Authors: Allen Adiana, Apsan Frediani Alex , Lambert Rita, Ome Baron Aura

Title: **Can participatory mapping activate new spatial and political practices? Mapping popular resistance and dwelling practices in the slopes of Bogotá eastern hills.**

Abstract

Within the wider ongoing debate of Participatory Action Research, this paper interrogates the capacity of participatory mapping not just as a means to tap into plural knowledges over and emanating from specific geographies but rather to disrupt exclusionary constructions of space and place and the reproduction of the governing relationships that cause inequality.

Focusing on a participatory mapping experience undertaken by the authors in collaboration with local residents in the steep slopes of Bogota's eastern hills – an area threatened by forced evictions in the name of ecological preservation and risk protection arguments - we explore why and under what conditions participatory mapping might have the potential to disrupt conflicting interpretations of place and space held both by local residents and state agencies, which in turn can open the room to rework what types of interventions are actually needed and why. We hypothesise that this depends on the extent to which mapping can abridge the different scales at which the state and marginalised communities make sense of a site historically underpinned by different forms of spatial myopia and territorial stigma. This is in our view not just a consequence of the application of participatory mapping techniques per se, but depends on the way in which mapping is used to expand the political space in which different conceptions of a territory can effectively talk to each other.

Introduction

In recent years, debates on Participatory Action Research (PAR) have gone a long way in emphasising the recognition of a 'plurality of knowledges'. As argued by Kindon, Pain and Kesby: recognising such plurality implies acknowledging that "those who have been *most* systematically excluded, oppressed or denied carry specifically revealing wisdom about the history, structure, consequences and the fracture points in unjust social arrangements."(2007, 9)

In this paper, we interrogate the capacity of 'participatory mapping' not just as a means to tap into plural knowledges emanating from specific geographies but rather to disrupt exclusionary constructions of space and place and the reproduction of the governing relationships that cause inequality. Thus, participatory mapping is

understood here as a means to reproblematise the process of knowledge production with respect to its visual representation and spatial understanding and to expand the room for manoeuver of those typically disenfranchised from such process; moving beyond more instrumental positions, that emphasize the use of participatory mapping in poverty reduction policies (Brock & Mcgee, 2002), and acknowledging the pitfalls of endorsing it as a means to build consensus, while under-theorising power relations (Cooke & Kothari, 2001).

While our central preoccupation resonates with many of the points raised in recent years within the fields of critical cartography[1] and critical spatial practice[2], we aim at furthering such debates in relation to the redefinition of participatory mapping as a form of spatial politics. Focusing on a participatory mapping experience undertaken by the authors in collaboration with local residents in the steep slopes of Bogota's eastern hills – an area threatened by forced evictions in the name of ecological preservation and risk protection - we explore how and under what conditions participatory mapping might have the potential to disrupt conflicting interpretations of place and space by local residents and state agencies, shedding new perspectives on what types of interventions are actually needed and why. We hypothesise that this depends on the extent to which mapping can abridge the different scales at which the state and marginalised communities make sense of a territory historically underpinned by different forms of spatial myopia and territorial stigma (Escobar, 2008). This is in our view not just a consequence of the adoption of participatory mapping per se, but depends on the way in which mapping is used to expand the political space in which different conceptions of a contested territory can effectively talk to each other.

Putting Triángulo 'on the map'
The mapping experience that informs the discussion took place in November 2012 in an area known as 'Triángulo' in the district of San Cristóbal, located in a forest reserve zone rising into Bogota's eastern hills. Triángulo comprises four neighbourhoods: Manantial, Triángulo Alto, Triángulo Bajo and Corinto, which together mirror many of the struggles that have shaped Bogotá during the last four decades (Map 1).

Map 1: Location of San Cristóbal. Source: Adapted from Rico (2010)

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[1] Critical cartographers position maps as tools of power/knowledge analysing their instrumental role in the construction of identities, in the activation of territory and in unfolding potential (Harley, 1989; Corner, 1999; Christophers, 2007; Wood 2010).
[2] 'Critical spatial practice', a termed coined by Jane Rendell (2006), extends the definition of 'critical' to focus on those practices that involve self-reflection and social critique.

Mapa 1. Localización del área de estudio. **Fuente:** Base cartográfica Secretaría Distrital de Planeación
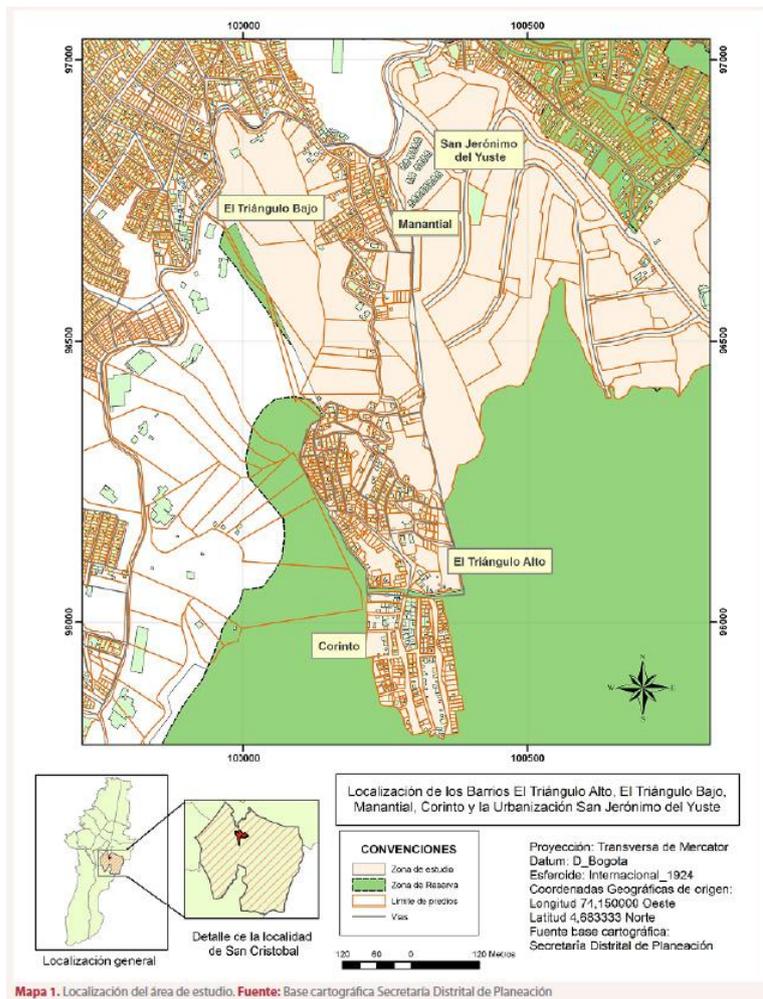
Over the years, Triángulo and the maps depicting it have been the subject of intense contestations between local dwellers and authorities. Externally portrayed as an encroached natural protected area, an area ridden by conflict and criminality, and more recently an area of unmitigable biophysical risk, Triángulo has also been the site of internal conflicts and struggles over the territory.

The first settlers arrived to Triángulo Bajo at the beginning of the Twentieth century after either inheriting or buying the land from the original landowners. Manantial originated through a process of pirate land subdivision in the late 1970s. These two settlements were soon followed by further waves of newcomers who occupied the area known as Triángulo Alto. In 1984, a further occupation led by the guerrilla movement M-19 marked the beginning of Corinto, attracting street vendors and waste pickers from the city centre who settled precarious shacks here. Due to conflicts arising from the progressive occupation of the upper part of the slope, by the 1980s the territory had became divided into four distinctive neighbourhoods.

In 2006, the area was designated by FOPAE[3] - the district agency responsible for emergency responses - as an area of 'unmitigable risk', paving the way for eviction and

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[3] Fondo de Prevención y Atención de Emergencias.

relocation through a municipal resettlement programme. Corinto, the neighborhood located on the upper part of the hills, was demolished in 2011 (Figure 1). One year after, the other three settlements faced a similar threat.

Figure 1: Corinto in 2012. Photo by Allen.

The mapping process that informs this paper emerged in 2012 out of the perceived need by a group of local residents from the three remaining neighbourhoods to understand the extent to which their dwelling practices were or not incompatible with the ecological preservation of the hills. Some of them have been actively involved in reconfiguring such practices under the notion of '*ecobarrio*'. Originally promoted by a local community leader, with the support of a Jesuit NGO with a long trajectory in working in the pacification and consolidation of the territory, this notion sought to cultivate socially just and ecologically sound local practices to inhabit the slopes. (Figure 2)

Figure 2: Ecobarrio poster drawn by the community. Photo by Alvarez, 2009

While some residents were militant about the possibility of reclaiming Triángulo as an *ecobarrio*, others were sceptical but willing to explore if their dwelling practices represented an alternative path in the appropriation of the territory with enough 'substance' to withstand the threat of eviction. As expressed by one of them: "we all care about the hills and the life they support, but we need to understand whether we really have the right to stay or should go." (Male leader from Triángulo Bajo, November 2012)

The mapping initiative emerged from such quest and was initially conveyed to one of the authors, Tatiana Ome, an anthropologist who had been conducting ethnographic research in the area since 2009. Initially driven by the interest of understanding the impact of a former state-led programme called '*Ecobarrios*' upon grassroots dwelling practices, she came across the experience of Triángulo, an area which had not been included in the programme, but where yet, local dwellers appeared to embrace the aspiration to become an *ecobarrio*.

In dialogue with several local community leaders, Tatiana facilitated the initial discussions that shaped the mapping workshop.[4] In the first instance, mapping was seen as a means to understand local dwelling practices, provide counter arguments against official maps of the area and to open dialogue with the very institutions who produced those maps (Figure 3). As explained by one of the leaders involved: "This exercise gives us elements from diverse types of knowledge to position ourselves and our territory against a neoliberal model that exclude us from the city" (Male local leader from Manantial, August 2012)

Figure 3: Poster produced for the Bogotá mapping workshop

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[4] For more details about the Bogotá mapping experience visit: www.bartlett.ucl.ac.uk/dpu/mapping-environmental-change.

In November 2012, a three-day workshop kicked-off with the identification of the local practices that make dwelling in the slopes possible. This was then followed by a session where these practices were located on an aerial photo of the area. The base map was further populated in the field, through a full-day transect walk undertaken by the authors and a group of 25 local residents[5] with the intention of stitching together the four seemingly disparate neighbourhoods. The last day was devoted to analyse the map produced and to identify potential strategies for risk reduction, social cohesion and collective action, as well as fostering dialogue with officials from FOPAE, present in the workshop. The main output of the workshop was a 'live map', conceived as an online platform that continued to be updated by the inhabitants after the workshop (Figure 4).

Figure 4: Online map showing the potential (future) dwelling practices identified throughout the transect.

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[5] Participants were self-selected out of the 300 households estimated to live in the area. They included equal gender representation across different generations.
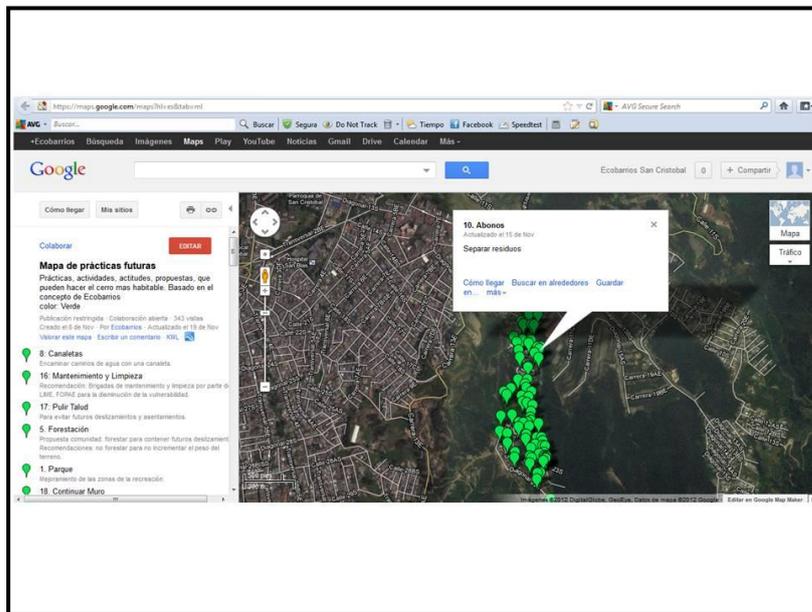
The following sections examine the way in which the reading, writing and audiencing of the map produced by the community of Triángulo carved new aspirations among local dwellers and political spaces in the wider metropolitan context of Bogotá. The discussion pays particular attention to the way in which different approximations to scale and time through mapping, helped to reconfigure the internal and external understanding of a highly contested territory.

Scale and Participatory Mapping

The adoption of participatory mapping as a methodology inherently brings scale at the centre of any discussion. Scales have been understood as socially constructed instruments of power (Nikiforova & Kaiser, 2008), which embody and express the unequal interplay among different actors. As scale is not fixed but rather malleable, different actors might invoke particular scales strategically to enrol allies, build relational power and achieve specific political ends. As such, scale is an integral part of strategies of empowerment and disempowerment (Kurtz, 2003; Swyngedouw, 2004). Hence, as argued by Smith (2004), focusing on scale in participatory praxis and acknowledging its performative potential may in effect play a role in transforming scalar relations. More recently, MacKinnon (2010) challenged the tendency to reify scale, contending that "it is often not scale per se that is the prime object of contention, but rather specific processes and institutionalized practices that are themselves differentially scaled." (page 22-23), what he refers to as 'scalar politics'.

Adhering to MacKinnon's insight, the Bogotá mapping initiative sought to unravel the 'scalar politics' at play, by exploring the links between the discourses and scalar practices underpinning official maps *vis-a-vis* the materiality and multiplicity of sociospatial relations converging in the production of this territory over time. This entailed bringing to the forth the relationship between the three neighbourhoods and the city and examining how the scalar authority of the latter had contributed to the marginalisation of local dwellers. Thus, before engaging with the actual writing of a new map, we started by reading how Triángulo had been mapped by local and national authorities, seeking to understand how the eastern hills had been perceived and conceived in planning circles.

Examining how the territory had been mapped over time, revealed contrasting assumptions. On the one hand, the '*Plan de Ordenamiento Territorial*' (POT) - a 10 year master plan for the city - depicts the area as lying in a planned ecological corridor, a buffer zone against further urban sprawl which seeks to safeguard the forested hills (Map 2). Similarly, most official documents show the area as a large green parch adjacent to the city, omitting reference to any human settlement.

Map2: Environmental zoning map produced by the Ministry of the Environment. With Triangulo located within the red box, lying in the forest reserve.
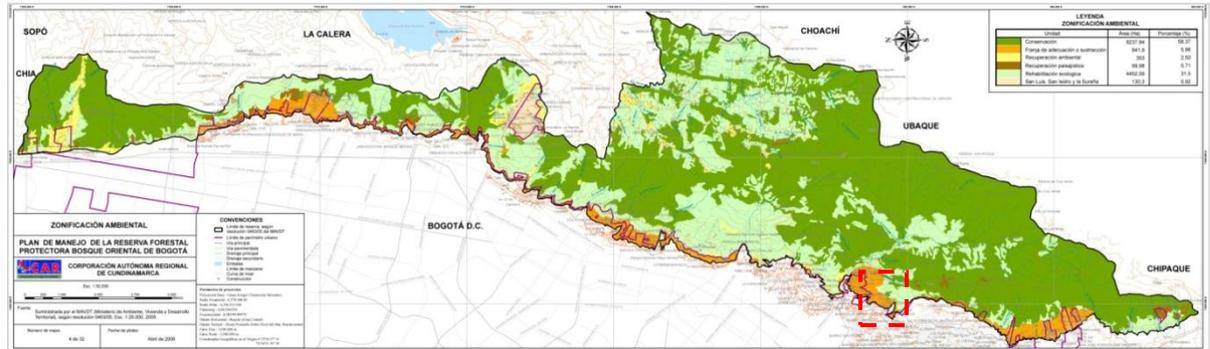
On the other hand, a sequence of maps produced by FOPAE showed that while in 2006 the area was considered to be at low to medium risk to biophysical hazards (Map 3), by 2011, most of Triángulo had become depicted as a zone of unmitigable risk (Map 4). Ironically, this map excludes from such label an adjacent patch of land, taken over by developers in 2007, which saw the excavation of the hills for the construction of several six-storey high buildings, triggering recurrent landslides. As mentioned before, these conflicts manifested and produced through maps have so far led the demolition of Corinto.

Map 3: Risk map elaborated by FOPAE in 2006. Source: CAR 2006
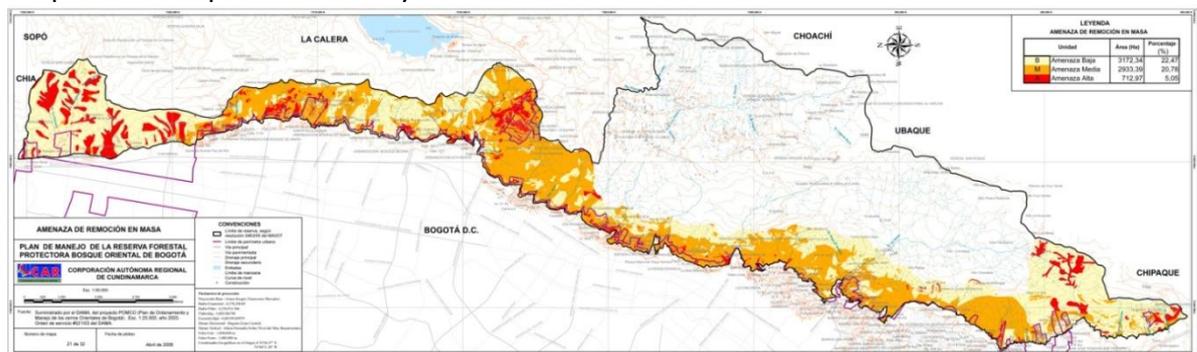
Map 4: Risk map produced by FOPAE in 2011, showing most of Triángulo reclassified in red as an area of unmitigable risk. Source: FOPAE, 2011
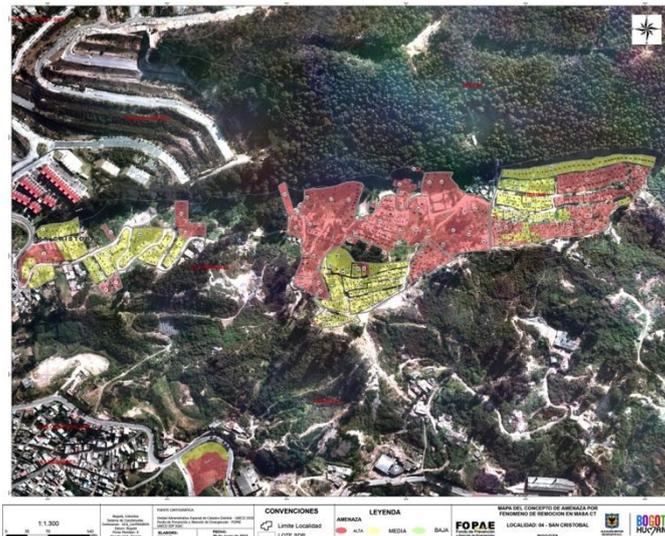
In the above maps, the city's sustainability is promoted, for which the risk and conservation maps support the need to contain urban sprawl. The territory is here conceived through nested hierarchical scales, where the neighbourhood scale is subservient to the city scale.

During the workshop, contrasting scales was useful to increase the scalar authority of the local and its non-homogeneous materiality, eliciting interrogations among the residents on where they were in relation to what was officially deemed as a desirable future for the territory they have dwelled for decades. The official maps not only appear to ignore the reality on the ground but were not informed by it. This is evident when one superimposes the POT map onto the territory as its zoning divides dwellings in half, leaving part of them within the buffer zone and half out of it. The risk maps produced by FOPAE also failed to engage with the particularities of risk within that territory or indeed with how people mitigate risk to be able to live on the slopes. They homogenised the experience of risk, painting the area with big red blotches.

The mapping workshop challenged this nested hierarchical conceptualisation of scales, opening the possibility to reframe the local as vital for the functioning of the city and indeed for the success of the planning mechanisms proposed to contain urban sprawl. The workshop itself was used as a means to bridge the distance between authorities and inhabitants, bringing them under one roof, opening-up dialogue and the possibility for negotiation. Senior representatives from FOPAE, took part in the discussion of how risk was understood and mapped within their organisation. It became clear through the conversation, that how risk was defined was not a purely objective endeavour as initially claimed but contingent on the variables chosen. Moreover, by zooming into the aerial photos used to support the discussion, residents were able to challenge FOPAE's homogenised representation of risk.

Here a moment of reflexion occurred where the officials could not entirely justify how a territory could objectively be labelled as an area of 'unmitigable' risk, acknowledging that the prevalence of informal land tenure and low socio-economic indicators was automatically assumed to capture the geography of unmitigable risk. As put by a senior

officer from FOPAE: "What makes risk unmitigable is in fact the vulnerability of the population in the area under study. We assume that those with higher socio-economic resources will be able to mitigate the impact of hazards and are therefore at a lower risk level." (Representative from FOPAE, November 2012).

A critical engagement with the reading of existing maps, allowed the residents to decide precisely what to map and what map to write. After locating their dwellings on the aerial photo provided by FOPAE, they decided to map what areas were at risk and what practices had been, were or could be adopted to mitigate risk.

In the field, participants recorded the areas where physical risk is a threat and areas where risk mitigation strategies had been implemented by those living there. The mapping party included a geologist invited by the community, who was the former President of the Colombian Society of Geology and had led a previous study conducted in the area by the National University and CINEP. Bringing a trusted and knowledgeable 'expert' to the field, made it possible for the group to differentiate between myths and facts on the site and to redefine potential practices to be adopted as they mapped. For instance, it was soon established that although much good work was being done by the community to aid the natural drainage of rainwater along the main paths in each settlement, a community scheme devised to facilitate waste disposal and collection points was obstructing the drains and exacerbating the occurrence of mudslides. In effect, this process opened the writing of the map to a more nuance assessment of risk, challenging the characterisation of the whole area as a site subject to unmitigable risk while allowing a micro-zoning perspective (Figures 5 & 6).

Figure 5: Local residents mapping risk.
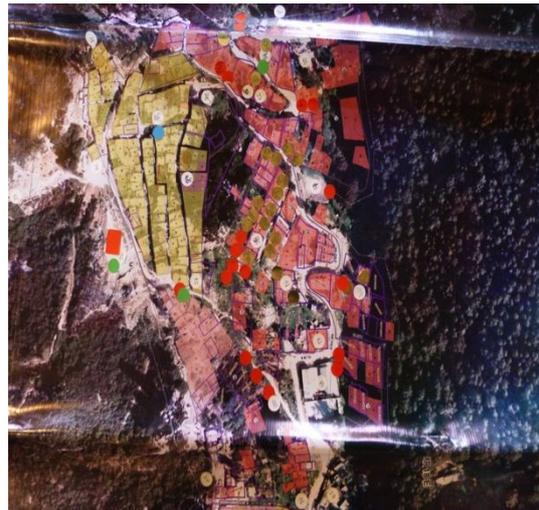
Figure 6: Risk map produced by the residents.

Furthermore, the residents highlighted the problematic which would arise in policing and enforcing the proposed buffer zone and ecological corridor once implemented, thereby exposing the gap between the 'scale of framing' - the scale at which a problem is experienced and framed - and the 'scale of regulation' - the scale identified for the administration of landscapes (Towers, 2000). Arguing that the implementation would fail, as the buffer zone would inevitably be encroached by newcomers, they used the maps and their own notion of what an e*cobarrio* is to reframe their dwelling practices

as a potential strategy which could simultaneously mitigate risk and safeguard the ecological infrastructure of the area. This in turn triggered an important discussion concerning whether a zero-growth pact was or not desirable. While some initially resisted the idea, it was agreed in the end that protecting the area from further developments would not only guarantee that their risk managements strategies could work at the scale they were implemented but also stopped local processes of land speculation and pirate subdivision. In a short space of time, local mappers were able to engage with complex planning decisions and ethical questions concerning the social function of the land, the contention of further sprawl and ecological carrying capacity of the territory.

The strategies adopted through the mapping workshop can also be understood through what Smith (2004) refers to as 'scale jumping' and 'scale bending'[6] in order to overcome or resist the discursive conceptualisation of the local as secondary. In this sense, the workshop raised awareness of citywide trends and discourses and, through the critical reading of maps, enabled the analysis of scalar politics and its reconfiguration as a strategy in itself.

Time and Participatory Mapping

Another aspect worth highlighting in PAR is the emphasis on understanding the production of space over time. As pointed by Corboz (1983), the territory is a result of a lengthy and slow stratification, with many layers produced over time. Thus, mapping can be conceived as a mechanism to reveal multiple and time-based narratives of territories. Instead of merely documenting changes on the physical form, mapping has the potential to explore people's memories, trajectories and attachments.

During the mapping workshop, participants explored popular narratives about Triángulo and also those constructed in official maps, contrasting those depicting the area as long-term dwelled and a non-inhabitable territory. The reading of various official maps allowed the group not only to deconstruct what variables had been included and excluded to map the territory, but also to become aware of the different arguments conveyed through maps over time about what the territory should be and why. While earlier maps produced by regional and national agencies appeared to privilege the 'conservation of nature', eventually municipal maps started to depict the area in light of its strategic role to protect the ecological infrastructure of metropolitan Bogotá. More recently, the area had began to be mapped with different colours, what was once green became red, human settlements previously omitted became noticed and magnified, signifying that what was to be protected –albeit through evictions – was 'human life at risk'.

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[6] 'Scale jumping' refers to the ability of certain social groups and organizations to move to higher scales of activity in pursuit of their interest. 'Scale bending' captures how certain groups and individuals challenge existing arrangements which tie particular social activities to certain scales.

So if in the past, local dwellers have found the notion of *ecobarrios* productive to explore ways of living with nature, the most recent maps invalidated such aspiration, an area of unmitigable risk could not be home to any 'barrio', whether eco, or not. Upon this realisation, the residents decided to focus their mapping transect on considering two hypotheses: one concerned with risk management, the second with preserving the ecological infrastructure of the area. Could *ecobarrios* be a strategy to articulate both objectives?

To explore the answer to this question four groups constituted by residents, researchers, senior representatives from the Secretary of District Planning and FOPAE and the geologist) were formed, one focused on identifying the areas that were at risk of natural and man-made biophysical hazards, while the other three groups focussed respectively on documenting the dwelling strategies adopted in the past, in the present and those that could be adopted in the future. The mappers insisted that the four groups should walk across the area together, to "explore simultaneously how we manage risk and how we live with nature." (Female local leader from Manantial, November 2012). This approach prompted the sharing of multiple understandings of the territory, the technical and the cultural, the contingent and the structural, the immediate and the long term.

In the third day of the workshop, the four maps written by the community in the field were overlaid generating discussions about the territory of the past and its memories, and connecting it with the aspirations associated to the territory of the future. Through such process, municipal authority officials started to acknowledge the presence of historical and cultural heritage in the area.

One of the main outcomes of the workshop was the enhancement of the local dwellers' 'capacity to aspire' (Appadurai, 2004), not only in their relationship with local authorities and the wider political system, but also in the reappraisal of their own agency. As part of a territory that had historically faced problems such as poverty, exclusion, violence and drugs, residents explained a sense of hopelessness have often compromised their capacity to aspire towards a better future.

Towards the end of the workshop, participants decided to share their maps and findings calling other residents and outside agencies and politicians to work "for our dreamed and renewed Triángulo".Mapping in this sense, assisted them in the "process of assembling possibilities out of actualities" (Dovey, 2011).

Concluding Remarks
Reflecting upon this participatory mapping experience, we note the importance of addressing the notion of 'participation' in knowledge production as a continuum. The design, implementation, the outputs produced and their use were key phases where local residents had to make conscious decisions about what to map, how to map, who with and for what purpose. These key phases were themselves strategies to increase engagement and commitment internally, as well as to foster external recognition.

Opening-up participation, to include the very institutions responsible for the production of the hegemonic maps contested, was indeed a noteworthy lesson for

participatory counter-mapping initiatives. Often, counter-mapping is performed as an exercise set aside from those producing the official maps (Hodgson & Schroeder, 2002; Peluso, 1995; Fox et al., 2005). Moreover, when the format is such that it includes government institutions, issues of co-option and questions about who owns the process and the information generated are put forward.

After the workshop, control over the map produced remained in the hands of the local dwellers and this expanded the opportunities to negotiate the political space to re-imagine the future of Triángulo and similar areas in the Eastern hills of Bogotá. FOPAE recognised the value of the map produced during the workshop for its capacity to capture grounded knowledge, and requested access to the online digital platform. However, the residents held on to it and decided to share the outcomes of their mapping experience with any interested institution but only when invited to talk about the map themselves, thereby claiming their participation in planning circles.

Apart from questions of ownership and control, the mapping experience also highlights the value of establishing a learning platform for all those involved. In the case of FOPAE, their involvement instigated a self-reflexive interrogation of how risk is mapped unilaterally without inputs from those deemed to live at risk. Community mappers from Triángulo were invited by FOPAE to share their experience with other communities 'at risk' and, more significantly, became directly engaged in further planning discussions and decisions concerning their territory, including the launch of the first 'Network of Risk Managers' by which FOPAE endorsed the creation of a 'risk mitigation school' and a pilot project in Triángulo to support and monitor the effectiveness of grassroots risk mitigating strategies.

Furthermore, gaining a new appreciation of how risk mitigation and environmental preservation can coexist through their dwelling practices, motivated community mappers to become co-managers in the environmental reclamation of the area previously occupied by Corinto; an initiative undertaken in collaboration with the Environmental Secretary, which has now entered its second phase.

Prior to the mapping workshop, one of the leaders from Triángulo had been highly instrumental in mobilising the inclusion of *ecobarrios* as a key grassroots strategy to be included in the 'Easter Hills Roundtable', created in July 2012. The mapping process triggered a wider endorsement from local residents to participate in this roundtable. The possibility of working together to make Triángulo an *ecobarrio* shifted from being perceived as an abstract construct or an opportunistic rhetoric devise to become a tangible possibility to address social and ecological concerns at once.

Reading how Triángulo had been mapped over the time at different scales also allowed the community to find their way across different administrative jurisdictions in which their map was to fight further battles. To date, the local mappers have become active participants in the citizens fora established at the planning zonal unit scale as well as at the metropolitan level, working across a number of thematic and geographical roundtables on water, risk and environmental restoration, among others.

The above outcomes revealed a number of ways in which encouraging an active reflection and hands-on approach in considering the scales at which problems are framed, maps drawn and solutions negotiated can assist grassroots groups to navigate the scalar politics of space production. A conscious approach to capture time through mapping produced yet another productive disruption in the way in which the territory of Triángulo had been historically internalised by its residents. As put by one of the participants: "Before the workshop, I thought there was nothing else but the present...little to celebrate in the past, nothing to hope for in the future" (Female resident from Triángulo Alto, November 2012).

Through the previous discussion we sought to examine how participatory mapping can work as a device to engage in the spatial politics underpinning a contested territory in Bogota. Instead of focusing on the tensions between working within or outside hegemonic structures - a dichotomy often present in critical spatial practice and critical cartography literature - mapping in this experience was practiced as a means to reveal and challenge entrenched institutionalised modes in the production of space, putting into productive dialogue the 'conceived' and the 'lived' and carving in turn new political interstices Mapping in this context can be seen as a form of 'participation' in knowledge production, where the latter is understood as a continuum shaped by relations of power and not a set of predefined categories or ladders. From this perspective, a critical participatory engagement not just with the writing of maps but also with their reading and audiencing becomes a means to disrupt exclusionary conditions, opening up the possibility for tactics that enable those who are typically mapped from above to reclaim their own way of being on the map and to bring about substantive change by engaging with scale and time. This experience illustrates some of the opportunities that participatory mapping might elicit, when treated not just as a means to tap into plural spatial knowledges or to counteract hegemonic mapping, but as a critical practice with the potential to generate renewed capacities to aspire and to act in spatially and socially embedded ways and to help carving new avenues of grassroots engagement with contemporary urban policy and planning issues and conceptions.

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