

DIALOGICAL - PARTICIPATORY MAPPING APPLICATION (ACADEMIC MANUAL)

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“Place is not just the set of natural systems and superimposed things; territory has to be understood as the space that is socially produced, not just space itself. Territory is space used plus its identity. Identity is the feeling of belonging to what belongs to us. Place is the foundation of work; the place of existence, of material and spiritual exchanges and the manifestation of life.” (SANTOS, 2007, p. 14).

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SUMMARY

Dialogical-participatory mapping is based on the participatory co-production of geographic data by citizens, researchers, public authorities and other interested parties. In this manual, through provoking a critical reflection on the practices this methodology involves, we attempt to introduce a holistic critical and interactive pedagogical approach. Methodologically, we apply several collaborative activities and tools based on local narratives and knowledge and spearheaded by spatial mapping related methods.

Dialogical-participatory mapping, is a mapping methodology designed by researchers from the Waterproofing Data and further explored and consolidated through the ESRC IAA-funded project *'Accelerating the impact of citizen-generated data for improving the monitoring and management of catastrophic flooding'*. The project was led by the University of Warwick (United Kingdom) in partnership with the School of Business Administration of Fundação Getulio Vargas (FGV EAESP), the National Centre for Monitoring and Alerting for Natural Disasters (Cemaden) and the NGO TETO Brazil. As an idealised and systematised method, its main objective is to strengthen situational awareness of the reality within the community, with geographic data consolidating as a significant component, with truly social and transformative value. This mapping process consists of several steps, which in many cases may vary according to the needs of the different communities. In other words, there is a dialogic interaction between researchers and the citizens participating in the mapping process, in the pursuit of practices that can be significant for the accurately representing their existent and emerging themes of interest. These so-called 'generative themes' are the starting point of the dialogical-participatory mapping process, emerging from popular knowledge, extracted from the everyday life of local citizens, which means that such themes are distinguished and defined by the community members themselves.

Between April and June 2022, researchers and research assistants from the international project consortium carried out a dialogical-participatory mapping exercise in three Brazilian states: Acre (AC), Minas Gerais (MG) and São Paulo (SP). The communities investigated were: 06 de Agosto neighbourhood in Rio Branco (AC), Guarani Kaiowá Occupation in Contagem (MG) and Cai Cai community in São Paulo (SP).

This manual is intended for the academic community, for social innovation institutions and self-managed bodies focused on direct social action through collective production of data with the community members. The approaches, methodologies and tools that were part of the mapping process in the different urban contexts are briefly presented, so as to enable the replication of this method at various instances not only within the Brazilian context but across other communities in Latin America and beyond.

METHODS AND TOOLS OF DIALOGICAL-PARTICIPATORY MAPPING

Knowing the area: Community mobilisation practices

To ensure the accurate translation of the data collected from the field in the various mapping scales, it is essential that community participation is secured throughout the application of the dialogical-participatory mapping process. Therefore, community mobilisation consists of collecting, recording and categorising common aspirations, under a shared vision with specific objectives (TORO & WERNECK, 1996).

At this particular moment, researchers are focused on recognising the territory in which they will work. In their first visits to the area, it is expected that researchers formulate their own vision of the area, in order to:

- a) get to know and evaluate the different dimensions of potential social research and the potential contribution of the work to tackle current social needs;
- b) explore, discuss and assess the most suitable strategies to be chosen for implementation;
- c) reflect on their role and responsibilities as researchers towards the local community;
- d) understand the potential outcomes of the implementation of the methodology for not only from an academic but also from a societal perspective.

Walks across the study area are essential for the researcher to get to know the residents and invite them to comprehend the idea and importance of mapping their community. After the first introduction to the study area and the local community, the researcher needs to seek communication with influential people within the

community, such as political or religious leaders, older residents or traders. The topics of conversations do not necessarily need to focus on dialogical-participatory mapping, but could rather explore various everyday experiences of both parties. The idea is that over time, citizens start to have more trust in the researcher and get used to his/her presence in their 'living space'.

Later, there are numerous strategies for community mobilisation such as: getting in touch with residents from other institutions that have already worked in the area; delivery of pamphlets and posting of posters in the community; visits to the area on commemorative dates and festive events, thus making social interaction lighter and more effortless; use of common spaces and family gatherings taking place in the community for informal exchanges and conversations. This action research approach is fundamental for the co-production of geographic data and maps that will be richer in information and that would present the actual realities experienced and reported by community residents.

It is important to emphasise that the establishment of this relationship of trust can take time, as in some communities which don't have an established culture of participation, such a culture needs to be cultivated; a process that can prove to be quite complicated. Routine visits to the territory (1 to 2 times a week or on a regular basis, such as every Saturday, for example) and, for the most part, accompanied by local leaders known in the community, usually facilitates such processes.

Use of maps and mapping practices

Bringing maps to the community discussion as a tool both in an objective way, for the production and collection of geographic data, and in a symbolic way, as a tool for understanding spatial components, is an important part of the dialogical-participatory mapping methodology. In fact, in some community contexts, little is reflected on the role and power of local community members and hence discussions regarding their realities, their aspirations as well as the limiting factors for achieving them need to be raised.

In technical terms, the map is a cartographic product. It is a graphic representation, usually on a flat surface and at a certain scale, of natural and artificial, terrestrial, or underground features, or even features of another planet (OLIVEIRA, 1993). The need to know the territory and record all relevant elements of human activity has been around for a long time and maps have always been the most widespread tool for fulfilling it. The map is a more familiar way of representing geographic information. All information that can be spatialised, meaning that they have some kind of geographic footprint, can be geographic information. This can be a point, an address, a whole area, a street, a commercial market, a place of worship etc.

Below are some suggestions on how to utilise maps in a community context. These suggestions do not need to be necessarily followed precisely but constitute basic guidelines for the researcher to use and adapt to his/her respective community context.

1st suggestion

Start from understanding the citizens' 'living space'

It is more recommended that the researcher starts the application of the dialogical-participatory mapping methodology from the citizens' 'living space', through activities that involve graphic representation rather than with purely discursive deeds. To this end, the researcher can start with practical exercises focusing on a small spatial scale, such as: draw on the map your house, your workplace, your school, your neighbourhood, your neighbourhood, places you like to visit and others. Here, the main idea is to place within the process of cartographic knowledge production the seeds of active participation and co-production.

2nd suggestion

Direct the themes

A map depicts several things beyond the mere location or position of a place. It also allows the discovering of different aspects of people's cultural, social, political, and religious life. As a result, it is prudent for the researcher to direct the issues raised by the community towards a common denominator. This does not mean excluding topics from the debate "less relevant" but rather aims at engaging into a meaningful dialogue with the residents to identify at one or more key themes. This way, the process of developing joint solutions to address the challenges identified within these key themes, becomes easier, whatever such they may be. What is expected from this process is the appreciation of the importance of citizens' existing knowledge, in an attempt to challenge them to enrich such knowledge through deeper engagement in the mapping methodology process.

3rd suggestion

Be patient and persistent

When the researcher proposes and promotes the access and connection of local citizens to maps, what is ultimately sought is the empowerment of the community. For this to be possible, it is necessary that the researcher is constantly willing to make the technical and scientific instruments utilised in the dialogical-participatory mapping process available, so that communities could appropriate this language, express the particularities of applying them in their areas and raise their emerging concerns. Therefore, continuity and persistence are among the most important properties of the dialogical-participatory mapping methodology.

Understanding the problems and challenges

In a world where decision-making is becoming continuously more data-informed, the use of technical tools and standardised data-collection processes by skilled individuals with the relevant technical knowledge is becoming increasingly more common. However, in most cases such data-informed decision-making processes are taking place without including a consultation with the civil society, especially with its members without the appropriate technical skills, demonstrating that incorporating local knowledge in the decision-making process is usually not a priority.

Understanding the reality, demands and suggestions of citizens who actively confront the challenges of their community on a daily basis is essential for these projects to present concrete and sustainable solutions. The application of the dialogical-participatory mapping methodology acknowledges the importance of citizen-participation in every level of the mapping process, so that the information produced, depicted, and disseminated through the maps is not only compliant with the lived reality of local people and but also enables the search for solutions in line with the demands and problems presented. It is the task of the researcher to truly comprehend such problems and work around them. In this sense, this manual addresses the tools and methods used in the application of dialogical-participatory mapping, focusing on a practice called **AFFECTIVE MAPPING**.



AFFECTIVE MAPPING

Affective mapping is a mapping practice that consists of capturing impressions, feelings, stories, personal experiences, potentialities, and weaknesses of citizens in relation to the place where they live. By accessing this type of information through a collective and affective approach between mappers and local residents, this mapping practice aims to depict urban problems in maps, based on the experiences of those who encounter them daily. Instead of viewing urban socio-spatial dynamics from an alienated perspective, affective mapping is about discovering who are the people facing the problems and what are the underlying stories and existent power relations within the community.

The term 'mapping' can be used for various methods and practices which are not necessarily related to the traditional view of producing cartographic representations of places (i.e., geological maps). Additionally, several urban phenomena influence the process of mapping (particularly in marginalised communities), and hence maps should be understood not merely as fixed cartographic representations, but rather as a product of dynamic and ongoing socio-spatial processes.

According to the *Iconoclastas* collective group, '*participatory mapping is a creative process that subverts the place of enunciation to challenge the dominant territorial beliefs, based on the participants' knowledge and daily experiences*' (Iconoclastas, 2013, p. 12). In this context, affective mapping, which is a form of participatory mapping, starts from the central idea the mapping process is guided by the local realities experienced by the residents of the studied community. It is from the information provided by the citizens that a starting point or '*generative theme*' is delineated. Moreover, through affective mapping the residents have their "first" interaction with the map.

It has been observed that while the use of the map is not mandatory, it is quite important since the map constitutes a form of communication, a way that people express and share information with a spatial footprint.

This step is quite simple. After the researchers have carried out a walk in the community, familiarised themselves with the territory and its problems, spoken to influential people, leaders, elder residents and shopkeepers, the possibility of arranging a face-to-face meeting with several community members in a physical space arises. Such physical spaces are usually popular building or areas within the community such as local churches, schools, neighbourhood association buildings or public squares.

There are several ways to manage the dynamics of the conversations with the local community, one of which is through '*generative questions*', Such as:

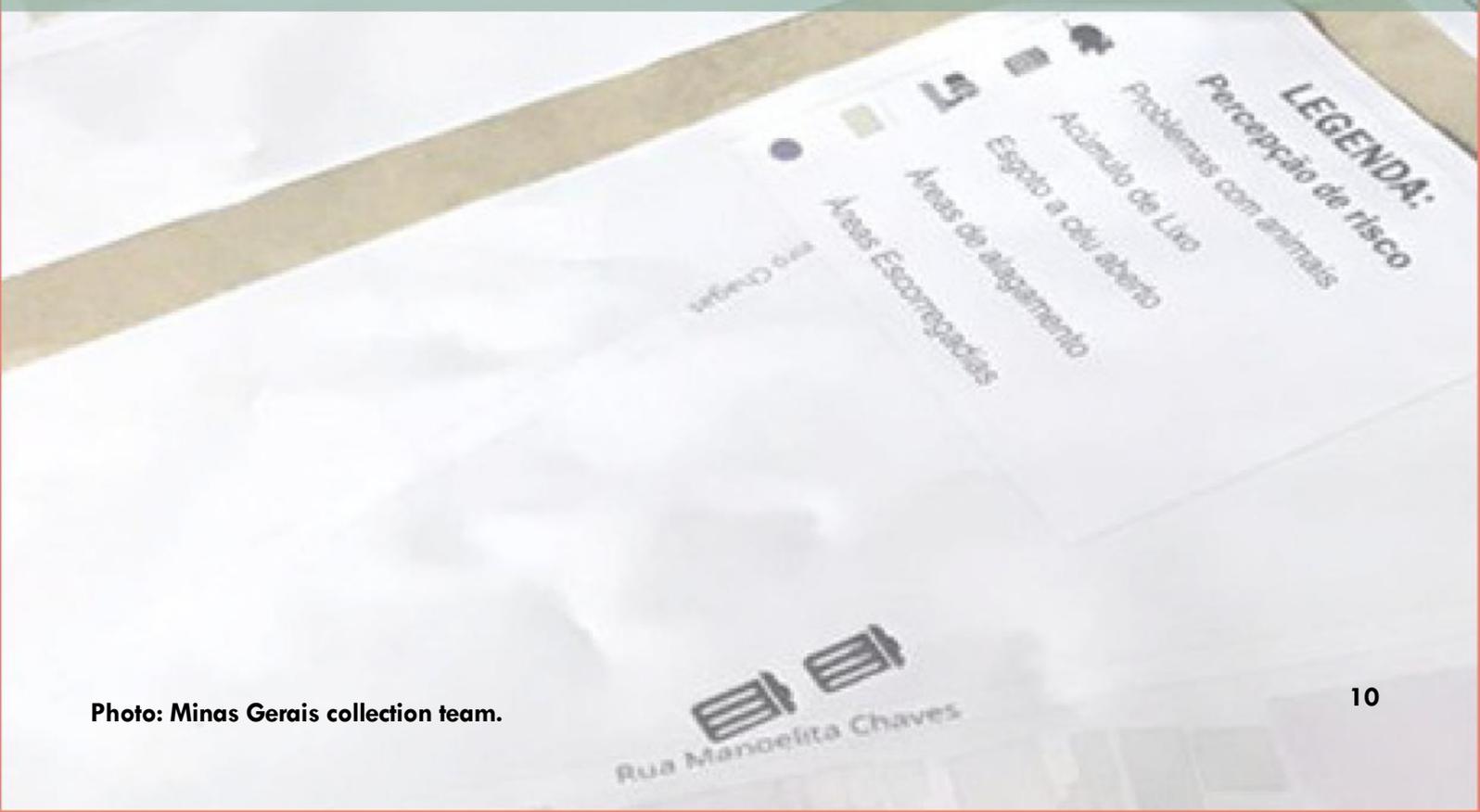
- Do you usually leave the house?
- Where do you go at dusk?
- Is there a problem that can be improved in this part of the neighbourhood?

Through such generative questions, the researcher arrives at a central idea that branches out to other secondary ideas regarding the local community. In order to encourage everyone to express their points of view, it is usually helpful to generate a relaxed and informal atmosphere. This can be achieved through attentive listening, supporting, and showing interest in all the opinions expressed. Eventually, the researcher invites participants to write down their ideas for improvement on a printed physical map. Here, it is important that the entire process is contextually bounded and that it addresses particular characteristics of the community, such as culture, customs, language and personal interests.



Affective mapping enables the identification and collection of relevant information about a particular subject or reality, hence rendering the analysis of a specific situation from different perspectives and the exploration of various pathways to find tailored and proper solutions for the local community possible. It encourages residents to report the problems they encounter, but also to express their aspirations and dreams for their community.

Affective mapping allows multiple mapping approaches to be applied for the collection of data-rich in geospatial information.



Community walks

Taking a walk through the community may seem like a simple and irrelevant task, without significant research value. However, it can provide multiple benefits for the researcher. To maximise the outcomes of this activity, it is necessary to identify a specific route to be followed with one or more local residents. Each of the mappers follow the route with a map in hand and notes whatever they consider most relevant, using icons as a visual resource to facilitate the identification of specific places as well as future analysis. The information collected can be both geographic and physical-affective, such as street names, shops, the location of certain vegetation or springs, slopes, flooding and inundation areas, community meeting points and place where excessive garbage is accumulated. It is also important to take photographs along the walk (given that permission by the accompanying residents is granted).

Approaching adults, youngsters, and seniors along the way, asking about specific benchmarks in the community, or simply having a short discussion

with them can be strategies for both community mobilisation and data collection, in the pursuit of data that will include the opinions of as many local residents as possible. Independently, researchers should also seek to understand the socio-spatial dynamics and information flows within the different areas examined, as these can unveil vital information regarding the community's identity.

This activity aims to collect geographic and physical-affective spatial data, in addition to enabling the mobilisation of residents alongside the selected route, specifically those who are interested in sporadically or more frequently participating and contributing to the generation of local maps. It provides an alternative form of interaction with residents in which they do not necessarily need to be present in collective meetings, such as workshops or conversation circles (see page 12) to contribute information but offers the opportunity to voluntarily (and often spontaneously) participate in the mapping process.

“The times and means of carrying out community walks must be collectively agreed between researchers and local residents. Participants, go out with small maps of the area and approach neighbours to ask questions or clarify existing doubts, ask for their opinion on certain subjects, or simply invite them to point out a problem in the area. The collected information needs to be further complemented with data from all the senses (smell, sight, taste, touch, etc.). While one group takes notes and interviews, another one takes pictures of compelling activities, moments, or artefacts. This process facilitates the revelation of an often-hidden historical layer of the area, enriches the collected information by incorporating a temporal dimension to it and highlights the particularities of the examined community on the map.” (ICONOCLASISTAS, 2013, p. 22).

Conversation circles

Conversation circles intend to ensure a participatory and meaningful dialogue with the residents of the community. As an activity, conversations circles are fundamental both for the community's engagement with the proposed activities and for the mainstreaming of continuous dialogue as a means of communication not only between community members and researchers, but among local community members themselves.

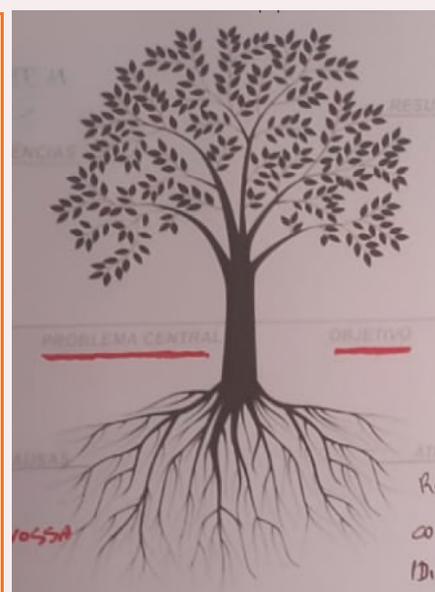
The conversation dynamics are based on informal conversations, emphasising critical reflections throughout the talks. In more detail, conversation circles can become a means of in-depth analysis of identified problems, recognising the causes that generate and prolong them, as well as their consequences and overall impact. This way, the activity also facilitates the process of co-producing pathways to solve the problems, through the listing of potential activities to be developed and the evaluation of probable results. Conversation circles are established through mediations and provocations. The idea is to understand the essence of the problems and approach possible solutions in collaborative and dialogical manner.

Improvement mapping

Improvement mapping aims to identify the major problems community members face. This activity intends to bring citizens together and initially document and spatialise community problems pointed out by them. Here, the ultimate objective is to later work on possible solutions to such problems, propelling a dynamic activity that is not merely consultative but also deliberative. In essence, community members point out the problems but also participate in the formulation of feasible solutions to them. To carry out this activity, two different tools are suggested.

The first is the **three maps tool**. In the three maps tool, three printed maps of the area with targeted objectives are used, each one focusing on a different problem: For instance, the first map focuses on points with accumulated garbage, the second on streets affected by flooding and the third on areas vulnerable to landslides. Through the provision of these three already completed maps the goal is to invite residents to validate the existing data and intervene by indicating potential omissions, mistakes or improvements.

The second proposed tool is the **tree of problems and solutions**. Here, researchers draw a tree and ask the local residents to fill in the blank areas around the tree, drawing lines. The lines on the left are drawn sideways and start from: **1. the trunk**, which highlights the central problems; **2. the root**, which presents the causes of the problem; **3. the leaves**, listing the consequences and impact of the problem; **4. the right side of the trunk (sideways)**, exposing the specific objectives to solve the problem; **5. the area from the root to the top**, which is used to accommodate possible solutions to the problems as well as expected results.



When both tools are applied, the residents present the problems faced and the potential improvements identified. Such improvements can be focused either on physical infrastructure (sanitation basic, water and sewage networks, garbage, lighting, etc.), or on socio-economic pressures (violence, security, unemployment etc).

Potentiality mapping

Potentiality mapping, as the name implies, refers to the activity of mapping the potentialities of the examined community. The main objective of this activity is to expand the dialogue with community members beyond the current problems and encourage them to identify the strengths and opportunities of their community. Community members designate existing physical spaces and areas of positive affect related to the everyday life to the group, and the emphasis then is turned to the concepts of **identity** and **representativeness**. This is a way of mobilising community members towards an innovative thinking around finding solutions to the problems they face, by exploiting the physical space in which they reside. Therefore, at this point, researchers should encourage residents to identify and mark on the map material and immaterial advantages and opportunities of existing infrastructures or networks with spatial footprint within their neighbourhood (i.e., wide streets, extant solidarity networks etc.).



TECHNICAL MAPS

Although maps produced by the community contain all the relevant contextual knowledge and information, the wider distribution and legibility of the final products of the dialogical-participatory mapping methodology requires the researcher's technical knowledge and skills. For instance, the main parts of a technical map, such as the title, scale, orientation, legend, and map projections need to be added to the final maps. Producing a technical map might require the application of tools that would allow the visualisation, editing and analysis of georeferenced data, such as GIS software. In order to acquire georeferenced data, either static (i.e. houses, commercial buildings, places where garbage accumulates) or continuous (i.e. rivers, streets) the application of Kobo ToolBox is suggested. Kobo Toolbox is a widely used collaborative tool for field data collection in challenging environments, such as remote and hard-to-reach locations or areas without an internet connection. Its use is divided into three distinct but interrelated actions.

First, the researcher creates an online, web-based survey questionnaire regarding the data collection process (<https://www.kobotoolbox.org/>). Then, the questionnaire is downloaded on an android device, through the KoBoCollect app, which is used for the data collection. Finally, the collected data is uploaded to an online server and are available for further analysis through the web-based application.

Map enrichment

Map enrichment is an important part of dialogical-participatory mapping methodology and can be performed at any time. This activity is specifically targeted at improving the quality of the community map. When examining the existing basemap of the community in different phases, in many cases several features or real-world geographic information may be absent from the map. This lack of data might inhibit the process of identifying the spatial location of the residents within the study area, due to the difficulty in identifying reference points, such as shops, cafeterias, squares, and historical monuments. Hence, residents may face difficulties in accurately pointing out the place where they live, if they live, for instance, on a street without an official registered name.

To carry out the **map enrichment** activity, initially, mapping teams need to meet to organise the material and discuss strategies to enrich the map. Subsequently, it is suggested that they divide into two or more groups, in which a mapper would be responsible for different streets and crossings. Eventually these groups meet again for a new alignment and division of the area as many times as required. Individually, each member is responsible for noting important landmarks, shops, and buildings across the neighbourhood on the left or right side of the street, according to the division of tasks. A further step here, would be the use of the FieldPapers tool (<http://fieldpapers.org/>), which allows users to split the study area into different segments and print a basemap in A3 paper format - it is important to note that the maps generated in FieldPapers come with a QR Code at the bottom of the page and this barcode allows the tool to determine the exact location of the map used for the survey. After using the paper for handwriting, the physical map used for the survey can be downloaded from the FieldPapers website and be used as a “mask” to the existing virtual map enabling the transposing of the information gathered.

Photo: Acre collection team.



Beyond providing graphic and visual support, maps produced as an outcome of the dialogical-participatory mapping methodology provide visibility to the most urgent problems of the study area, as identified by its citizens. The methodology allows reflections and connections to other emergent themes, indicating the interconnectedness of ongoing social, political and environmental phenomena and their manifestation on physical space.

It is fundamental to understand that maps are powerful tools for communities, but in their physical form they are just this: tools. It is their future elaboration which, if embedded in a collective dialogical and communicative process, can act as a baseline diagnostic of the study area and a basis for designing future projects committed to long-term engagement and community participation. More important than the physical outcomes themselves, is the methodological process of dialogical-participatory mapping; a process that is capable of consolidating networks of solidarity and affection within marginalised communities and enabling the application of applied research methods and knowledge exchange between academics and local communities in tackling existing practical challenges.

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