State’s Technical Cartography and Social Cartography’s Participatory Mapping: Contributions to a Contemporary Reflection on the Use of Maps

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Abstract

The use of cartography in geographical approaches, notably in those focused on territorial discussions, is gaining more and more importance. However, the use of technical maps still prevails, which often act to hinder its use and appropriation by traditional communities. Based on this assumption, this article seeks to show that, in addition to technical cartography, there are other methodologies, which should also be used, in both elaboration and representation of territories, such as the participatory mapping. For that, some recommendations and suggestions are presented in this paper, aiming to subsidize the application and the collaboration of maps, through the mentioned methodology. These suggestions and contributions are the result of both theoretical debates and in loci observations, in workshops held in traditional communities of Brazilian Amazonia. From these discussions, it is concluded that the adoption of participatory mapping in the process of valuing and understanding the knowledge of traditional communities is of great value, in addition to serving as a subsidy for the claims of rights of both appropriation and possession of the territory.

Keywords

Participatory Mapping, Social Cartography, Territory, Traditional Communities
1. Introduction

It is definitive, in the current context, the importance of cartography in Social Sciences studies, not only in Geography, and there are several authors who affirm the importance of this representation of space and time, concerning its origin and its evolution, which had been described, all over human history, through drawings, sketches, charts, maps, among others [1]. Although they are distinct models of representations, they show how mankind has been interacting and specializing the environment, as well as defining and occupying its surrounding territory.

Throughout territory delimitation and occupation historical processes, notably the ones promoted by nation-states, it was constant the adoption of charts and maps, which are cartographic products, taken as official or technical, for encompassing a worldwide used set of rules and conventions that allowed an homogeneous reading, independently of the area of interest, a feature that, by one hand, values this more technical knowledge, developed mainly by experts in geoprocessing or related areas and, on the other hand, operates in the distance of the spatial representations of groups or communities, which are at the margins of the process of use of such geotechnologies.

This paper seeks to discuss the ways by which the mapping knowledge comes up, over time, noting that, in addition to official State technical mapping, there are other methodologies, which also can be used in the preparation and the representation of territories, such as participatory mapping, which has demonstrated the importance of valuing and understanding the knowledge of excluded groups and traditional communities.

In this sense, trying to recovery such knowledge, we present some recommendations to mapping organization and preparation process, from the participatory mapping. To support such a discussion were held theoretical debates on the importance of cartography and participatory methodology, prioritizing authors, who approach the territory and territoriality groups or traditional communities through important in loco observations in participatory mapping workshops.

Thus, the recommendations suggested at the end of this work are the result of empirical experiences acquired in recent years, with the application of participatory mapping techniques in traditional communities in the Brazilian Amazon and in other countries. In this sense, these practices in the field made it possible to apply methodologies that involve direct contact with the studied communities, which consisted of meetings and workshops with the objective of presenting and applying participatory mapping as a spatial planning and spatial representation methodology. With the case studies, a lot of information was collected, which can be accessed in [2]-[11], and other authors like [12], that are referenced at the end of this work.

Considering the importance of the participatory mapping in recognizing the recommended knowledge by traditional communities, as to the uses of their ter-
ritories and the claims of their rights, this work presents a further contribution for the expansion and the development of maps, both for academic and for own community purposes, in the defense and the claiming for their rights.

2. The Map in Geographical Space and Historical Time

Over the centuries, mapping has represented, through its symbols and signs, the knowledge of human groups about the realities around them. Thus, this knowledge, before entering a set of cartographic conventions, created from the development of techniques, was used by the Ancient civilizations as a representative instrument of the natural resources and a territorial delimitation of the existing groups [13].

In this sense, [14] state that Ancient people sought to represent graphically the primary information of their reality, those apprehended by the senses, describing the landscapes and the territories of the occupied spaces such as the living, mobility, location and livelihood places. So, in a first approach, it is verified as the importance of cartographic knowledge in identification and appropriation of territories, a characteristic that will be enhanced and widely used later, in the conquest of people and nations, as well as in the construction of national identities. [15] verifies that (...) The first constitution maps of the Nation States had to do with penetration and orientation, identification of routes to the interior, definition of reference points considered critical along the routes and placement of symbols to suggest the existence of wealth. Another aspect of cartographic production was the territorialization or delimitation of the State’s limits, as well as the definition of properties in its sovereignty space.

It does identify the use of cartographic knowledge for different purposes, since all of them intend to know, to define and to expand domains, to a greater or to a lesser extent. In ancient times, this search was primarily associated to the need for survival of human people, whether in protection against other people or against wild animals, whether in the search for resources for the subsistence.

On the other hand, with the emergence of the first nation-states territories, even if there is a need for survival and protection, other elements are incorporated, assuming dimensions, which surpass the need for subsistence of human groups, spreading in the search for power. Therefore, the conquest and domination of people and wealth become continuous and incessant goals, and the spatialized knowledge of the maps favors this domination. To [16] Cartography can also be a form of knowledge and a form of power. Just as the historian paints the landscape of the past with the colors of the present, the geometer, consciously or not, reproduces not only the environment in an abstract sense, but also the territorial imperatives of a political system. Whether the map is produced under the banner of cartographic science, as were most of the official maps, that is, an exercise in open propaganda, it is inevitable that you are involved in the process of power.

Thus, it is possible to conceive a map as a spatial representation, which shows
the knowledge of a given territory and can be used as an important power tool, since it enables the adoption of strategies for the territorial conquests.

[17], by referring the importance of maps in Brazilian territorial formation, states: “(...) I do not believe that there exists on the planet a nation whose territorial domains have been guaranteed and expanded at the expense of a general who has never fired a weapon against the enemy: the map (...)**. According to the theoretician, this statement is based on the figure of the Baron of Rio Branco, who emphasized that the information coming from the maps were responsible for each victory on the conquest and expansion of the Brazilian territory.

Therefore, the objective of elaborate a map is to emphasize a given characteristic of the territory, which may be disputes between nations or social groups, location of special areas of use [18] or the identification of natural resources, conducive to economic exploitation, among countless other functions. It is important to accentuate that the reality shown on the map will result from the look of the manufacturer, which [16] claims not to be totally exempt from “judgment of value”.

In most cases, since they are conceived by experts, which are commonly far from the mapped areas, the maps were and are still considered, at the present time, a distant knowledge, serving, for a long period, fundamentally, for the purposes of the State-Nations, which has already been commented. The map, although considered a technical product, shows and serves, not infrequently, to objectives that are far from those presented by local populations, characteristic that has acted negatively, that is, in the devaluation of cartographic knowledge, so important and necessary in building knowledge and claiming the rights of excluded or vulnerable populations/communities.

Thus, these technical maps, called official maps [19], seek to present a set of norms and conventions, which serve both to order the information disposed and to direct their understanding, regardless its access and dissemination places, in order to make cartographic reading an accessible knowledge and within the reach of those who need it, either for the day-to-day routine or for the planning and management of the territory.

However, until today, although it is intended that these official maps are within the reach of all, this is not widely adopted, since there is resistance and a certain lack of knowledge about the tools used in their production, which makes it difficult to apply. In addition, the representations bring numerous limitations, such as the omission of both social and environmental problems on the local scale, such as disputes, tensions or conflicts between subjects, whose territorialities involve various appropriations.

In an attempt to show these conflicts cartographically, our gaze turns to the so-called Social Cartography, because we understand its importance in the representation of local reality, starting from the knowledge built by the official cartography of the states and incorporating, in cartographic production, traditional/local knowledge and cultures, which are based on the daily work of communities of fishermen, artisans, potters, riverside dwellers, quilombolas, among
Thus, through Social Cartography information collection techniques, it is possible to think, direct and produce cartographic products, which highlight the needs and identities of the involved subjects, constituting empowerment and vindication instruments in both political and decision-making arenas, as well as in environmental, economic, social and/or territorial areas.

[20], by discussing environmental conflicts, emphasizes that one should not disregard local social groups’ reality, because it means erasing important data from History. Now, it is this History that has been attempted, since the 1990s, to introduce in the exercises of representation of a territory that makes visible the spatial dynamics of the living social fabric—the intrinsically conflicting socio-ecological processes that stabilize and instability social places and groups. This is because environmental conflicts result from the way in which the living social fabric manifests itself regarding the acceptability of the conditions under which space is shared. And what is called into question by the conflicting dynamics as a whole—not necessarily, certainly, by each collective actor separately—is, therefore, the development model—the socio-spatial way in which the resources of the territory are distributed [20].

Additionally, such conflicts, since they are spatialized, they may show advances in their resolutions in order to present the real forms of use and/or possession of traditionally occupied territories, as well as their expropriations, which are very common. Thus, we emphasize the importance of Social Cartography in the identification of disputes and territorial conflicts, in which human groups can express their knowledge, their needs and their interests, going beyond professionals’ unilateral vision that, although they seek to represent reality in an objective way and closer to the real, they cannot reproduce with the same wealth of details the information of the territory.

In this sense, the Social Cartography, unlike official maps, is developed from a closer-to-reality scale of details, making local subjects the main protagonists in the process of producing cartographic knowledge. For example, while, in the technical georeferencing of areas, it is possible to reach a 10-meter accuracy, in Social Cartography, the individual himself is the limit, with his perceptions, experiences and interactions within community and nature. Thus, (...) in maps that seek to incorporate the historicity of social processes, space becomes a vast chess board on which social subjects evolve, move, orient themselves. The delimitation of space thus becomes no longer a means of representing it simply by the geographical objects that compose it, but by the knowledge associated with its use and the political intention that presides over its appropriation. The representation of these territories, where the knowledge of different interests is incorporated, as well as the conflict between their different projects, opens, therefore, to the debate the question of the legitimacy of the power that is exercised over them [20].

Social Cartography acts as a practical tool, in which the knowledge coming from local subjects are considered primordial in the delimitation, appropriation,
use and cartographic representation of the territory, serving as a representation strategy, who denounces the conflicts or disputes between invisible subjects, in the face of the advance of economic groups, whose production means impact negatively a certain way of life.

In this sense, multiterritoriality enables distinct groups to live together, in the same territory, developing diverse activities and sharing the same spatial reality. However, spatial planning should serve all those who live/work there, without prioritizing a particular group. Linked to Social Cartography concept, participatory mapping tools enable the inclusion of groups and communities, providing recognition of the challenges and problems faced by these communities, concerning the management of both territorial and natural resources.

Since the territory is the matrix of social, political and economic life [21], it is necessary to give wide access and knowledge about it. In this way, participatory mapping is intended to show or highlight what the State directly or symbolically omits through its textual, graphic or cartographic official data.

The construction of territories by participatory mapping should be carried out, from communities’ local reality, which are closely linked to the identities and feelings of its inhabitants’ socio-territorial belonging, in order to enable interconnection and dialogue between both cultures [22] [23] [24] and scientific and traditional knowledge [25], for the management of territorialities, providing them a new rationality [26], as a freedom practice [27].

In our times, with the help of technical, technological and other instruments, such as remote sensors images, geoprocessing programs and geographic information systems (GIS), cartographic production can and should assist in the execution of participatory mapping programs and projects, based on knowledge and experiences of certain social groups, regarding their way of living and using the territory [21].

Thus, the participation of local reality social subjects is fundamental for the production of Social Cartography. The map should not be understood as a neutral or ideological-free instrument, but rather both a power and domination strategy and a spatial and geographical methodological tool representation, which, according to [28] is much more than a list of statistical data or a series of writings and transcripts. Corroborating the ideas of [16] [28] notice that the map is knowledge and power, because it is a social product.

In general, participatory mapping is a collective and joint effort, in order to value the environmental perception and its intrinsic relationship with the territory, taking into account the relative knowledge of the subjects involved in the plot—traditional communities, public officials, academia, non-governmental organizations, etc. Therefore, it is possible to say that participatory mapping is a planning, territorial preparation, empowerment, feeling of belonging and conflict resolution tool, as [20] states: (...) the terminologies used in participatory mapping processes in Brazil clarify the diversity of methodologies applied to this type of cartography, highlighting: ethno-ecological surveys, ethno-environmental mapping of indigenous peoples, mapping of the traditional uses of natural re-
sources and forms of occupation of the territory, participatory community mapping, participatory macro-zoning, ethno-zoning, ethno-environmental diagnosis and social cartography.

The definitions of [19] on mapping converge to the central idea that both participatory mapping and Social Cartography have the purpose of advising marginalized human groups and the knowledge built by them, along generations, from the empirical relationship with the world that surrounds them.

For [29], the flexibility in participatory mapping procedures, which adapts them to different contexts and realities, follows, basically, two rules: the elaboration of schematic or sketchy maps (using local knowledge for identification and spatial representation) and the overlapping of other maps, which has cartographic and geodesic references.

In short, participatory mapping, associated with a Social Cartography constructive process, consists of the analysis, the interpretation and the construction of real scenarios, in which subjects’ strategies and participation tactics in the process need to consider both local and collective interests.

Thus, participatory mapping contributed to the identification of the subjects, who dynamize and occupy the territory. Therefore, participatory mapping is understood as the spatialization and the recording of the social groups’ knowledge in a given locality and the final result of this mapping does not necessarily generate maps, which follow the premises of conventional cartography, characteristic of official maps. On the contrary, through the participatory mapping experiences, regarding the understanding of territories, it is possible to elaborate reports, illustrations and scripts that not linked to conventional and Euclidean cartographic rationality. However, for the realization and valorization of that local subjects’ knowledge, it is necessary to adopt practices that contribute to the localization and spatialization of social actions in the territory. Thus, some recommendations are listed below, which might be adopted, in order to facilitate the elaboration of social cartographies.

3. Recommendations and Contributions to Participatory Mapping

In Social Cartography elaboration process, the trainers/facilitators must have the basic knowledge of the history of conventional cartography and the cartographic alphabet, from the visual variables concepts [30] [31], in addition to official map’s conventions and fundamental elements, to avoid the generation of random cartographic products, which can only be understood by its makers. Although “rigid” norms and conventions are not required in Social Cartography, some standards should be adopted, in order to facilitate the location of the subjects within the territory and the understanding of the chart by the readers, who will have access to the maps, independently of their spatial and historical context, making them accessible to the understanding of all those who read it, which is the main feature of a cartographic product.
For Social Cartography participatory mapping techniques, the concepts and geographical categories must be explicit, given that space, territory, region, place or landscape representations are the cartographic modeling main components. It is not possible to make Social Cartography without study the Geography of what is being represented, so it is important the adoption of methodological guidelines in the elaboration of participative maps. In this work, the orientations will be addressed in five stages, which are complementary to each other.

3.1. The Map-Making Process Trainers/Facilitators

In participatory mapping, the role of the facilitator is of great value, because this actor will lead the activity. Therefore, a good relationship between the researcher and the target audience (the community or certain groups) is the success key for the application of the methodology, being advised to visit and know the area and participants several times, before applying the mapping. This relationship should focus on three important points: transparency, time and trustfulness. Otherwise, the participatory mapping process may become unproductive or even unfeasible. Therefore, it is necessary to remain clear in the approach, promoting meetings to define and explain the methodology, using a simple, direct and creative language that involves all the participants.

If the mapping of areas involving some kind of conflict between the target audience and other social groups, it is necessary to avoid the initial monitoring of representatives of supervisory bodies, as these individuals may inhibit indirectly and unintentionally the exposure of information by the target audience.

Since participatory mapping refers to the representation of a group or community knowledge about a given subject, it is important to the researcher to be accompanied by his own team, which must be aligned with the mapping objectives, to avoid surprises on the field activities management, because a wide participation by the community can make necessary to divide the participants into smaller thematic groups, involving categories, such as schooling, age, professional/productive activity, etc.

Thus, the researcher must have prior knowledge, regarding both the specific subject to be treated and the general characteristics of the region researched, because it is necessary to have an early knowledge of the customs, the main occupations of the residents, the means of transport, food, among other aspects, which may be discussed and surveyed, before the beginning of the data collection, which will be focused on the maps. This information will also be useful to the researcher, in order to avoid important dates for the community, such as working days, holidays or religious festivities, in which the participants may not be present or do not provide the necessary information for the maps plotting.

Another important point is that the facilitator(s) should check beforehand whether the concepts and categories (of Geography, for example) discussed and presented for the elaboration of participatory maps are accepted by the scientific community, as a way to avoid representation errors and/or inaccuracies in the map. Finally, depending on the localities of the activities, it is important to count
on some attractive on the mapping day (courses, lectures, etc.) or to assist financially the participants, as in case of dislocations, especially when mapping occurs in communities far from the urban area. However, everything must be done in order to not to give the idea of harassment or grooming, a situation which can also jeopardizes the development of mapping activities.

3.2. Choosing the Map Model

For the effective development of participatory mapping activities and to obtain satisfactory data, with a view to plotting the maps, the researcher-facilitator and his team must define their own and appropriate criteria, parameters and procedures, considering both public-target and interest area, as the use of symbols, tools and other techniques should be made more flexible, according to the reality of each community and the space to be mapped.

[9] and [32] expose examples of mechanisms, which can be used: the PGIS (Participatory GIS), which encompasses mapping with general official cartographic databases of the region; the mapping with remote sensing images; and the mapping assisted by Geographical Information Systems (GIS). Each technique presents a methodology that can be adapted, according to the objective of the researcher-facilitator, the mapped region and the target audience.

Still according to [9], mapping with cartographic databases occurs, from a map with basic georeferenced information (municipal headquarters, highways, hydrography, among others), gathered in a base map, a blank map, which contains only general information, to enable participants to locate themselves in the territory, enabling the insertion of more specific information in the mapping, which is wanted to stand out. However, this methodology should not induce, even indirectly, the perceptions of the researcher-facilitator, regarding the target audience knowledge.

These authors state, in addition, that mapping with remote sensing images can be performed from an image chart, which comes from the crossing of cartographic data and both high and medium spatial resolution sensors. This image chart may contain hydrographic data, municipal boundaries, highways and other visible elements of the studied area, which, again, should not induce participants to register the information of the images that was not mentioned by the region’s communities.

To use the GIS-aided mapping, [9] emphasize the need of participants to present previous knowledge, related to computer science and mapping geoprocessing software. That characteristic, combined with the need for a computer lab or several computers for the participants, hinder the adoption of this methodology, because, in certain localities/communities, there are a few persons that know the techniques of using these programs or have enough computers to ensure the participation of all involved.

The final map, to be presented to the community, should be printed, for the generation of a physical document. However, at present time, when advances in cartography and geotechnologies announce the emergence of a Neocartography,
Based on computational environments [33] [34], it is important that the final participatory map can be made available on the internet, to be directly accessed on mobile phones, for example. In this sense, regardless of both final map model or methodological application used, it is necessary to highlight the importance of building a symbology in the community itself, at the mapping time – by means of symbols, colors and own references, always referring to the cartographic representation of the mapped reality.

3.3. Field Mapping Planning

After choosing the cartographic base and the format of the maps and the data plotting method, the researcher-facilitator should organize the steps, which will be developed directly in fieldwork, in the region or the territory to be mapped, highlighting the importance of planning activities. To do so, the researcher-facilitator and his team should verify and select the contents to be represented (leisure areas, conflict areas, community/collective areas, party areas, religion areas, etc.), as well as the objectives, the information collection methodologies, the necessary materials and equipment, in addition to the supporting texts and the definition of the target audience, which will participate in the preparation of the maps.

Before starting the application of the methodology, the facilitator’s team needs to check the infrastructure of the places in which the meetings with the community will happen, since it is important to enable the participation of all residents, who wish to represent cartographically its activities, territories and ways of life. Such meetings may take place in schools, community centers or other places, in which it is possible to bring together participants, in order to ensure the participation of all interested persons.

Conducting collective mapping meetings with individuals can be effective, if there are other objectives, in addition to drawing up maps, such as social, religious or school organizations meetings, which bring together participants, for the resolution of conflicts or discussion of collective interest issues.

By using a methodology that adopts unknown elements of a target audience, such as Social Cartography, it is essential a clear and didactic presentation of the basic notions of location, legend, scale and other cartographic concepts. This conceptual presentation is necessary to emphasize the importance of the methodology, as a way to strengthen the need to map the territory characteristics, in which the target audience live/work, seeking to always underline the importance of the group/community knowledge in the elaboration and obtention of the participative map, as the final product.

During the mapping meetings, for the information plotting procedure, the facilitators team aims to listen to the community, encourage them to ask questions, to probe and, above all, to avoid the interference of origin, ethnicity, gender, religion, age or socioeconomic condition prejudices, because the emphasis on these themes can generate new conflicts, which did not exist before the application of participatory methodology.
Furthermore, the facilitators team should promote both inclusive and discussion group activities, during the preparation of participatory maps, which will allow participants to critically analyze their ways of life and community participation. In the course of the participatory mapping application, mediators should pay attention to the lack of precision and to the different scales of analysis of the interest area, in addition to being careful with accentuated cartographic generalizations. It is also necessary to be cautious about the influence of the facilitators' pre-concepts, since the vision of the interviewees/mappers/participants of the target audience should be respected and, in the moment of transforming the data into information, the symbols used in the mapping shall be recognized by all participants, giving more importance to the identification of the knowledgeable subjects of daily life, local history and territorialities.

3.4. Materials Used in Mapping

In the Social Cartography activity planning process, even before the field mapping, the facilitator’s team must specify the information collection method, in order to define the materials to be used in the mapping process. In the cartographic basis mapping, for example, there is required several blank and printed base maps of the interest area, for the collection of information and its subsequent overlapping, by using a geoprocessing software, which will digitalize and vectorize the data, digitally maintaining the forms and locations of collected knowledge.

On the other hand, if the image chart mapping technique is used, it is necessary to look for optical sensors images, which present colors and shades close to the real, instead of grayscale microwave-sensor images (radar). However, it is necessary to be cautious, since the use of remote sensing images is biased, as it presents spatial features, which may not be perceived and/or informed, by the interlocutors.

In Social Cartography development, it is important to use visual variables on the blank map [30], in order to assist in the location of the participating subjects in the territory. Therefore, generalizations, as the use of different geographical and cartographic scales, should be avoided, as well as working only on blank paper, without any information, since the use of base maps facilitates the plotting of the information highlighted by the group or by the community, from a spatial reference—a river or a road, for example.

3.5. The Target Audience

As it represents a cartography, in which the mapped elements come from the local reality, it is very important to identify local history and reality knowledgeable subjects in the choice of the target audience. Thus, representatives, religious leaders, older and experienced people of the community, as well as other individuals, connoisseurs of the territory, play a fundamental role in the elaboration of Social Cartography.
Consequently, it is necessary, in participants’ identification process, to verify their time convenience, in order to gather the largest number of persons, so it is suggested that the meetings can be held, mainly, in morning and afternoon shifts, because the activity of collecting data demands time. In addition, at the end of the action, the researcher-facilitator and his team should conduct a feedback, seeking to maintain a friendly and reliable relationship with the target audience, so as not to harm future research.

Once the field mapping activities are completed, another important point is the verification of the veracity of the data obtained in the field, in order to correctly identify and name the features known to the residents. Often, due to the lack of cartographic precision, it is also necessary to verify the scales used, demanding caution, in relation to the accentuated generalization of scale data. Thus, it is recommended to conduct a survey among the interviewees/mappers/participants, regarding the information collected, in order to avoid the recording of incorrect or untrue information.

At the very end of the field mapping activities, the researcher-facilitator should present the final map for the participating communities, in order to confirm the veracity of the information. The availability of several copies of the final map to the community should serve as a tool for recognizing and reaffirming the use of the territory in official documents, such as management plans, for the claim of historically occupied territories by groups and traditional communities, as well as in many other purposes.

The recommendations presented in this text can serve as support to the researcher in the application of participatory mapping techniques on the territory. There are too much suggestions, that the researcher will find in bibliographic queries or directly in the fieldwork, so the application of participatory mapping is not a finished recipe, to be followed, blindly. It is a territorial analysis methodology, which needs to be constantly understood and adapted to both the reality in focus and target audience.

4. Final Considerations

From the discussion here presented, it is evident the importance of the elaboration of maps, especially the participatory mapping, which emphasizes that all are able to delimit and map their territories, being a methodology that can be widely used by those who wish to work with traditional groups or communities, vulnerable groups, minorities, etc.

Thus, the discussions here present highlight cartography in territorial practices, inserted in a substantial political-social sphere, which, in a certain way, translates the complexities of social actions performed by mankind in space. Considering this perspective, maps can be used as struggle instruments by social movements, since they are able to insert the subject in the cartography construction, in order to understand the complex processes that relate territory, social action and collective life.
The recognition of the human being in the territory and the relationship between them enable subject’s empowerment and search for autonomy, which can influence both territorial development and internal dynamics of a community, as well as it can become an action alternative in the collective search process for viable forms of development in the local context, which aims to create new political sociability or expand an existing one, from which the most varied subjects participate in the elaboration of their different social identities, contributing to the growth of cohesion in the community and the empowerment of individuals in the imposition of the recognition of their existence and citizenship to society.

Participatory mapping can be considered a democratic and clear process of map construction. The social participation guarantees credibility and acceptance of the cartographic object by its participants and gives to this tool the possibility of acceptance by state bodies and the academy itself, considering that it aggregates technical and conceptual characters in its elaboration, given by professionals who know the characteristics of Cartography. For the future, it remains the higher dissemination of this methodology, in order to recognize it as a technical-scientific production, with its own standards and elaboration methods.

Thus, making a map with the participation of local communities or vulnerable groups becomes allied in social rights claiming, due to both documentary and political importance of these maps, in addition to favoring the local living memory, promoting in individuals the practicing of mapping and cartography, to show how people are able to organize and educate themselves,concerting to appropriation of their own territory.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

References

[1] Silva, C.N. (2020) A prática de mapear e o discursocartográfico na era da geoinformação. RevistaCiênciaGeográfica, 24, 263-271. https://www.agbbauru.org.br/publicacoes revista/anoXXIV_1/apb_xxiv_1_web/agb_xxiv_1-19.pdf

[2] Monteiro, H.L.S., Silva, C.N. and Paula, C.Q. (2019) Modo de vida e territorialidades na comunidade pesqueira de Achada Ponta-Santa Cruz (Cabo Verde). Boletim Gaúcho de Geografia, 45, 8-27.

[3] Castro, G., Silva, C.N. and Marinho, V.N.M. (2019) Mapeamento Participativo do Território e Territorialidades dos Pescadores da Vila de Cachoeira em São Caetano de Odivelas (Pa). Mares: Revista de Geografia e Etnociências, 1, 3-15.

[4] Marinho, V.N.M., et al. (2019) Hidroelétricas na Amazônia brasileira: Considerações sobre os impactos na pesca artesanal nos rios Xingu (Pará) e Araguaia (Amapá). Vivência: Revista de Antropologia, 1, 35-47. https://doi.org/10.21680/2238-6009.2019v1n53ID20601

[5] Silva, C.N., et al. (2018) Territorialidades e estratégias de sobrevivência de populações amazônicas no rio Acaraqui (Abaetetuba-Amazônia-Brasil). Interespaço Revista de
Geografia e Interdisciplinaridade, 4, 8-22.
https://doi.org/10.18764/2446-6549.v4n12p08-31

[6] Silva, C.N., Lima, R.A.P. and Marinho, V.N.M. (2018) Desestruturação territorial na atividade pesqueira: A instalação de usinas hidroelétricas na bacia do Araguaí (Ferreira Gomes-Amazônia-Brasil). Revista Nera (Unesp), 21, 186-201.

[7] Silva, C.N., et al. (2017) Modo de vida e territorialidades de pescadores da comunidade Caju em Mosqueiro (Belém-Amazônia-Brasil). Revista Nera (UNESP), 20, 246-272.

[8] Lima, R.S., Silva, C.N., Palheta, J.M. and Ponte, F.C. (2016) Território e territorialidade a partir da produção local de açaí: Um estudo de caso no baixo Tocantins (Igarapé-Miri/PA/Brasil). Revista Sodebras, 11, 84-89.

[9] Silva, C.N. and Verbicaro, C.C. (2016) O mapeamento participativo como metodologia de análise do território. Scientia Plena, 12, 1-12.
https://doi.org/10.14808/sci.plena.2016.069934

[10] Silva, C.N., et al. (2016) Estratégias de sobrevivência na Amazônia Paraense: O caso dos moradores do baixo Rio Meruú (Igarapé-Miri/Pará/Brasil). Geosul, 31, 151-172.

[11] Silva, C.N., et al. (2016) A cartografia participativa e a práxis de mapear o território. In Rocha, G.deM., Teisserenc, P. and Vasconcellos Sobrinho, M., Eds., Aprendizagem territorial: Dinâmicas territoriais, participação social e ação local na Amazônia, Vol. 1, NUMA/UFPB, Belém, 137-157.

[12] Zambra, A., Alvarez, R., Ther, F., Nuñez, D. and Navarro, M. (2016) Mapeando elConocimiento Local: Experiencias de Cartografía Participativa en elSur de Chile. Revista AUS, 20, 20-27. https://doi.org/10.4206/aus.2016.n20-04

[13] Silva, C.N. (2013) A representação espacial e a linguagem cartográfica. GAPTA/UFPB, Belém.

[14] Silva, C.N. and Carvalho, J.S. (2011) A representação espacial e a linguagem cartográfica. Revista GEOMAE—Geografia, Meio Ambiente e Ensino, 2, 85-106.

[15] Acselrad, H. (2019) Sobre os usos sociais da Cartografia. https://docplayer.com.br/39833464-Sobre-os-usos-sociais-da-cartografia-henri-acselrad.html

[16] Acselrad, H. (2008) Cartografia social e território. IPPUR/UFRJ, Rio de Janeiro.

[17] Santos, M. and Silveira, M.L. (2001) O Brasil: Território e sociedade no início do século XXI. Record, São Paulo/Rio de Janeiro.

[18] Maretti, C.C., Catapan, M.I.S., Abreu, M.J.P. and Oliveira, J.E.D. (2012) Áreas Protegidas: Definições, Tipos e Conjuntos-reflexõesconceituais e diretrizesparagastro. In: Cases, M.O., Ed., Gestão de Unidades de Conservação: Compartilhandoumaexperiência de capacitação, WWF-Brasil/IPÊ-Instituto de Pesquisas Ecológicas, WWF-Brasil, Brasília, 331-369. http://www.terrabrasilis.org.br/ecotecadigital/images/abook/pdf/1sem2015/Abril/24 -Gestao%20de%20unidades%20de%20conservacao.pdf

[19] Ferraz, C.B.R. (2017) Mapas Oficiais e Cartografiasdo Cotidiano: Tensionamento das Experiências no Espaço. Cadernos de Pós-GraduaçãoemArquitetura e Urbanismo, 17, 99-112. https://doi.org/10.5935/cadernosarquitetura.v17n2p99-112

[20] Acselrad, H. (2008) Cartografia social e território. IPPUR/UFRJ, Rio de Janeiro.

[21] Santos, M. and Silveira, M.L. (2001) O Brasil: Território e sociedade no início do século XXI. Record, São Paulo/Rio de Janeiro.

[22] Leff, E. (2001) Epistemologia ambiental. Cortez, São Paulo.
[23] Leff, E. (2001) Saber ambiental: Racionalidade, sustentabilidade, complexidade, poder. Vozes, Petrópolis.

[24] Floriani, D. (2007) Diálogo de saberes. In: Ferraro Júnior, L.A., Ed., Encontros e caminhos: Formação de educadoras(es) ambientais e coletivos educadores, MMA Departamento de Educação Ambiental, Brasilia, Vol. 2, 105-116.

[25] Morin, E. (2001) A cabeça bem-feita: Repensar a reforma, reformar o pensamento. Trad.: Eloá Jacobina. 3rd Edition, Bertrand Brasil, Rio de Janeiro.

[26] Leff, E. (2019) Racionalidade ambiental y diálogo de saberes: Sentidos y senderos de un futuro sustentable. Revista Desenvolvimento e Meio Ambiente, 7, 13-40. https://revistas.ufpr.br/made/article/view/3042/2433 https://doi.org/10.5380/dma.v7i0.3042

[27] Freire, P. (1979) Ação e prática para a liberdade. Paz e Terra, Rio de Janeiro.

[28] Lacoste, Y. (1997) A geografia—isso serve, em primeiro lugar, para fazer a guerra. 4th Edition, Papirus, Campinas.

[29] Maccall, M.K. (2014) Mapping Territories, Land Resources and Rights: Communities Deploying Participatory Mapping/PGIS in Latin America. Revista do Departamento de Geografia—USP, Volume Especial Cartogeo, 94-122. https://doi.org/10.11606/rdg.v0i0.534

[30] Joly, F. (1990) A cartografia. Papirus, Campinas.

[31] Archela, R.S. and Théry, H. (2019) Orientação metodológica para construção e leitura de mapas temáticos. Confins—Revista Franco-Brasileira de Geografia, 3, 2008. http://confins.revues.org/index3483.html https://doi.org/10.4000/confins.3483

[32] Saadallah, D.M. (2020) Utilizing Participatory Mapping and PPGIS to Examine the Activities of Local Communities. Alexandria Engineering Journal, 59, 263-274. https://doi.org/10.1016/j.aej.2019.12.038

[33] Ferreira, R. (2016) Atlas, Cibercartografia e Neogeografia: Uma perspectiva tecnológica sobre a evolução moderna da ciência geográfica. Revista Iberografías, 12, 31-44.

[34] Freitas, M.I.C. (2014) Da cartografia analogica à neocartografia: Nossos mapas nunca mais serão os mesmos? Revista do Departamento de Geografia—USP, Volume Especial Cartogeo, 23-39. https://doi.org/10.11606/rdg.v0i0.544