Between ecological and social perspectives: towards a methodology to evaluate the social-cultural component of fluvial landscapes in the urban context

Entre perspectives écologiques et sociales : vers une méthodologie d'évaluation de la composante socioculturelle des paysages fluviaux en contexte urbain

Lígia Vaz de Figueiredo*, Maria da Graça Saraiva*, Isabel Loupa Ramos*

* Faculty of Architecture | University of Lisbon, ligiafvaz@gmail.com; gsaraiva@sapo.pt)
(Technical Institute | University of Lisbon, isabel.ramos@tecnico.ulisboa.pt)

RÉSUMÉ

Planifier des paysages fluviaux, dans un contexte urbain, est un processus qui devrait inclure des dimensions écologiques, économiques et sociales. Lier le processus de planification aux approches socio-écologiques reste un défi. Afin de mettre en évidence les interactions homme-nature et intégrer la perception sociale du paysage, nous avons développé une méthodologie permettant d'évaluer la composante socioculturelle des paysages fluviaux. À partir de l'étude de la perception des valeurs du paysage, nous avons conçu une étude SIG sur la participation publique (SIGPP) qui comprend une enquête en ligne pour évaluer les informations quantitatives sur les valeurs et sa distribution spatiale dans les paysages fluviaux. Des participants d'un quartier de la zone métropolitaine de Lisbonne ont assigné des points sur des cartes pour obtenir des endroits ayant un sens pertinent, associés à une typologie de valeurs. Cet exercice est en cours avec quatre scénarios différents de paysages développés jusqu'en 2040. Les résultats de cette étude soulignent l'importance d'intégrer la composante sociale dans la planification du paysage fluvial et le potentiel de la SIGPP qui permet de communiquer les perceptions sociales du paysage aux parties intéressées et aux planificateurs.

ABSTRACT

Planning for fluvial landscapes, in urban context, it's a process that should include the ecological, economic and social dimensions. Linking the planning process with social-ecological approaches is still a challenge. In order to emphasize human-nature interactions and integrate social perception of the landscape, we developed a methodology to evaluate the sociocultural component of fluvial landscapes. Based on the study of landscape values perception we designed a Public Participation GIS (PPGIS) study which include a web based survey to assess quantitative information on values and spatial distribution on fluvial landscapes. Different participants of a parish in Metropolitan Area of Lisbon assigned dots on maps to elicit places that have relevant meaning, associated with a typology of values. This exercise it is made in the reference time (present time) and in four different scenarios developed for that landscape, to 2040. Results of this study highlight the importance of integrate social component in fluvial landscape planning and the potential of PPGIS to communicate results to the stakeholders and planners.

KEYWORDS

Fluvial landscapes, Social-ecological system, Landscape services, Landscape values, PPGIS

INTRODUCTION

The values that human associate with place are central to individual and collective decisions about about appropriate and desirable land use at multiple scales. Place values are not universal within a given population or region and many be contested, leading to conflict and change in land use over time. (Brown, 2012)

The European Landscape Convention (Council of Europe 2000) as defined landscape “as means an area, as perceived by people, whose character is the result of the action and interaction of natural and/or human factors”. This definition emphasizes the perception of people in landscape processes. On the other hand, highlights a holistic view that implies the hierarchical organization of landscape and the context of and relationship between the landscape elements.

The aim of the study is to evaluate changes in the landscape values perception, by the residents of a parish in the Metropolitan area of Lisbon. From the planning point of view, is also relevant to know where the landscape is valuable by people, defining meaningful places. Because of this is also our goal to test a method that spatially quantifies place values, using public participation GIS (PPGIS). With this method, predefined place values are identified by the residents of parish or stakeholder’s groups using a values typology containing 14 values.

The innovation lies in integrating fluvial landscape scenarios in the methodology to measure change in fluvial landscape values, considering a future time. This is relevant because could contribute to define landscape planning strategies that integrates place values.

The methodology itself is also a challenge in this study. To understand the impact in the results, we tested different interaction methods with the public: direct interview, sending the online questionnaire and face-to-face experts sessions.

We present results of a case study located in a parish of Metropolitan Area of Lisbon, the Jarda Sub-Basin. This creek has a typical Mediterranean-climate flow regime with mild, wet winters and hot, dry summers. Precipitation and thus streamflow vary strongly from year to year. As its catchment has urbanized and the extent of impervious surface has increased, less rainfall infiltrates into the soil, and more runs off directly as stormwater, increasing peak flows produced from a given rainfall (Kondolf, 2010).

METHODS

The methodology used was based in survey techniques. We developed an online survey to evaluate how the perception of fluvial landscape values change over the time. The development of survey was supported in scientific research (Brown, 2012; Ives, 2017). We used ArcGis online with Survey 123 Conect application to construct the survey which enables the information to be collected expeditiously

The survey is structured in four parts: the first one, where we intended to study the familiarity degree with the basin and the main uses; the second part is related with the reference conditions (actual time) and include the spacialization of values and their hierarchy by distributing an overall amount by the values selected; the third part is the scenario approach, where we integrate images of those fluvial landscape representing scenarios of 2040. The global scenarios of the parish were developed in a research project at University of Lisbon: “Peri-urban areas facing sustainability challenges: scenario development in the Metropolitan Area of Lisbon”. We developed images/drawings, based on real photos of the Ribeira da Jarda and adapting the Periurban scenario narratives and images to the fluvial landscape. The purpose is to allow participants “traveling in time” and imagine how the Jarda fluvial landscape could be in 2040. With these, we ask participants to do the same previous exercise of setting dots in the map in places that are most representative, for each one of them. Finally, we ask participants to select which scenario they prefer. The forth part is related with the social-demographic characteristics of the participants and their community.

Landscape values were selected with scientific review support and expertly adapted to fluvial landscapes. The list of 14 social value types assigned to places by participants include: Aesthetic Value; Biological Diversity Value; Cultural Value; Economic Value; Future Value; Historic Value; Intrinsic Value; Learning Value; Life Sustaining Value; Recreation Value; Spiritual Value; Therapeutic Value; Social cohesion Value and Sense of place Value. (adapted from Brown, 2012)

Considering the socio-ecological approaches currently emphasized, like "Ecosystem services

approach", the values "social cohesion value" and "Sense of place value" were identified as a gap in the existing lists of values. For the purpose of this study we decided to include them. We also included "negatives qualities" (Ives, 2017) of the fluvial landscape like, unappealing (e.g. neglected, damaged, unaesthetic, ugly, etc), scary/unsafe (e.g. dangerous or threatening), noisy (i.e. disturbingly loud or noisy) and unpleasant (or exposed to the elements, i.e. too hot, too windy, no shade or shelter, etc).

A statistical analysis of the collected data will be used to explain how number and type of values varied in different fluvial landscapes considered. To assess and analyzed the spatial data we developed density maps for the spatial distribution of the 14 aggregated landscape values measured based. Densities will be created from point data using Kernel estimation (Brown, 2012).

RESULTS AND DISCUSSION

The expected results will include a density map for each value type, for the reference situation and for each scenario presented. This will allow to compare and discuss how landscape values change with different landscape changes.

Results will integrate a discussion of changes in the importance of fluvial landscape values over time and the of changes in fluvial landscape value spatial distribution over time.

In the other hand, we intended to demonstrate which scenario people prefer and correlate with the significance of the values types chosen. Then infer about the social valuation of the fluvial landscape that could be integrate into landscape planning.

The statistical analysis will contribute for the quantitative discussion and will contribute to better understand the correlations between different values and between values and places.

The methodological approach of this study itself is also an issue of discussion and we intend to compare the different methods of interrelation with people and discuss opportunities and limitations of each.

CONCLUSION

Fluvial landscape planning is a complex process that still have many challenges. A way of integrating the social component is through the study about what and where people value those landscapes.

This study intends to demonstrate that people value landscape in different ways and this knowledge should be integrated into planning strategies. This, emphasizes the relevance of integrating social approaches into landscape planning, looking for suitable methods to achieve this goal.

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