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Abstract:

Santiago, like many of Latin America's megacities, is dealing with the threat of worsening water shortages, floods, and heat waves in the face of climate variability and change. Seeking to address these issues, the city's Regional Government engaged in a planning process from 2010 to 2012 to produce an Adaptation Plan for the city with recommendations on reducing urban vulnerability to climate change. Despite being hailed as a 'meticulously participatory' planning process, however, and against the best efforts of its political and professional supporters, the resulting plan was neither ratified nor implemented by the city's authorities.

In a context of socio-spatial inequality and increasing vulnerability, this study asks how a participatory planning process with significant political backing failed to achieve its goal of improving the city's preparedness to confront climate vulnerability. Through in-depth fieldwork, the research finds that multiple opportunities to pursue ambitious change were quelled through the subtle exercise of social power, through decisions over the scope and agenda by the process coordinators, and the domination over information ownership by a private corporation that supplies water to the city. Decisions taken before, and during the process, acted to privilege consensus over conflict and scientific rationality over common knowledge, suppressing civic aspirations and opportunities to tackle longstanding socio-spatial inequality and vulnerability.

As Chile now replicates Santiago's adaptation planning experience in cities throughout the country, and other Latin American megacities follow suit, this study suggests that participatory adaptation planning can achieve little without challenging the wider system rules and power relations of traditional urban development. The failure of Santiago's experience should not be attributed to the coordinators alone, who succeeded in fulfilling their mandate to produce a plan with practical, viable solutions. Rather, we should see the coordinators and participants as agents constrained and enabled by the wider socio-political structures that went unchallenged in Santiago's planning process. As climate impacts sharpen existing socio-spatial inequalities, and as more cities engage in responses to climate impacts, it is now incumbent on planning scholars and practitioners to interrogate the many ways in which power and politics shapes adaptation.

Urban Climate Adaptation Planning in the Latin American Megacity: Lessons from Santiago, Chile

Daniel Gallagher

1. Introduction: climate impacts, planning and politics in Chile

From the dry lands of the north to the powerful ice of Patagonia in the south, Chile is a country

of contrasting climates. The country's central area, home to the capital city, Santiago, enjoys a

Mediterranean climate but has suffered recurring droughts since its founding by Valdivia in

1541. One of the most severe of those droughts, in 1968, led to an agricultural collapse so severe

that planners instituted a permanent shift in time zone in an effort to avert social and political

unrest. Such historic events serve as a reminder of the role of planners in managing the social

and political repercussions of climatic stresses.

In present-day Santiago, climate variability and change are also largely issues of water: either too

little, or too much of it. In the former case, water shortages are worsening as glaciers melt and

total rainfall reduces (Universidad de Chile 2006). In the latter case, high-risk urban areas flood

repeatedly due to planning deficiencies (Barton 2013). But as is clear from existing conditions,

these impacts are not felt equally within the city. While Santiago ranks as of the most advanced

cities in Latin America (e.g. Laclaustra 2014; MercoPress 2011), inequality remains highest here

among all OECD countries (United Nations 2015). The Metropolitan Region of Santiago

(MRS), which encompasses all 52 municipalities of 'the city region' in an area that shares one

water supply and one administrative jurisdiction, exhibits profound socio-spatial segregation. In

Providencia and *Las Condes* in the *barrio-alto* (so-called because the area is higher up the

Cordillera de los Andes and has a high socioeconomic level), wealthy residents enjoy a water

consumption of 805 liters per capita per day, mostly used for irrigating private green areas and

filling in swimming pools (Krellenberg & Hansjürgens, 2014). Residents in poor areas of the city including *Pedro Aguirre Cerda* and *La Pintana* consume just 180 liters per capita per day (*Idem.*). These figures demonstrate that poor neighborhoods of the MRS are highly vulnerable to fluctuations in water supply. Conversely, wealthier neighborhoods are buffered by an already high share of the city's water supply, and the socio-economic resources to absorb rising water tariffs. The water crisis, clearly, has distinct socio-spatial effects throughout the MRS.

Public-sector responses to climate impacts first emerged at the national level in 2006 through a climate change strategy, then a climate action plan in 2008. In those early stages, national authorities afforded urban adaptation a low priority, despite the fact that 80 per cent of Chileans live in urban areas (*Idem.*). That early lack of urgency aside, Santiago's Regional Government initiated the adaptation planning process in 2010 that is the focus of this research. Before examining that process, it is necessary to review the historical administrative and political aspects of urban planning that influence the city's approach to adaptation planning today.

Urban planning in Santiago, and more widely in Chile, demonstrates the influence of deep political economic shifts of recent decades. Following the fall of a short-lived Marxist coalition in 1973, Chile underwent deep social and economic reforms under the authoritarian politics of General Pinochet's military government, which embraced a *laissez-faire* economic logic and retrenched the state (Castiglioni 2001; Kurtz 1999; Grugel & Riggirozzi 2012; Bauer 1997). Pinochet's government marginalized opposition and came to revere expert-led positivist science at the expense of citizen participation in public decision-making (Zunino 2006; Paley 2004).

In urban development during that period, planners promoted technical and economic criteria over social concerns, as rapid market-led urbanization doubled Santiago's urban footprint (Zunino 2006). In water policy, too, the military dictatorship left a lasting impact through the commodification, marketization and privatization of water supplies (Bauer 1997; Budds 2004; Borzutzky & Madden 2011). Among the most contentious of reforms at that time was the 1981 Water Code, regarded by many Chileans as a neoliberal policy instrument (Budds 2004; Barton 2013) that allowed the state to grant rights to private individuals to extract water (known locally as '*derechos de agua*' or 'water rights') that could be bought, sold, mortgaged and rented on an open market. Today, a foreign-owned corporation, *Aguas Andinas*, has a monopoly over water supply in Santiago, with an 80 per cent market share (Arellano & Carvajal 2014).

Santiago now is one of the most administratively fragmented, yet politically centralized, cities in Latin America (Siavelis et al. 2002; Angell et al. 2001). Ministries often overrule Santiago's Regional Government, which is headed by a presidentially-appointed *Intendente* who lacks significant authority over public investments in the city (Idem.). It is clear that the military regime's embrace of *laissez faire* economic logic and authoritarian politics, coupled with the retrenchment of the state, are a significant legacy that influences present-day urban planning, water policy, and the more recent phenomenon of 'adaptation planning' in Santiago.

2. Theoretical underpinnings and research methods

Since technical or managerial approaches to deal with the impacts of climate change are mediated through politics in planning and implementation, adaptation is fundamentally political. Just as scholars of urban planning have pursued critical theory on urban politics through the lens of power (e.g. Purcell 2009; Flyvbjerg 2012), this research also draws on a theoretical treatment

of power. In previous analyses of power relations in planning, Waterstone (1996), Zunino (2006) and Hidalgo and Zunino (2011) used Ostrom's 'social rules' (1986) as a heuristic to identify concrete instances of power. The analysis here similarly uses the notion of 'social rule' to interpret the ways in which actors exercise power, or are influenced by power, in their social context. Social rules, following Ostrom (1986), are understood as formal and informal prescriptions that achieve order and predictability in structuring decision-making situations. [1] This framework provides the basis to understand how power influenced the design of Santiago's adaptation planning process, the interactions within the process, and its outcomes.

The method for this study draws from a 'case study approach' discussed in detail by Yin (2009) and Flyvbjerg (2006). Semi-structured interviews formed the primary data collection method, with interviewees purposively selected on the basis that they participated in the planning process on behalf of public, academic, civil society, and private sector entities. Interview questions were designed to elicit information on the social rules acting at each phase of the process, and were refined during the course of fieldwork in line with observed phenomena. Fieldwork took place during a four-week period in January 2015. A total of 23 interviews were conducted, ranging from 45 minutes to two hours. A full list of interviewees is provided in Annex I.

3. Adaptation Planning in Santiago

Santiago's adaptation planning process was part of an initiative proposed by researchers in German and Chilean universities who had collaborated on urban research in Santiago in preceding years. Seeing an opportunity to extend their collaboration to new emerging issues of

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[1] Social rules encompass: setting up positions in decision-making bodies (position rules); defining how participants enter or leave a position (boundary rules); specifying the actions each position is required, allowed or forbidden to take (authority rules); specifying the set of outcomes each position is required, forbidden or allowed to affect (scope rules); prescribing how collective decisions are taken (aggregation rules); defining channels of communication and the types of information to be used (information rules); and describing how benefits and costs are to be distributed (pay-off rules).

climate risks facing the city, the researchers proposed an adaptation-focused initiative to Santiago's Regional Government, and successfully obtained €1.4 million from the German Ministry of Environment to finance it. That initiative, Climate Adaptation Santiago (CAS), brought together policymakers, practitioners and scientists over a two-year period improve projections of climate impacts, produce an adaptation plan, and promote adaptation in other Latin American cities (Krellenberg & Hansjürgens 2014). While the funding for the initiative originated in the 'international climate finance' domain, the initiative was driven by the research team, with longstanding expertise and interest on Santiago's urban development. The Regional Government's leader, the *Intendente,* endorsed the initiative and granted coordination responsibilities to a group of academics in the *Pontificia Universidad Católica,* who would design the process and determine the participants, the scope of discussion, and how perspectives from participants would be synthesized into a final plan at the end of the two year process.

Empowered to lead the process, the academic coordinators made a series of decisions early on that influenced the opportunities to tackle the underlying causes of vulnerability in the city. The coordinators persuaded around 30 organizations to participate, including universities, government ministries, the water regulator, and five civil society organizations. However, when it came to the people being 'planned for' i.e. those most vulnerable in the city to climate impacts, the coordination team cited a number of challenges to including vulnerable people in the process: (i) the coordinators' lack of knowledge of their location, (ii) their sheer number, (iii) the fragmented nature of the city into 52 municipalities, and (iv) the variegated formal and informal nature of neighborhood organizations. Faced with these challenges, the coordinators observed that public-sector agencies and civil society organizations might act as proxy representatives of the urban poor.

Following the first roundtable meeting, participants attended a series of meetings over the two-year process focusing on climate impacts, adaptation measures, and an implementation plan. Findings from fieldwork illuminate a number of instances during the process in which participants successfully and unsuccessfully challenged the 'social rules' instituted by the coordinators, and in doing so, reshaped the power relations at play inside the planning process.

One such challenge came in the form of a challenge to the 'authority rules' by some national ministries, who progressively diminished the seniority of the representatives they sent to the meetings. Reflecting on why some ministries may have opted to send individuals who had little influence in their own agencies, one official affirmed, "It's not politically correct not to send representatives, so they send whomever". Interviewees from the private, public and civil society organizations agreed that the Ministry of Housing and Urbanism was one ministry guilty of not sending senior staff and instead sending someone who was "not even a manager", a signal that the ministry took the process less seriously than others. As a result of the non-participation of decision-makers, participants took their involvement with varying levels of seriousness, and the legitimacy accorded to the process by different groups became increasingly polarized.

A positive outcome during the two-year planning process was the early formation of a group of public-sector officials who found common cause in advancing climate adaptation on the political agenda. Citing his viewing of '*An Inconvenient Truth*' during Al Gore's visit to Chile in 2007 as a major influence, the Regional Councilor who formed part of that group sought to convince his political colleagues that adaptation ought to become a mainstream policy priority. Among his persuasion strategies, he drew on scenes from the film, '*The Day After Tomorrow*', to illustrate

how competing visions of politicians and scientists can act to stall preventative action in preparing for disasters. With the endorsement of the Regional Council, he created the Sub-Commission for Climate Change, hailed as a "significant political act" (Krellenberg & Hansjürgens 2014). This institutional design marked a victory for the alliance of public-sector officials in politicizing adaptation, and giving it 'formality' in the political agenda.

In contrast to the success enjoyed by the public-sector officials, others vying for influence had less success in advancing their objectives. Given its centrality to climate vulnerability, water was an issue of particular contention. In the preceding years, the *Intendente* had publicly criticized *Aguas Andinas* during recurring crises in water supply (e.g. El Mercurio 2008), and the regulator had sanctioned the company for repeated infractions (SISS 2008). In contrast to its confrontational public stance towards *Aguas Andinas*, the regulator enjoyed good relations with the company in the planning process. A representative from *Defendamos La Ciudad*, a civil society organization, criticized the relationship and accused the regulator of "corruption and irresponsibility". Civil society and university representatives fought for ambitious reforms to the 1981 Water Code to renationalize water, and the potential introduction of pro-poor water tariffs, both of which would have implications for the profitability and indeed possibility for continued water supply by private companies such as *Aguas Andinas.* The coordinators took measures to stem these proposals on the basis that they were minority views or the cause of too much contention. In turn, a number of participants began to further question the legitimacy of the planning process and its likelihood of achieving real change. For civil society organizations, the constraints on them made it "no longer worth fighting for" the conclusions.

Another cause of contention in the planning process was over the possession of information, where conflicts took place between the public and private sector over data that the public sector required for decision-making. Despite participants, including the coordinators, urging *Aguas Andinas* to make information on water supply and glacial retreat (which the company has more information on than any other organization) readily available, the company cited commercial sensitivity and the lack of pre-determined contracts as reasons not to share the information. That information was not included in models of future water availability upon which adaptation measures are determined, demonstrating the power of foreign-owned corporations to impose 'information rules' that restrict ambitious change in domestic policy and planning.

In the closing phase of the process, some resistance arose to the way that a team of experts had filtered out measures that were highly important to some participants. One of the coordinators recalled that they had tried to make the aggregation process "as participatory as possible", but on seeing the final measures proposed, some participants began ask, "where's my great idea?" and seek alliances in favor and in opposition to the proposed measures. Ambitious proposals were filtered out through seeking consensus instead of an alternative aggregation approach (e.g. one that could have prioritized procedural and distributional equity). Despite their best efforts to be fair and progressive as facilitators, the coordinators inadvertently filtered out reforms that could have tackled aspects of urban injustice by challenging the political-economic status quo.

In the first year after the plan was formally handed back to the Regional Government, the very body created to institutionalize adaptation in regional politics, the Sub-Committee for Climate Change, was under threat of extinction. The Regional Councilor who presided over the sub-committee lost political office through an administrative reform that, for the first time in Santiago, required councilors to be democratically elected. Not receiving enough votes, the

councilor lost office, and the sub-committee that had been heralded as a "major sign of political support" was dissolved. In turn, competing political priorities meant that the plan, despite the huge efforts of all those who dedicated their time to its elaboration over two years, failed to be ratified by the political authorities and failed to be implemented by national ministries.

In terms of pay-off, it was ultimately *Aguas Andinas* that was the winner in maintaining the status quo, and the *Pontificia Universidad Católica*, whose researchers managed to produce a plan with pragmatic measures that notionally involved a wide range of participants. The group of public-sector officials had gained support during the process, but ultimately failed in securing long-term support for adaptation on the political agenda against competing political dynamics.

4. Summary of Findings

It is striking that the final plan's level of ambition was significantly lower than the measures discussed internal to the multi-year, multi-participant planning process and that, in the wake of the plan's launch, it was neither validated by the city's authorities nor implemented. Today, as the urban poor in Santiago – those being planned for – remain highly vulnerable, it is essential to understand the ways in which ambitious, transformative adaptation was suppressed.

A first question of interest is how it came to be that the elaboration of an urban adaptation plan, a highly political issue, was entrusted to a team of researchers? Interviewees confirmed that it was common for the academic sector to take on such a role in public policy in Chile, given the retrenchment of the state during the military dictatorship, and the reification of scientific rationality in policy processes. The consequence of the *Intendente's* decision to transfer coordination to academia was clear: it created an expert-led process where academics decided

who should take part, what would be the scope of discussion, how conflicting views would be aggregated, and the ultimate measures that the plan recommends. We can understand the *Intendente's* decision as an exercise of the 'third dimension of power' (Lukes 2005 [1974]), where socio-cultural assumptions go unchallenged and quietly dominate proceedings to the detriment of the relatively powerless. By following precedent from the time of the military dictatorship on expert-led planning and based on scientific and market rationality, the *Intendente* allowed the most pervasive, yet largely invisible exercise of power, to infiltrate the process.

A further question to address is how it came to be that a foreign-owned corporation could withhold information on glacial melt that was essential to decision-making on future water availability. Fieldwork revealed the privileging of pro-market logic over equity, leaving unchallenged the decades-old tradition of planning as technocracy and the 'management of things' (Silva 2013). Decisions taken by the coordinators on the rules that would govern the planning process demonstrate the exercise of the 'second dimension of power', which Bachrach & Baratz (1962) theorize shapes a 'mobilization of bias' that acts towards the exclusion of certain participants and issues in political decision-making.

Beyond the process, when the Regional Councilor lost office through administrative reforms, the lack of action by the Regional Council to continue the Sub-Commission on Climate Change can be understood as a "non-decision" that suppressed adaptation as a political issue. Further, non-participation and diminished participation allowed powerful ministries to reject the plan, on the basis that they had not been sufficiently involved in drafting its recommendations. These events suggest that gains by participants inside the planning process can be undone by the exercise of

the second dimension of power by actors external to, or supervising, the process, to nullify transformative change at the point of implementing political decisions and plans.

5. Conclusions and implications of the study

Concern is growing among theorists that adaptation planning too often falls victim to 'reformism', limiting the potential for more transformative challenges to the social and economic relations that produce climate vulnerability (Pelling et al. 2012; Kates et al. 2012; O'Brien 2012). Despite being celebrated as a case of 'meticulously participatory' collaborative governance, the findings presented here lend support to the growing understanding that participatory adaptation planning can achieve little without challenging the wider system rules and power relations of traditional urban development (Pelling et al. 2012; 2014). The failure of Santiago's experience should not be attributed to the coordinators alone, who succeeded in fulfilling their mandate to produce a plan with practical, viable solutions. Rather, we should see the coordinators and participants as agents constrained and enabled by the wider socio-political structures that went unchallenged in Santiago's planning process.

As climate impacts sharpen existing socio-spatial inequalities, and as more cities engage in responses to climate impacts, scholars and practitioners must interrogate the ways in which politics and power shape climate adaptation planning. From the scholarly side, researchers can engage in ethnographic work that examines the many social movements working parallel to formal planning processes, to enhance our understanding of avenues for socially transformational adaptation. In Chile, there are already signs that civic resistance may more effectively challenge the roots of urban vulnerability than formal planning, with social movements having succeeded in pressing President Bachelet to reconsider the market-dominated governance of water that

many consider a primary driver of urban water stress (Terra Noticias 2014). From the

practitioner side, a critical engagement in the architecture of decision-making processes can

allow us to pursue more inclusive ways of selecting participants and fairer ways of determining

the parameters and scope of decision-making. One strategy would be to follow the lead of

planners in Ecuador, who prioritized equity in Quito's adaptation planning process by directing

attention and funding to socially vulnerable groups, resulting in improved resilience outcomes

for the urban poor (Chu et al. 2015). These are still early days for the planning profession's

engagement in adaptation, and much can be learned from past efforts at inclusive, participatory

planning. Planners must, however, go further than well-intentioned participation, to fully

discover and expose the structural causes of climate vulnerability in the societies in which they

plan. In doing so, they can uncover the political barriers to more equitable and transformative

adaptation, and offer marginalized communities the strategies and tactics needed to prevail.

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Annex I – List of Interviews

Interviews undertaken in Chile (January 2015)

Interviewee 1	Representative from Ministry of Housing and Urbanism
Interviewee 2	Representative from Ministry of Environment 1
Interviewee 3	Representative from Ministry of Environment 2
Interviewee 4	Representative from Civil Society Organization 1
Interviewee 5	Representative from Civil Society Organization 2
Interviewee 6	Representative from College of Architects
Interviewee 7	Representative from *Aguas Andinas*
Interviewee 8	Representative from *Universidad de Santiago de Chile*
Interviewee 9	Representative from Regional Government of Metropolitan Santiago
Interviewee 10	Former Regional Councilor & Pres. of Sub-Committee on Climate Change
Interviewee 11	Representative of ADAPT Chile (Non-Government Organization)
Interviewee 12	Coordinator 1 of 'Participatory Planning Process', *Universidad Católica*
Interviewee 13	Coordinator 2 of 'Participatory Planning Process', *Universidad Católica*
Interviewee 14	Representative 1 of CEPAL, Sustainable & Urban Development
Interviewee 15	Representative 2 of CEPAL, Sustainable & Urban Development
Interviewee 16	Presidentially-appointed Water Czar for Metro Region of Santiago
Interviewee 17	Municipal Staff Member 1, *Comuna de Lampa*
Interviewee 18	Municipal Staff Member 2, *Comuna de Lampa*
Interviewee 19	Municipal Staff Member 3, *Comuna de Lampa*
Interviewee 20	Municipal Staff Member 1, *Comuna de Santiago*
Interviewee 21	Municipal Staff Member 2, *Comuna de Santiago*

Interviews undertaken by Skype (January 2015)

Interviewee 22	Head Coordinator of 'Climate Adaptation Santiago' in Germany
Interviewee 23	Former Technical Staff Member from *Universidad Católica*