

Project area 5 x 5 km

PAMPULHA CASE STUDY: Co-creation of future urban landscape in an area of UNESCO cultural heritage

Pampulha is an area of interest for urban growth through densification and verticalization, since it is in the city's growth axis and presents good installed infrastructure in its central and eastern part.

There are conflicts of interest with the modernist landscape, since verticalization already affects the field of view of the area recognized as World Heritage UNESCO.

It is necessary to think about the needs related to housing (there are also slums), the fragility of transport capillarity and public transportation and the low presence of commerce and services. It is necessary to encourage the maintenance of the significant vegetation cover, as it is a fundamental value of the landscape. There is a lot of potential for sun-related energy resources.

We developed the workshops in three scales:

1. The large scale in the area of Pampulha under the impact of conflicts of interests due to urban densification and market's interests of transforming the land use. It's the buffer zone of UNESCO's Cultural Heritage Protection, recognized because of Niemeyer's work and unique architecture.

2. The medium scale in contact with the previous one, but in a very empty area with rural characteristics. The land use presents expressive vegetation cover, very big lots or areas that were not parceled out yet. It's the natural growth of Pampulha densification.

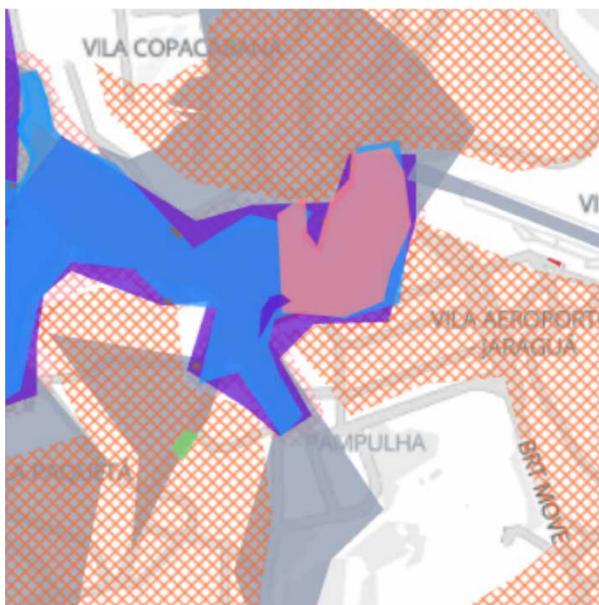
3. The small scale that is in the frontiers of the previous one, but completely different in land use: a very densified area of a slum, called Dandara. Dandara is an emblematic illegal settlement in Belo Horizonte, with a thousand registered houses and more than five thousand residents. In 2017 we developed a Geodesign workshop with local community, creating collaborative environments for the development of the favela upgrading helping to co-create a regularization plan to the area. In 2018, as part of IGC studies, we decided to repeat the workshop in academic scope, to compare the ideas from people of the place with the ideas proposed by students (graduate and post-graduate students).

We decided to present just the large scale, an area of 5x5 km.

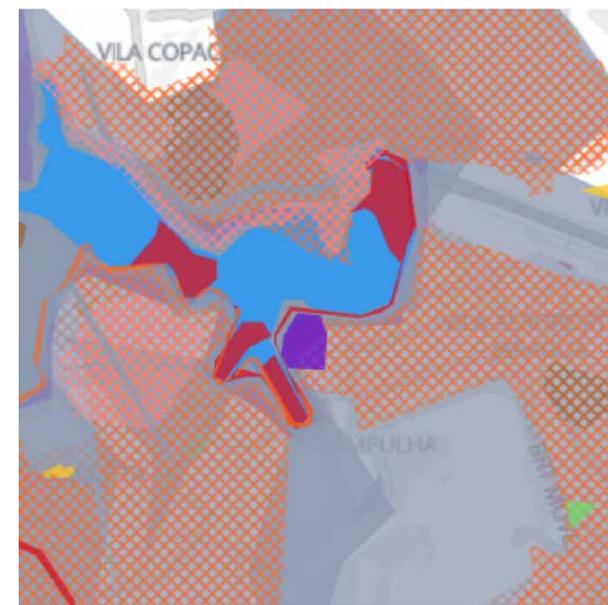
Major Assumptions and Innovations

Adopted:

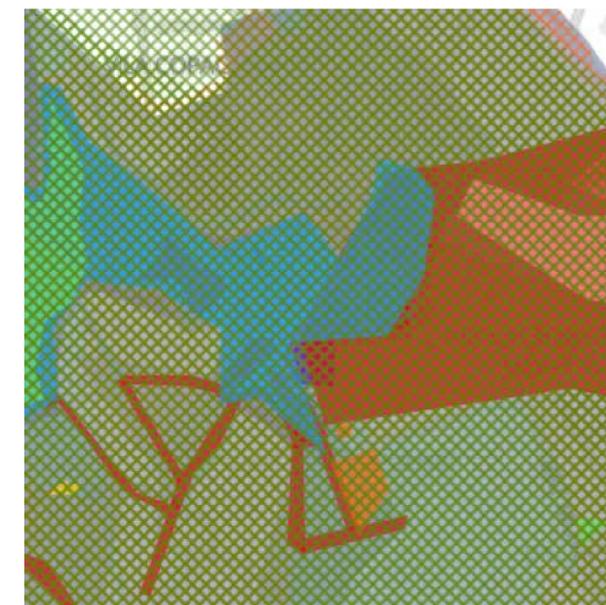
- GREY - Electric and shared cars and bikes, and Light Rail, mainly in the touristic area around the lake;
- TRA 2035/2050 5 - Hyperloop Transport;
- TRA 2035 8 - Self-Driving Cars - car sharing;
- TRA 2035 13 - Redefining Biking;
- TRA 2035 14 - Bikeshares and e-bikes.
- ENERGY – Solar energy, vibration energy in the football stadium, scroll wheel energy. Many policies to implement energy capture:
 - ENE 2035/2050 1 - Renewable Energy;
 - ENE 2035 3 - Solar Roads;
 - ENE 2035/2050 - Developments in Battery Storage;
 - ENE 2050 - Parabolic Channels.
- AGRI – Shared urban garden:
 - AGR 2035/2050 10 - Urban Farming, Urban agriculture.
- HOUSING – Mixed uses and shared multifamily uses:
 - MIX 2035 1 - Mixed use development;
 - MIX 2035 14 - Sustainable neighborhood pattern and design.
- INDUS – Coworking and development of local products, from the culture of the place.:
 - IND/COM 2035 16 - The future of small business.



Existing Situation 2020



Early-adopter 2035

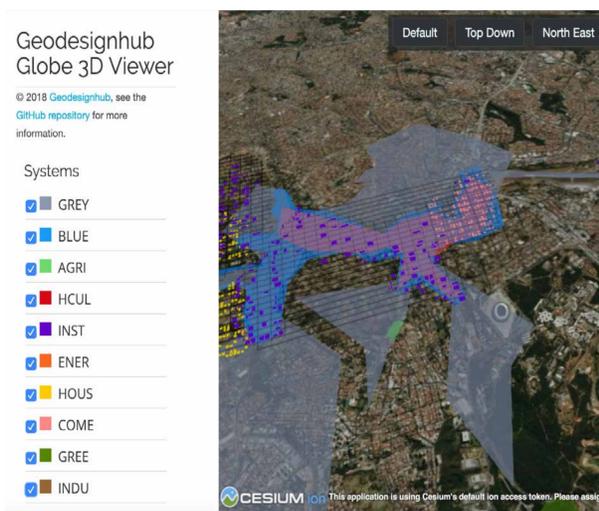


Early-adopter 2050

Early-adopter scenario:

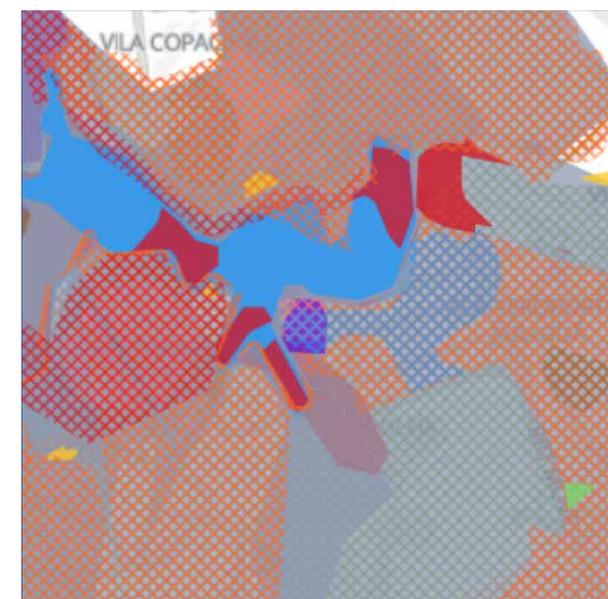
We note that the process begins with an interest in remedying transportation problems and in harnessing the existing energy potential. To our surprise, the interest in environmental issues related to green areas and water was less than the interest in enhancing the use of the area through services, commerce and housing. Through the study of cross-impacts it is possible to perceive that the proposed ideas create negative impacts in the form of locational conflicts with the themes of green, blue and agriculture, while creating positive impacts on housing, commerce and institutions. There are no impacts of projects on the issues themselves, but there are cross-impacts, demonstrating a trend that continues over the years.

It is very important to note that we observe little variation of ideas with the changes of years, proving that perhaps for cultural reasons the participants have difficulties in thinking on a larger temporal scale. It is also important to highlight that even the early-adopter group does not present very innovative ideas, preferring to draw diagrams with traditional ideas, innovating only in energy matters, both of energy production and the use of transport with alternative energies.

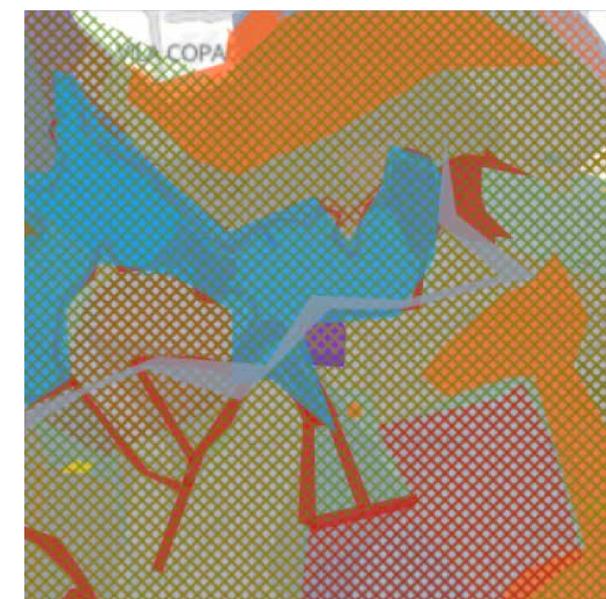


Some changes in colors in all the maps: most of the colors follow IGC proposal but we did some changes to allow comparisons with previous case studies in the area.

Existing 2020 - 3D View



Late-adopter 2035



Late-adopter 2050

Late-adopter scenario:

We observed that the proposals and results of the Late-adopter group are very similar to the partial and final results of the Early-adopter group.

Even asking them to think differently, it was very difficult for participants to think and adopt innovative assumptions. All of them highlighted interests in issues related to energy and transportation, because it is where we understand that some innovation is possible in the face of the vulnerabilities and potentialities that exist.

The similarity of ideas is proven in the targets, cost distribution, in the conflicts caused by cross impacts.

We decided to present just the large scale experiment in the banner because we observed a great difficulty to the participants in two tasks of the experiments: to deal with large term periods and to think about innovations.

In previous Geodesign workshops we conducted (18 in Brazil) or that we took part (6 in case studies in Europe) we used the composition of teams according to community's interests (for instance: people of the place, ONGs, public administration, cultural heritage, and so one) or according to axis of interests (economic, social, environmental), and people were able to play the role of their interests and to understand the dynamic. It was much more difficult to make people act and think as "non-adopter", "later-adopter" or "early-adopter".

We observed that the results were quite similar. Another difficulty was related to the innovations: people just don't care about them, because they still have to think about basic needs.

Talking about innovations, when you still have to propose agreements to ensure a minimum of habitability and infrastructure, was considered by the participants as something like "scientific fiction".

Why the large scale

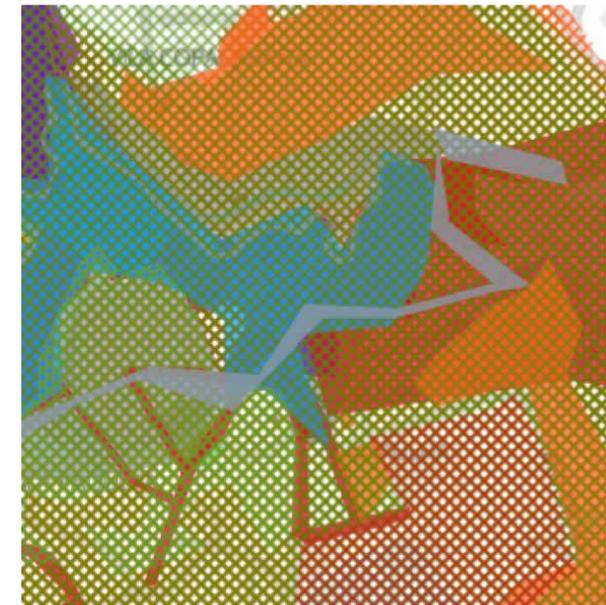


Small scale: Dandara

From the three scales studied, the only one in which we could observe some difference of results between the teams and some adoption of innovations was the larger one, because Pampulha is an area with good infrastructure, and it's possible to think about "what is next". But even in Pampulha the innovations were related to more "possible" or already existing innovations, like alternative energy production, car sharing, and ideas to save environmental resources. The very Innovative innovations were not of interest. That's why we decided to present just one of the scales in the banner.

Small scale: Dandara (working with young people from the place and repeating the experience with young people from the university (academic workshop). To read more about Dandara case studies, we recommend the papers:

- 1) Dandara case study with local community: Monteiro, Livia de Oliveira; Moura, Ana Clara M.; Zyngier, Camila M.; Sena, Ítalo Sousa; De Paula, Priscila Lisboa. Geodesign Facing the Urgency of Reducing Poverty: The Cases of Belo Horizonte. DisegnareCon, v.11, n.20, 2018, p. 6.1-6.25. <http://disegnarecon.univqa.it/ojs/index.php/disegnarecon/article/view/362>
- 2) Dandara case study with young people from academy in the university: Patata, S., Lisboa De Paula, P., Mourão Moura, A.C. (2018). The application of the Geodesign in a Brazilian illegal settlement. Participatory planning in Dandara occupation case study. In A. Leone & C. Gargiulo (Eds.), Environmental and territorial modelling for planning and design. (pp. 673-685). Naples: FedOAPress. ISBN: 978-88-6887-048-5, doi: 10.6093/978-88-6887-048-5 <http://geoproea.arq.ufmg.br/publicacoes/2018/the-application-of-geodesign-in-a-brazilian-illegal-settlement-participatory-planning-in-dandara-occupation-case-study>



Non-adopter 2050



Existing landscape - Modern architecture

Non-adopter scenario:

We observed that the proposals and results of the Non-adopter group are very similar to the partial and final results of the Early-adopter and of the Late-adopter groups. And we also observed the difficulties in proposing innovative ideas, that were concentrated only in ENERGY and GREY systems, and in grey the ideas were composing transportation with clean energy consumption. BUT we noticed that the performance of Non-adopter group was better, because it reduced the negative impacts in cross-system analysis: most of the impacts were positive. It is explained by substitutions of projects that presented large areas by diagrams of policies, more adapted to some ideas.

Project that aims to apply the Geodesign framework (Steinitz, 2012) in the steps of assessments (models of representation, process, evaluation) and of intervention (models of change, impact and decision) in urban and landscape planning.

Based on models supported by geoinformation technologies.

Projects approved by CNPq:

- "Geodesign and Parametric Modeling of Territorial Occupation: new resources of geo-technologies to landscape management of Pampulha Region, Belo Horizonte", with the support of CNPq – National Council for the Scientific and Technological Development, Call MCTI/CNPQ/MEC/CAPES Nº 22/2014, Process: 471089/2014-1.
- "Geodesign and Parametric Modeling of Territorial Occupation: Applying Geoprocessing to develop a Landscape Master Plan for the Iron Ore Quadrangle Region, Minas Gerais", with the support of CNPq – National Council for the Scientific and Technological Development - Universal Demand Call 1/2016, Process: 401066/2016-9, and Fapemig PPM-00368-18.

<http://geoproea.arq.ufmg.br/>

Team credits and acknowledgements:

The project was developed by the "Geoprocessing Laboratory":
 Prof. Ana Clara Mourão Moura (Coordinator)
 Prof. Rogério Palhares
 Prof. Alfio Conti
 Prof. Bráulio Magalhães Fonseca
 Prof. Silvio Motta
 Ana Isabel de Sá
 Bruno Andrade
 Camila Marques Zyngier
 Christian Rezende Freitas
 Danilo Marques Magalhães
 Débora Faria
 Ítalo Sousa Sena
 Lourdes Manresa Camargos
 Lucas Saliba Santos
 Nicole Andrade da Rocha
 Pedro Casagrande
 Priscila Lisboa de Paula
 Renata Herculano
 Suellen Ribeiro
 Vanessa Tenuta de Freitas

We kindly thank Hrishi Ballal for the use of GeodesignHub.