THE PROCESS OF URBAN SYSTEMS INTEGRATION
An integrative approach towards the institutional process of systems integration in urban area development

FINAL REFLECTION

Graduation Lab: Next Generation Waterfronts
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The relationship between research and design

The choice for my topic came forth from a course that I followed the year before at the AMS Institute. It was triggered by the FabCity project at the Kop van Java in Amsterdam, where a lot of companies, research institutes and students worked together in order to develop cities in a more sustainable way. It made me curious about how these people and organisations from different sectors and backgrounds could work together. Besides difficulties in connecting the technical aspects, I was more interested in the institutional process of all these innovative ideas coming into being.

It was not clear from the beginning what would be the right angle for me to do research into these processes. I wanted to combine my knowledge of the built environment with sustainability and innovation. After a few conversations with experts in the area of sustainable solutions in urban areas, I learned about the Street of the future project (that is planned for the Floriade 2022) where multiple infrastructures are to be combined. It provided a good opportunity to look at the aspects of innovation and connecting different types of actors within an urban context. However, it was difficult to get the right information about the project as it is still in its initiation phase. There was no possibility to do a profound and in-depth research into this project. Therefore, three other cases were selected to provide insight into systems integration projects. Instead of using the Street of the Future project as a case, recommendations for the process of it were aimed for.

The relationship between the graduation lab theme and the subject/case studies

The theme of the graduation lab, Next Generation Waterfronts, was interpreted quite freely. My cases do not focus on urban waterfronts, although there was one waterfront location (Buiksloterham) in one of the three case-studies. I do think that there are some similarities with the type of development. Both my cases and waterfront locations around the world deal with complex processes, integrating actors from different disciplines. The main focus of my research was to analyze the institutional process of systems integration where multiple actors from different 'systems' need to work together. Inner-city, former industrial areas with a transformation task towards a sustainable mixed-use neighbourhood (next generation

waterfronts) also deal with complex institutional processes. However, it was not the aim of this research to provide knowledge for regenerating waterfront locations in particular.

A free and open approach towards the graduation topic was stimulated by the department of Management in the Built Environment. Especially within this graduation lab, no boundaries were set regarding the topic of the research. This provided freedom to choose the topic that really interested me: innovation processes in urban areas.

I should note that although I'm glad I've deepened my knowledge on this topic, it was not always an easy choice. Crossing the boundaries of my own field of study (the built environment) towards institutional processes and public administration was a challenge. I had to do a lot of additional reading and research into terminology and frameworks of which I didn't know they existed. This made me feel a bit lost sometimes in the amount of literature and made it hard to limit my research. On the other hand I do think it provided a lot of extra depth and crossing the boundaries of my own field of expertise has definitely had a positive effect on my thesis. Furthermore, my knowledge about institutions has broadened which gave me insight into processes that are often very important in urban area development.

The relationship between the methodological line of approach of the graduation lab and the method chosen by the student in this framework

Combining a long-standing framework such as IAD with a new and innovative concept such as systems integration has helped a lot. I struggled in the beginning to find tools and guidelines as not many research has been done into systems integration processes yet. Furthermore, a limited amount of cases was available. The Institutional Analysis and Development framework provided the handles to do research. Although it took me some time to find an appropriate framework, it was eventually worth it.

The project and the larger social context

Systems integration projects were at the root of this research. Although I do believe that the recovery of resources can help us in reaching more sustainable development, there are some important considerations for implementing S.I. projects in UAD.

Integrating multiple infrastructural systems such as energy systems with wastewater systems often go hand in hand with decentralisation. Technical aspects such as the fact that vacuumsystems for sewage do not work over large distances, and social aspects e.g. active citizens wanting to operate their own system and being independent cause this.

Opinions about whether decentralised solutions are desirable are divided. Although decentralisation might technically provide opportunities for more circular, sustainable and efficient ways of living, the current electricity and wastewater systems are well functioning and robust. Large amounts of investments are sunk in the current infrastructure.

The transition from a centralised towards a decentralised system has multiple consequences. When urban development projects disconnect from the collective system, less people bear the costs for a central network. As a result, the collective system gets more expensive. Population groups that have the financial means to built and maintain their own sanitation

system and make infrastructural adjustments within their homes are often wealthy and highly educated. Decentralisation of the energy sector has similar consequences: people that have their own roof on which solar panels can be placed, and have the ability to make the investment. Decentralised systems can therefore cause a social division. The differing opinions on this should be seen in a broader political perspective. The choice for a collective system (whether it is infrastructure or health etc) is dependent on the political background of a country. England e.g. has a largely privatised market, and prices for services are determined by market mechanisms, while the Scandinavian countries have much more collective and prices are protected.

The idea of disconnection is often related to the idea that these people don't pay for the collective system and infrastructure anymore. Integrating systems with each other on a larger scale could be a solution. The recovery of resources would still be aimed at, while costs and benefits are then divided over a more extensive network and remain equal for all consumers. This can be further achieved by raising/diminishing taxes or a financial compensation system/subsidies.

Decentralisation does not only raise social difficulties. Technical and organisational issues also arise. We will illustrate this with an example from the water sector. The quality of our drinkingwater is highly controled and regulated by a public actor. Water control boards and drinking water companies have the expertise in this area.
The Netherlands is known for its water related knowledge all over the world. When inhabitants disconnect from the collective system, it becomes complicated to control waterquality. Additionally, it is much more expensive to check on an individual scale then on the large scale of RWZI's. The question arises who will control waterquality and who will bear the responsibility for this.

A lot of research is being done into the concept of circular solutions for urban areas. As described in the introduction, a lot of experiments are focussed on the technical aspects of sustainability. Living labs are an example of a popular way to test sustainable and circular innovations. However, actors from different disciplines and sectors have to work together and as we've seen in this research, this does not always result in a smooth process. Differing rules and ways of working proved hamper collaboration. This research has intended to provide more insight into the process around technical innovations.

It was not my goal to provide actors with a standard way of working which they can use during such processes. There is no single method to achieve a successfull process, and every case must be tailored towards the specifics of an area. In my opinion this is even more necessary for S.I. projects in UAD.

UAD is one of the main 'systems' that influences the S.I. process. Ways of working are often traditional and roles and responsibilities predetermined. The fact that a lot of actors from

UAD find themselves within the public sector results in specific rules and regulations (e.g. the obligations around tendering procedures) that can be a challenge for innovative experiments during development. Policies come from the regime and landscape level, and are (especially for public actors) dependent on political views. In order to reach a true transition, ideas on S.I. should be integrated in the decision-making process at several levels and within multiple departments, making it a politically independent topic (mainstreaming vs dedication).

We've seen that the innovations were often facilitated and initiated by public and semi-public actors. Examples are the municipality and housingassociation in Sneek, the drinking water company in Culemborg and the drinking- & wastewater company Waternet in Amsterdam. This is quite different from product innovation processes, where market parties are often the first ones to kickstart innovation. Possibilities to attract private actors in S.I. lie in e.g. product suppliers, organic waste processors and fertilizer users (farmers).