 billion in each case (Figueroa and Orellana 2007). The Transantiago failure caused protests and political problems, along with a huge and continuous flow of state cash to keep the system running, with few substantial improvements.

On the other hand, the Metro appears to be a resilient project and was the only

state urban company to survive, through its immense political impact and its new adaptation to neoliberalization. No wonder; since the inauguration of the first Metro station in 1975 by General Pinochet (La Cuarta 2012), every inauguration is considered of major political and electoral relevance, and also welcomed by the real estate and development industries, which benefit from (untaxed) valuation of their properties (Tomic and Trumper 2006). Today, the Metro has seven lines (two under construction) and 123 stations (fifteen under construction), but this has come at a much higher comparative cost than a properly funded bus system (Figueroa and Orellana 2007).

One of the most notorious changes in Chilean transport infrastructure is the new road system. The private ownership of a car has symbolized social mobility and prosperity, and Santiago's motorization rate increased by 378% from 1975 to 2012 (reaching an average of 239 cars per 1,000 inhabitants), while the population grew by 64% in the same period (SECTRA 2012; INE 2012). At the same time, these rate averages hide an increasing inequality between the poorest and richest municipalities and householders: while the wealthiest municipality in Santiago has a motorization rate of 1,032 vehicles per 1,000 inhabitants, the poorest one shows a rate of 80 vehicles per 1,000 inhabitants (INE 2012). As the flow of cars has increased the congestion and the public bills for road construction and maintenance, the civilian governments have promoted the expansion and modernization of Santiago's road system through mechanisms of Build, Operate, and Transfer (BOT) concessions of highways. While in 1996 more than 2,460 km of highways were concessions, urban highways proved to be particularly efficient at attracting private investment in infrastructure, from both the privatized Chilean workers' pension funds and the larger transnational Toll Road Companies (Tomic and Trumper 2009). This is not a case of a pure free market policy: to make the tender more attractive, the state offered assurance of revenues, large subsidies for the initial stages of construction, a quasi-monopolistic market, prizes for achieved goals, and conditions of contract renegotiation largely favorable to the private companies (Engel et al. 2009). Public incentives were thus directed to the development of these projects, rather than to a public transport system. From 1996 to 2010, almost a third of the total infrastructure concession investments were made in urban highways, with only a small share (1.5%) dedicated to improving the Transantiago road infrastructure (MOP cited Cerda 2012: Anexo V).

Beyond the investment, this new private road system (see Figure 2) works as a new premium infrastructure network (Link 2008) that connects the main social and economic activities, easing the displacement of private car owners from the high-income residential districts to the CBD and peripheral entrepreneurial districts (Allard 2002).



**Figure 2.** River and motorway in Santiago. Photograph: C. Olivares (2012).

However, the success of the concessions was not without conflicts and difficulties. With the failure of the Transantiago system, private car use was perceived by many citizens as the immediate solution for mobility. In a context of economic growth and credit access, the city's road network collapsed with more cars. Today, urban highways have become an expensive congestion trap at the peak hours, with drivers paying to spend hours trapped between home and work/study places, a problem that is being addressed by the building of new private concessions for more highways and tunnels (Argandoña 2011).

Also, urban highway projects were continuously contested by local conflicts, as in the case of the Costanera Norte highway, a project of a 33 km express highway that developed all along the Mapocho River, linking Santiago's high income district with the city Central Business District and the international airport. When initiated in 1996, the projects triggered the opposition of communities in their way, challenging its viability (Sepulveda and Du Monceau 1998). In the end, a coalition of professional classes, activists and groups of local merchants did not stop the project but succeeded in bringing about substantial changes and mitigation efforts that cost the state an additional US\$70 million, and raised debate about the concession policy of urban infrastructure (Poduje 2007).

In low-income neighborhoods the impacts of the new highway projects were evictions, segregation, and nuisances due to the length of the construction time and the techniques used. Despite the passivity of the local authorities, some local communities contested the projects, as in the case of the construction of a new track of a highway concession connecting Santiago with the southern areas of the metropolitan region through the La Pintana and La Granja municipalities (SUR 2011). In those territories, affected neighbors and local ecology organizations contested the impact of the works and the evictions and expropriations, seeking mitigation and compensation. Although those neighbors and municipalities benefited from several measures of mitigation, compensation, and project improvements (amounting to about US\$25 million) until 2009, in 2011 the inauguration of the last track of the highway triggered a new wave of protests from neighbors demanding improvement in pedestrian security (SUR 2011).

In a different context, since 2009, within the affluent municipalities of La Reina and Las Condes, neighbors and community organizations have been opposing the extension of the city's main highway ring. Community leaders grouped into anti-growth social organizations demanding new technical solutions, such as large-scale tunnels to avoid evictions and local environmental impacts that would make the project non-viable without even larger public subsidies. They also contested the related municipal general plans to modify land use and increase building density in the area of the new highway, which would further exacerbate road congestion (SUR 2011). This social activism has raised still unanswered questions on the limits of the encroachment of neoliberal restructuring of the urban and its governance, and more importantly, on a viable alternative and more democratic governance of urban infrastructure.

## 6. Conclusions

The disruption of infrastructure and networks by the successive totalitarian and neoliberal shocks was crucial for the restructuring of the system and its urban infrastructures under a more democratic and reformed—but still neoliberal—modernization. The imposition of neoliberal policies in Chile and their impact on infrastructure exemplifies the relationship between shocks and infrastructures. These shocks are not just events like natural disasters or technical failures; infrastructures are shaped by political and economic shocks, and this combination of shocks shapes both the way they are operated and how they materialize in space, with consequences for both the lives of urban citizens and the use and circulation of resources.

A shock relates to the attempts to control different material spheres, to discipline both population and resources, reshape the socio-natural metabolism of the city, and force the population to adapt to the new regime. Here we are dealing with two separate but interrelated shocks to infrastructure. The first one is the actual coup and the seizing of infrastructures by the military Junta. The second one is the neoliberalization of the economic system and in particular of the infrastructure's funding, construction, and operation. The 1973 coup in Chile and the regime that followed demonstrate how infrastructure—under shock—can be simultaneously used against individual freedoms and collective institutions, actively contributing to deconstructing democratic forms of social and political citizenship, and producing binary social categories of subjects under a friend/foe logic. Rather than a mere material product, infrastructure shock appears to be a powerful tool for social engineering and political domination, and, as suggested by Swyngedouw (2006), not only as a material expression of a power balance, but an active element of the material and symbolic assemblage of that power.

In the case of Chile, the neoliberal shock allowed the new rulers to disrupt and dismantle the previous political system, infrastructure, and social networks, and impose a new neoliberal economic and constitutional order. But at the same time, the very conditions for its success—totalitarianism and massive violation of human rights—created an unfavorable political and economic environment to attract substantial and continuous investment in urban infrastructure.

The tension between continuity of the neoliberal policies and pressure for democratic reforms led to a negotiated political transition, which can be understood as a “resilience phase” of infrastructure development. In this phase the consolidation of the new regime was signaled by the boom in infrastructure investment, network expansion, market development, and search for legitimization of the inherited framework of urban infrastructure development in the needs of an accelerated economic growth to fight the high poverty rates left by the previous regime. At the same time, the restructuring of urban infrastructure networks led to new urban problems and conflicts. Policies of neoliberal shock and neoliberal resilience increased the infrastructure standards and diversified the service networks at the cost of greater inequality of access to these improved infrastructures, as in the case of the transport modes in Santiago. The concession system and the liberalization of bus transport and the ensuing restructuring have not solved this issue. The Transantiago system appears to be a clear example of an attempt to remedy previously ill-conceived policies that in no case addressed the social needs of their times, let alone those of future generations. The top-down reconfiguration of infrastructure in Chile could only be brought about on the back of a terror campaign; but in seeking to mold complex socio-technical systems

according to ideological solutions—rather than growing organically on relatively functioning models—the system has been responding to the consequences of the shock with the same rationality inherited from it.

The case of Santiago de Chile speaks, as proposed by Bakker (2005) of the imperfect, contradictory, and never accomplished process of nature and social domination that permeates urban projects through the reconfiguration of urban flows. If infrastructure shocks make the political fabric of urban society visible, as Graham (2009) argues, what do they tell us about the incomplete nature of such projects and the way time challenges them in unexpected ways?

## Acknowledgements

The authors are grateful to the EPSRC-funded research project *Shock (not) Horror* in which some of the ideas on infrastructure shock developed here originated in the form of a working paper draft by the authors. All findings and conclusions in this article are those of the authors.

## References

- Aguilar, Mario. 2003. La historiografía de los derechos humanos en Chile: memorias y testimonios historiográficos del régimen militar. *Diálogos* 7 (1),177-200
- Albala-Bertand, Jose, and Emmanuel Mamatzakis. 2004. The impact of public infrastructure on the productivity of the Chilean economy. *Review of Development Economics* 8(2), 266-278.
- Allard, Pablo. 2002. Si el río suena ya no serán piedras lo que trae: Costanera Norte mitos, verdades y lecciones de una autopista urbana. *ARQ* 52, 44-49.
- Argandoña, Consuelo. 2011, June 15. Aprueban túnel que une Costanera Norte y Autopista Central para reducir tacos. *La Tercera*. Retrieved from <http://latercera.cl>
- Baer, Madeleine. 2014. Private water, public good: water privatization and state capacity in Chile. *Studies in Comparative International Development* 49(2), 141-167.
- Bakker, Karen. 2005. Neoliberalizing nature? market environmentalism in water supply in England and Wales. *Annals of the Association of American Geographers* 95(3), 542-565.
- Boisier, Sergio. 2000. Chile: la vocación regionalista del gobierno militar. *EURE* 26(77), 81-107.
- Castán Broto, Vanesa, Stephanie Glendinning, Emma Dewberry, Claire Walsh, and Mark Powell. 2014. What can we learn about transitions for sustainability from infrastructure shocks? *Technological Forecasting and Social Change* 84, 186-196.
- Cavallo, Ascanio, Manuel Salazar, and Oscar Sepulveda. 1997. *La historia oculta del régimen militar: Chile 1973-1988*. Santiago de Chile: Grijalbo-Mondadori.
- Cerda, Hernán. 2012. Inversión pública, infraestructuras y crecimiento económico chileno, 1853-2010. Retrieved September 12, 2013 from <http://www.tdx.cat/bitstream/handle/10803/107826/hact1de1.pdf?sequence=1>
- CIE. 2013. Foreign Investment Statute (D.L. 600) inflows and outflows by recipient economic sector 1974- 2012. Retrieved July 6, 2013 from <http://www.ciechile.gob.cl/wp-content/uploads/2007/07/FYS74-12.xls>

Cofré, Boris. 2007. *Historia de los pobladores del campamento Nueva La Habana durante la Unidad Popular (1970-1973)*. Tesis para optar al grado académico de Licenciado en Historia y Ciencias Sociales. Santiago de Chile: Universidad ARCIS.

Davis, Ricardo. 2003. *Entre el neoliberalismo y el crecimiento con equidad: tres décadas de política económica en Chile*. Santiago de Chile: Comunicaciones Nor-este.

De Castro, Sergio. 1992. *El ladrillo: bases de la política económica del gobierno militar chileno*. Santiago de Chile: CEP.

Engel, Eduardo, Ronald Fischer, Alexander Galetovic, and Manuel Hermosilla. 2009. Renegociación de concesiones en Chile. *Estudios Públicos* 113, 151-205.

Engel, Eduardo, Ronald Fischer and Alexander Galetovic. 2011. Public-private partnerships to revamp U.S. infrastructure (Discussion paper 2011-02.). Retrieved November 5, 2012 from [http://www.hamiltonproject.org/assets/legacy/files/downloads\\_and\\_links/Final\\_ENGELDiscussPap\\_Feb2011.pdf](http://www.hamiltonproject.org/assets/legacy/files/downloads_and_links/Final_ENGELDiscussPap_Feb2011.pdf)

Errázuriz, Luis. 2009. "Dictadura militar en Chile: antecedentes del Golpe estético-cultural." *Latin American Research Review* 44(2), 136-157.

Fazio, Hugo. 1997. *Mapa actual de la extrema riqueza en Chile*. Santiago de Chile: Lom Ediciones.

Figueroa, Oscar. 1990. La desregulación del transporte colectivo en Santiago: balance de diez años. *EURE* 16(49), 23-32.

Figueroa, Oscar, and Arturo Orellana. 2007. Transantiago: gobernabilidad e institucionalidad. *EURE* 33(100), 165-171.

Fischer, Ronald, and Pablo Serra. 2007. *Efectos de la privatización de servicios públicos en Chile*. Washington D.C.: Inter-American Development Bank.

Foxley, Alejandro. 1982. *Experimentos neoliberales en América Latina*. Colección Estudios Cieplan N. 07. Santiago de Chile: CIEPLAN.

Fundación Sol. 2011. El desalojo de la educación pública. Santiago de Chile: Fundación Sol.

Garretón, Manuel. 1994. Transición incompleta y régimen consolidado: las paradojas de la democratización chilena. *Revista de Ciencia Política* 16(1-2), 21-32.

- Garretón, Manuel, Roberto Garretón, and Carmen Garretón. 1998. *Por la fuerza sin la razón: análisis y textos de los bandos de la dictadura militar*. Santiago de Chile: Lom Ediciones.
- Graham, Stephen, ed. 2009. *Disrupted cities: when infrastructure fails*. London: Routledge.
- IDB. 2013a. Inter-American Development Bank Fund for Special Operations Chile. Retrieved June 13, 2014 <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=37872692>
- IDB. 2013b. Inter-American Development Bank fund for ordinary capital Chile. Retrieved June 13, 2014 <http://idbdocs.iadb.org/wsdocs/getdocument.aspx?docnum=37872748>
- INE. 2012. *Anuario censo de vehiculos*. Santiago de Chile: Instituto Nacional de Estadísticas. In: [http://www.ine.cl/canales/chile\\_estadistico/estadisticas\\_economicas/transporte\\_y\\_comunicaciones/parquevehiculos.php](http://www.ine.cl/canales/chile_estadistico/estadisticas_economicas/transporte_y_comunicaciones/parquevehiculos.php) [Accessed: 09 Jul 2013]
- Klein, Naomi. 2008. *The shock doctrine: the rise of disaster capitalism*. London: Penguin.
- La Cuarta. (2012, October 24). Así era el metro antes del Transantiago. *Diario La Cuarta.*, Retrieved from <http://www.lacuarta.cl>
- La Nación. (2013, May 5). Convertirán ex hospital abandonado en polo logístico y empresarial. *Diario La Nación*. Retrieved from <http://lanacion.cl>.
- Larkin, James. 2010. El golpe de estado en Chile de 1973 y como una persona lo experimentó. *Modern Languages and Literatures* 3. California Polytechnic State University. Retrieved December 21, 2013 from <http://digitalcommons.calpoly.edu/mlsp/3>
- Link, Felipe. 2008. De la policentralidad a la fragmentación en Santiago de Chile. *Centro-h* (2), 13-24.
- Lüders, Rolf. 1991. Massive divestiture and privatization lessons from Chile. *Contemporary Economic Policy* 9(4), 1-19.
- Marcel, Mario. 1989. Privatización y finanzas públicas: el caso de Chile, 1985-88. *Colección estudios CIEPLAN* 26: 5-60.

- Moguillansky, Gabriela. 1997. Chile: las reformas estructurales y la inversión privada en áreas de infraestructura. Reformas económicas series, No.2 (LC/L.1083). Santiago de Chile: Economic Commission for Latin America and the Caribbean.
- Pion-Berlin, Daniel. 1988. The national security doctrine, military threat perception, and the 'Dirty War' in Argentina. *Comparative Political Studies* 21(3), 382-407.
- Poduje, Ivan. 2007. Participación ciudadana en proyectos de infraestructura y planes reguladores. *Temas de la Agenda Pública* 3 (22), 3-16. Santiago de Chile, Pontificia Universidad Católica de Chile.
- Rodríguez, Alfredo, and Paula Rodríguez. 2009. Santiago, una ciudad neoliberal. Santiago de Chile: SUR Corporación de Estudios Sociales y Educación.
- Rojas, María. 1988. *La represión política en Chile: los hechos* (Vol. 6). Madrid: Iepala Editorial.
- Schmidt-Hebbel, Klaus. 2012. Fiscal institutions in resource-rich economies: lessons from Chile and Norway. (Working Paper No. 416). Retrieved December 09, 2012 from PUC Economics Institute website: <http://www.economia.puc.cl/DT?docid=4400>
- SECTRA. 2012. *Indicadores de movilidad*. Secretaria de Planificación de Transporte SECTRA. Retrieved 09 Jul 2013 from: [http://www.sectra.gov.cl/indicadores\\_de\\_movilidad/Indicadores/tasa\\_motorizacion.html](http://www.sectra.gov.cl/indicadores_de_movilidad/Indicadores/tasa_motorizacion.html)
- Sepúlveda, Claudia, and María Du Monceau. 1998. El comportamiento del SEIA ante una comunidad que se toma la participación en serio: el proyecto Costanera Norte. *Ambiente y Desarrollo* (14) 3: 23-33. Santiago: CIPMA.
- Sigmund, Paul. 1977. The overthrow of Allende and the politics of Chile, 1964-1976. Pittsburgh, PA: University of Pittsburgh Press.
- Silva, Patricio. 1991. Technocrats and politics in Chile: from the Chicago boys to the CIEPLAN monks. *Journal of Latin American Studies* 23 (2), 385-410.
- Soja, Edward, Rebecca Morales and Goetz Wolff. 1983. Urban restructuring: an analysis of social and spatial change in Los Angeles. *Economic Geography* 59 (2), 195-230.

Solimano, Andrés. 2009. Three decades of neoliberal economics in Chile: achievements, failures and dilemmas (Research paper UNU-WIDER No.2009.37). Retrieved October 14, 2013 from [http://www.wider.unu.edu/publications/working-papers/research-papers/2009/en\\_GB/rp2009-37/](http://www.wider.unu.edu/publications/working-papers/research-papers/2009/en_GB/rp2009-37/)

SUR. 2011. *Mapa de los Conflictos Urbanos*. Retrieved March 12, 2012 from <http://mapadeconflictos.sitiosur.cl/index1.php>

Swyngedouw, Eric. 2006. Metabolic urbanization the making of cyborg cities. In *In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism* (Vol. 3), edited by Nik Heynen, Maria Kaika, and Eric Swyngedouw. London: Routledge.

Thomson, Ian. 1992. "Urban Bus Deregulation in Chile." *Journal of Transport Economics and Policy* 26(3): 319-326.

Tomic, Patricia, and Ricardo Trumper. 2006. Transporte y poder: el metro de Santiago de Chile. In H. Capel and R. Hidalgo (eds.). *Construyendo la Ciudad del Siglo XIX, Retos y Perspectivas Urbanas en España y Chile*. GEOcritica y Geolibros PUC, 163-175.

Trumper, R. and Tomic, P. (2009). The Chilean way to modernity: Private roads, fast cars, and neoliberal bodies. In *Car troubles: Critical studies of automobility and auto-mobility*, edited by J. Conley and A. McLaren: 165-80. Surrey, UK: Ashgate.

Tolorza, Erika. 2011. *Sistemas sociotécnicos para el abastecimiento de aguas domiciliarias en el periurbano de la región metropolitana de Santiago* (Doctoral dissertation). Santiago de Chile: Pontificia Universidad Católica de Chile.

World Bank. 2013. *Operations approved Chile*. Retrieved June 13, 2014 from [http://www.worldbank.org/projects/search?lang=en&searchTerm=&countryshortname\\_exact=Chile](http://www.worldbank.org/projects/search?lang=en&searchTerm=&countryshortname_exact=Chile)

## Photo Credit

Claudio Olivares Medina. Some rights reserved. <https://www.flickr.com/photos/quiltro/with/7055375307/> CC license Attribution-NonCommercial-NoDerivs 2.0 <https://creativecommons.org/licenses/by-nc-nd/2.0/legalcode>

## Lead Photograph

Downtown, Los Angeles. This photo shows part of the Downtown train depot, and is part of a series entitled One Santa Fe that explores a new housing and commercial development in the Downtown Los Angeles Arts District. Located across from the Sci-Arc Campus, an architecture school, on its eastern edge, One Santa Fe is not the first development in the neighborhood but could represent the type of developments to come in the near future. Photograph by Lucy Seena K Lin