

# GIScience and power: the democratization of conceived space

Jose Enrique Gomez Gomez

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*All acts of understanding must include a spatial dimension that allows us to encompass the synchronicity, juxtaposition and separation of disparate spheres of life as well as the asymmetries of distributions of power.*

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*Edward Soja*

*Doris Bachmann-Medick*

## 1 Introduction

Since the so-called spatial turn in XX century, space has won relevance as the main dimension in which social, cultural and even physical phenomena should be understood and analyzed, playing a key role in knowledge production. The commandment “Always historicize!” has turn into “Always spatialize!” [2] illustrating the leap of space over time, of simultaneity over evolution; a dimension of multiplicity and coexistence overtaking one of a centralized single trajectory. Under this paradigm space does not longer only refers to physical location but to a social production process embedded with complex

power relations, economical dynamics and cultural practices.

Of special interest is the relation between space and power. Beyond the siting of beings in relation to power networks, space is a category that allows for emancipation, freedom and empowerment [11]. The center-periphery power structure, commonly related with colonialism, resembles a central, hegemonic power (European societies) spreading its truth towards the relegated periphery (the colonies) as some sort of evolutionary conception [10]. With the end of colonial age and the arrival of globalization, the power map of the world changed. Previously marginalized realities, experiences, cultures and knowledge constituted into independent but coexistent trajectories and the world was re-defined as the spatial relations among them. This can be extended to daily live in our times: centralized or global powers represented in state interest, political discourses and production relations making invisible local realities in favor of expansion and perpetuation. Thus, communities empowerment, power asymmetries and knowledge representation must be approached with a spatial basis both with space as a conceptualization (the dimension of the spatial) and as an analytical category (the methodology of spatialization).

Since hegemony is exercised through the control of knowledge production [7], spatial representation of the world can be a means to perpetuate or modify existing power dynamics. Here, maps can not longer be conceived as a narrow representation of physical location but they must evolve into a more generalized medium to structure knowledge. The act of mapping is always guided by discourse, by dominating power and its constant confrontation with counter-power represented by socially produced knowledge.

It is commonly said that Geographic Information Systems (GIS) and, moreover, Geographic Information Science (GIScience) lies on the heart of nowadays both of scientific and humanities investigation, as it provides a set of tools for spacialize previously impossible data, making use of a wide

range of continuously evolving spatial technologies [5]. Those tools provide a framework where analytic and descriptive processes converge in the same representational environment, bridging the necessary components to fully exploit the multidisciplinary potential of spatial turn. Nonetheless, social appropriation of GIS faces several challenges such as data access, political economy, geodemographics and GIS epistemology [6] which, when not confronted, reinforce the established power dynamics. The next pages will describe how the democratisation of GIScience and therefore of space conception can alter power balance in favor of those with less voice.

## 2 Power and conceived space

Space is not a static container, a neutral void, where objects are located and historical events happen. It is as a medium with its own productive agency which, at the same time, is a product of human action and produce the conditions under which those actions develop [12]. It is not a pre-existing receptacle but its own nature is created as of the result of social activity. Simultaneously, social activity is constrained by power [3]. The modes of thinking, acting, understanding and speaking are locally shaped by the ruling power which make them spatially contingent, giving place to a complex space-knowledge-power relation.

According to Lefebvre's theory of space as a social production [7], social space is the dialectic result of the interaction between three elements known as the spatial triad ( Figure 1):

1. **Perceived space or spatial practice:** is the practical basis of perception of the world, what is seen. In some degree it is the space as such; the physical, materialistic means in which events develop, but without the events themselves.

2. **Conceived space or representations of space:** the conceptualization of space. The space of scientists and planners. This is the dominant space in any society or model of production, where social and political power practices take place.
3. **Lived space or space of representation:** individual experience of space every day. Daily live of individuals. Is the space of social live, art, symbols and memories. It is the dominated space in a society and, as such, offers the possibility of resistance [9].

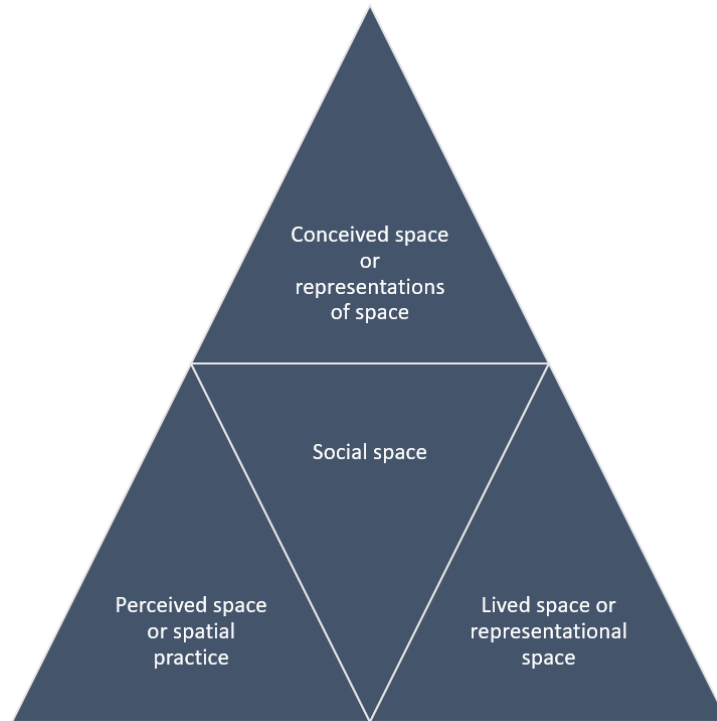


Figure 1: Schema of the spatial triad [7]

The conceived, as the dominating space, entails the possibility of a dominant group organizing and instrumentalizing social space in its interest to achieve advantages at the expense of other groups [4]. Monopolization of

conceived space leads to annihilation of lived space. The conceptualization of space is not only the way in which spaces are represented but in which it is understood and communicated towards society and, therefore, the model towards which society is forced to organize itself. This dichotomic and antagonistic relation between the lived and the conceived constitute the basis of hegemony and marginalization.

"If it is not on the map, it doesn't exist" is a common phrase to refer to the fact that only those elements present in a map, as the main means of spatial representation, correspond to reality. When power encroaches science at all its roots favoring a model of production, objectivity tends to vanish and truth is subject of the interest. In a map making context this means that presence of resources, location accuracy, adequate visualization, analytical results or even persons location, representing their own existence, can be manipulated and distorted.

In order of changing power dynamics, resistance must be exercised in the conceived space. Lived space, as the subjective experience of people and the dominated dimension of space, offers possibilities of resistance but those possibilities must be translated into knowledge for the appropriation of conceived space by human interest in such a way that the model under which space is planned not only benefits a particular group but all those coexisting in a space. This opens the future to participatory planning, policy definition and decision making based on local realities. The translation between lived and conceived demands democratization of a spatial understanding of reality which, in practice, means the dissemination of GIScience as a tool for observation, analysis, representation and communication of everyday spatial information.

### 3 Study case

Colombia is a country where a vast richness of natural resources is in constant clash with extractivist interest. In particular, the country distinguish for being the sixth country with the larger water reserves [1] and one of the megadiverse countries [8]. Its water wealth is due to the Amazon river and its tributaries, as well as the numerous rivers, lakes, and underground aquifers and waterfalls over the region which are often protected in national parks but threatened by economic pressure. A clear example of this condition is the zone known as *Serrania de la Macarena*, a place where three national parks for natural conservation converge. There, among a complex hydric network, is located *Cano cristales* globally known as the river of five colors, a powerful symbol for locals. Given the geological characteristics of the area, it is highly likely that oil reservoirs are present underneath this environmental complex, rising interest of productive companies and protection initiatives from communities inhabiting the territory.

In 2016, the national government granted an oil exploitation licence nearby *Serrania de la Macarena*, awaking the nonconformity of the community. The main argument for granting the license was the nonexistence of risk for water resource or big impacts in the environment as the location of the licence was 68 kilometers away from *Cano cristales*. This concept was mapped and communicated extensively in official channels and mainstream media (Figure 2). The map drags the attention to a measuring line between the licence and *Cano cristales*, proving that it is located in a safe distance form it, outside the national parks, and away from the only river in the zone.

However a second map was generated as part of the protest against the granted licences (Figure 3). It was pointed that the map presented excluded an important river of the area, rio Lozada, directly bordering the exploitation title, many other tributary that contribute to the complex hydrologic balance

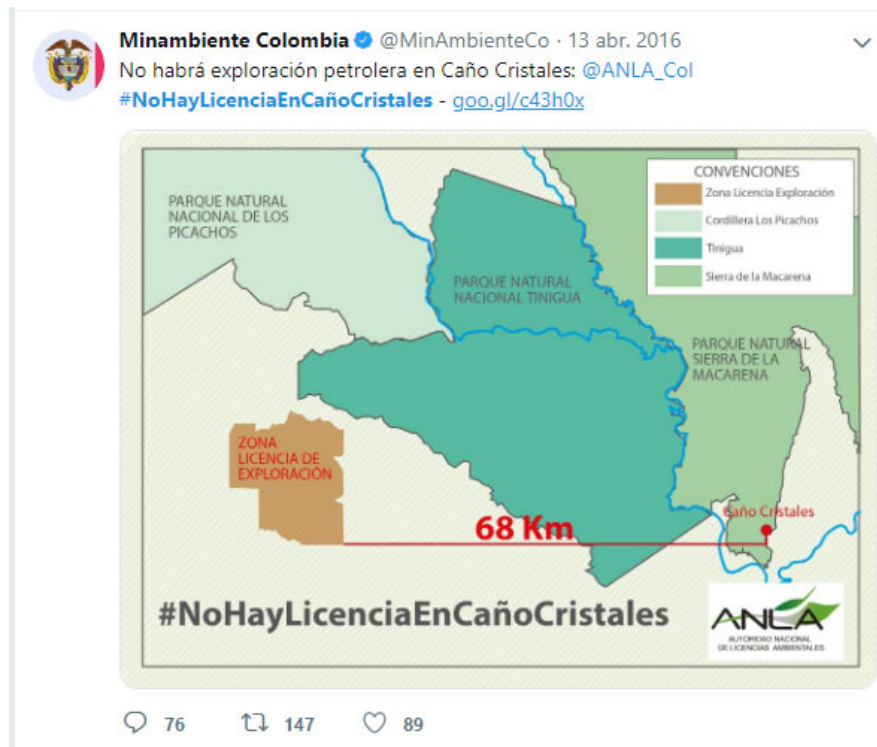


Figure 2: Official mapping of extractive licence.

of the area. Further, the new map includes a second measuring line between the licence and the national parks which turns out to be of only 2,5 kilometers. This information opened a debate between experts, politicians, exploiters and activist around conservation and environmental integrity of the zone, directly translated into the possibility of non risk exploitation. As a result, after weeks of intense debate and rising social pressure, the licences was withdrawn.

## 4 Conclusion

The spatial dimension of power dynamics is present on environmental and resource management in a development planning context. The extractivist

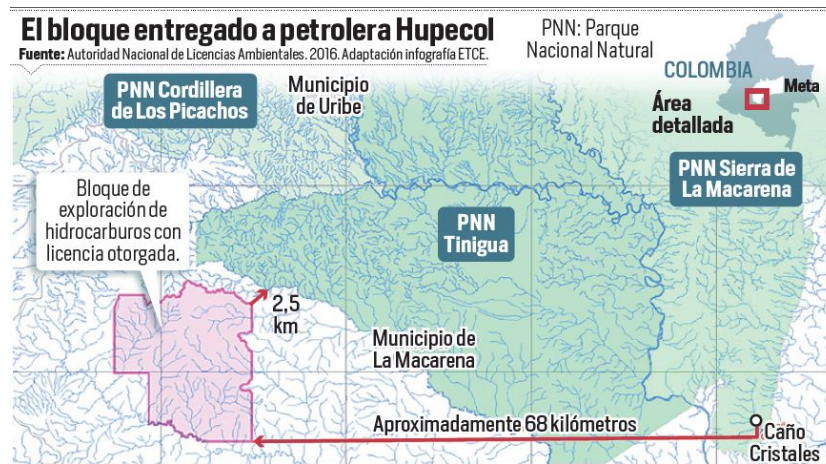


Figure 3: Official mapping of extractive licence.

perspective of multinational conglomerates towards under developed countries, especially in the sectors of mining and oil, put pressure on local governments to model their policies in favor of exploitation campaigns. As a consequence, the conceived space of society is distorted following an economic agenda designed to endorse the dominating model of production even if that implies passing over local impacts on environment, economy and even human rights. Here, the monopolization of conceived space by the economical interest is translated into policies, planning strategies and licences that intent to reshape the lived space of communities and the established local powers.

GIScience is a powerful tool what allows the democratization of conceived space. In order to close the gap between the lived and conceived space, knowledge must be first specialized to account for local realities which is possible trough existent and upcoming methods of GIS. Once this knowledge is represented and recognized, it is capable of transforming conceived space no the basis of social needs and demands. The case of Colombia is one of many where space and, in particular, spatial representation where the battle



field of power; a space of exploitation against one of conservation, and the will of a society to self organize itself against the productive hunger of the industry. This battle is dynamic and dialectic as the history of power itself, but it is now happening in the dimensions of social space.

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