METAVALLEY

Explorations of an adapted geodesign framework to integrate a regenerative approach and planning in the Metropolitan Area of the Valley of Mexico

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Small summary of the results

The thesis departed from the problem that is the lack of integration between theories like Regenerative Development and Design (RDD) and planning practices. Theories like RDD take a systematic approach towards bringing sustainable and adaptable solutions to the built environment. Theories like these are highly relevant because they embrace cities as complex systems that they are.

The thesis used the case study of the Metropolitan Area to answer the question of how to integrate then, regenerative development and planning practices. It used the working hypothesis that by integrating the geodesign framework as a methodological basis and the Social-Ecological Systems Framework (SESF) as a theoretical-analytical basis, the previous could be achieved. The SESF was used to address the use of social-ecological systems, governance, and multiscalarity, while the geodesign framework was mostly used to achieve transdisciplinarity. The integrated framework was further enhanced to use multiple scales and to allow for co-designing.

The report then presented the methodology that was used to explore such issue, followed by the results of the exploration of the meta-ontology in the case-study of the MAHM. The thesis proposed a system of technologies and strategies which, by focusing on the value generating capacities of the system, generated the systemic understanding of place and developed the strategic systemic thinking capacities of the designer and the stakeholders. The goal of regenerative development could be understood as to catalyse the transformation of the biophysical and governance components of the social-ecological systems across scales into regeneratively sustainable states. The systemic understanding of the place and the development of strategic thinking capacities in the project catalysed or laid the ground to shift worldviews, to add value across scales and to create mutual beneficial, co-evolving relationships.

Reflection on a wider social, professional and scientific framework

The use of an adapted geodesign framework as a methodology to integrate the theory of Regenerative Development and Design and planning, which, as mentioned before, is still a gap in the current spatial planning panorama, provides enough flexibility to be adapted to other projects. Even more, the use of the developed framework can be used not only to bridge regenerative development but also other sustainability approaches such as co-evolutionary planning (Boelens and de Roo, 2014), landscape sustainability (Gibbons et al., 2018) or circular economy (Vans der Lee et al., 2018; Williams, 2018). The systemic understanding of the place and the development of strategic thinking capacities in the project catalysed or laid the ground to shift worldviews, to add value across scales and to create mutual beneficial, co-evolving relationships.

Overall, the workshop was perceived by me as a very important moment for the thesis. As I mention, in the end, I was able to develop, along with the stakeholders, potential regenerative pathways of accordance from the spatial and governance perspectives that went from an sectoral to an integral way which I am proud of. However, it serves as a fine example to evidentiate the potential of the adapted geodesign framework developed in this thesis. Williams (2018) proposes to bridge circular economy and urbanism with two principles and three actions. The principles embrace preserving natural capital and optimizing resource units, and the actions to achieve such principles are  closing resource loops, planning for adaptation (rather in a technical way with adaptable buildings infrastructures) and by regenerating the natural and social capital. The perspective from which Williams tackles such actions is rather from a biophysical level, without taking much consideration of the governance matters involved. She even suggest that further research is needed in regards of the key actors required to achieve such actions (Williams, 2018). Even more, I find that her actions are also in need of formal methodologies to be achieved. The framework towards regenerativa proposed in this thesis could be the first step her research could take into achieving one of her three actions, and to hopefully include a governance framework to her studies.

Further, the definition and the modelling of the performance indicators in a continuous loop for designing and assessing provided the possibility to run many iterations of the case study in order to reach a co-designed and agreed upon regenerative strategy. This ultimately provides a more informed and transparent evaluation of regenerative strategies, that can ultimately improve the values system of the involved actors. This is important, especially in an area where decisions are mainly done in a linear and short-sighted manner. Even more, a regenerative approach not only brings ecological enhancement but also socioeconomical ones, and this method allowed for the stakeholders to notice that. Such enhancements could provide for a better quality of life for existing and future housing developments.

Lastly, the methodology of the proposed thesis supports the research by design approach that characterises TU Delft’s Urbanism research programme. It further focuses on combining the knowledge of urban design, spatial planning, landscape architecture and environmental technology. However, while the proposed thesis touches on all the previous topics from the Urban Metabolism perspective, it probably does so more on environmental technology and spatial planning than on urban design and landscape architecture. The research agenda of TU Delft also focuses on more sustainable and fairer environments, which this research elaborated on for Mexico’s central basin.

Reflection on the work

I am satisfied with the results of the thesis. When the academic year started I knew it would be a challenge to develop a methodology that would allow to integrate regenerative development with planning practices. I strongly thought that I would have to go beyond paper and screen to achieve such, and to actually co-design in place with the stakeholders involved in the project that are rather used to developing in sectoral and fragmented ways. Even more so, I knew it would be a challenge to develop the necessary knowledge and technical capacities to achieve my research aims. On the end, I was able to develop, along with the stakeholders, potential regenerative pathways of accordance from the spatial and governance perspectives that went from an sectoral to an integral way which I am proud of. Overall, the workshop was perceived by me as a very important moment for the thesis. As I mention, in...
my report, one of the aims of the thesis is to catalyse a regenerative development in the MAVM, and this was the moment in which I could take this goal beyond paper.

There is, of course, room for much more improvement both in regards to the methodology proposed and in regards to the details of the design.

In regards to the methods

The current assessment of the accessibility to services takes into account how accessible are the newly developed areas to employment centers, independently of which kind of employment centers they are. In the future it would be interesting to also develop more the assessment to take into account, for instance, if the employment center has an agro-industrial character, merely an industrial, or if it is more focused on commerce and services. When developing the thesis, I always had in mind, that my strategy should be developed close to the current Agro-industrial areas in the MAVM: Taxco and Chalco, which were included in Zone 1, but there was no way of highlighting it within the methodology.

Regarding the social performance of the areas where nothing is built or developed yet, the report considered that the areas have low accessibility to services and infrastructure. However, a more precise method to assess this is necessary as in reality these areas do not actually need to have infrastructure and services. The current assessment currently adds a value of either 33, 66 or 100 depending on how accessible the areas are to employment centers, taking into account that the value of the areas where they are developed is 0. The modification would indicate that in reality, the development areas should probably subtract the values of 33, 66 and 100 to the areas where originally there was no need for infrastructure or services, and with the layout of housing, the need is created.

In the report, it was also mentioned that the maximum governance performance was set to a very highly, if not even impossible value to achieve. This is due to the fact that the maximum value of the strength of the network depends on having all the stakeholder having strong collaboration with every other, which ultimately is impossible and not even desirable. Thus, I believe, translated into having rather low governance performance values that did not match the comments and the attitude from the actors after the workshop.

The method to integrate the stakeholders and the researcher's regenerative strategies should further be repeated, as it was only developed once, and it a more qualitative steps which could more easily make it vary.

Lastly, at the beginning, the project aimed to calculate how much water was being prevented from being discharged to the Tula basin at the north of the MAVM, however the scope and time limitations prohibited to do it, but overall it is known that the more water is treated, the less water is being discharged to an external basin.

In regards to the workshop

If I would organise this event again, I would probably send out a Doodle form so that the stakeholders would be able to choose which date fits them the most. On a personal level, I was initially very intimidated with the whole organisation of the event and the reaching out to people. The idea of not having anyone answering this call scared me at first. However, I definitely overcame that, but it inhibited me still of proposing a longer duration of the workshop. With more anticipation doing the previous, I would suggest a more extended workshop of at least half the day of duration. Due to the limited time of the workshop and the number of interventions to look at the decision support tool that I realised was not able to be used iteratively with the stakeholders, but rather as an evaluation tool in the end. Having iteratively used the tool with the actors could have been very interesting. I am still curious if their reactions towards the interventions or strategies could have changed their choices. However, taking into account that they were satisfied with their final strategy I could imagine that it most likely would not have been the case.

In regards to the spatial decision support tool

In regards to the tool, it could also definitely be improved further, as of the moment, it only takes into account the already preselected locations. The previous limits the possibility for the stakeholders to select the areas that they might desire. The issue found with selecting the sites within the tool is that, besides it being extremely time-consuming, the tool would have to have feedback on the evaluation of such locations already.

In regards to the future research

For future research, it would be interesting to study what are the effects of the water balance and the conditions of the land and the strategies on the floodings, draughts, and subsidence rates in the region, and to include those aspects in the social performance evaluation. The accessibility to public spaces is another aspect that could be further studied; however, it could prove to be very challenging to assess the quality of the public spaces in peripheral areas.

The exploration of the use of renewable energy is very closely related to the thesis, as it was considered one of the aspects that would improve social performance, which, unfortunately, due to the scope of the project, was barely touched.