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Bobbink, Inge

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Testing the illustrative method: How to reveal hidden knowledge stored in traditional water systems

Inge Bobbink
Technical University Delft, Netherlands

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The polder-boezem system, a traditional water system, is a step-up discharge system that drains water from the lowlands into the outer water of rivers and sea. In order to reveal the landscape architectonic structure and form of the Dutch polder-boezem system the form-layer method (Steenbergen et al. 2005) was applied and extended in the dissertation: The Landscape Architecture of the Polder-boezem system, structure and form of water network, water pattern and water works in the Dutch lowlands (Bobbink 2016). Originally the form-layer method is an analytical tool to understand the structure and form relation between a landscape architectonic composition (a project) and its site. Four layers are distinguished: the basic form, in which the relation between the intervention and the topography is unfolded; the program form, in which the structure and form of the intervention in relation to its program is clarified; the image form, in which the cultural and metaphorical expression is linked to the structure and form of the landscape and the layer of the spatial form, in which the structure and form of landscape and intervention is defined from the experience at eye-level perspective. In the dissertation, this method was used and adapted to analyse a cultural landscape (the polder landscape) instead of a landscape architectonic design. After identifying the landscape architecture form and structure of the lowland water system we felt the need to extend the method further to reveal the use, maintenance and the circularity of human-made traditional water systems in general.

Humans transformed and managed natural water flows in a particular area during decades for different reasons. Depending on its scale these water management measures shaped the landscape. Indigenous water systems are interesting study objects because they develop over a long period of time by trial and error, cut and fill and therefore store a lot of knowledge related to use, adaptation and climate variation. Many different water elements and works are developed to direct, drain, irrigate, retain, infiltrate and reuse water. Commonly different water elements and works are combined in one system, in which they most of the time try to keep the water in place as long as possible. Next to the benefit for humans, traditional water systems are relevant and valuable for ecosystem services due to their size and connecting capacity as part of blue-green networks.

The extended method, called 'the illustrative method' is tested by international graduate students and researchers of the TU Delft, section of Landscape Architecture in the Circular Water Stories LAB. All students within the LAB are interested in water topics and want to learn from existing systems. Nine traditional water systems are mapped according to the method. By evolving the drawings simultaneously, along with a set of theme-drawings and diagrams, flanked by one legend for all cases is developed. Every drawing is drawn again and again until the best result, a meaningful drawing is achieved. Students and researchers learn from each other. During the process the understanding of which layers (soil map, height maps, relief etc.) need to be combined to express the essence of the waterscape have become clearer. From here the description of the method is explicated.

Each set of drawings includes: a short introduction, a description of the project, photos of the past and today; diagrams of the climate zone including the rain fall curve over the year and a diagram presenting the flow directions of the system; the water system drawn on the regional scale in relation to the topographical and soil map; the development of the water system over a longer time period, a more technical drawing of the catchment area and the different water compartments; sections and/or systemic and functional diagrams, in which the interaction between the water elements, water works, its ecology and the use is explained; a crucial detail which is representative for the system and a conclusion. In the conclusion students summarized their findings of the analyses by transforming general values into specific values. So far we have come up with six values.

Landscape values: Natural landscapes are transformed to cultural landscapes, through transformation the natural landscape is architectonically pronounced and is part of the cultural expression;

Strategic values: Smart use of the site to achieve maximum profitability with the minimum resources and infrastructures, by taking advantage of natural elements, topographic changes, slopes, river bends...;

Functional values: Water systems are constructions with simple formal and practical solutions;

Material and tangible values: Water elements and water works are a source of knowledge of traditional construction techniques, local materials from the surrounding area are used that adapt to climate and lithology, expression of rituals;

Values of sustainability and circularity: By using natural local and non-polluting materials of the surroundings. The water is used in the system for different purposes and brought back into the natural circuit;

Ethnographic and identity values: To encompass the knowledge of what were the main activities of the region.

The process of testing the method made clear that much of the work was essential, especially for those cases which are situated in countries that do not have open access to data. Sites had to be reconstructed

with the help of Google Earth maps, Open Source Street maps, and country specific National Databases . Computer and analytical skills were needed to process the amount of data and thereby visualise the spatial quality of the reimagined sites. Examples helped to figure out the path of the analyses. A description of the method was not enough to get a good result, intensive discussions are needed to improve the drawings.

Comparison of cases and ongoing reflection is essential for a valuable outcome of the research, this still needs to be done. For now, (March 2019) the material is on display in an exhibition at TU Delft and awaits comments of peers. This new input can help develop the method further and to come up with more circular traditional water systems that in the end can be published in a book. The graduation LAB is called 'Circular Water Stories' but so far we did not manage to work on the story part, since this involves more research, research in which we involve the makers and users of the system and dive into archives to learn more about its history.

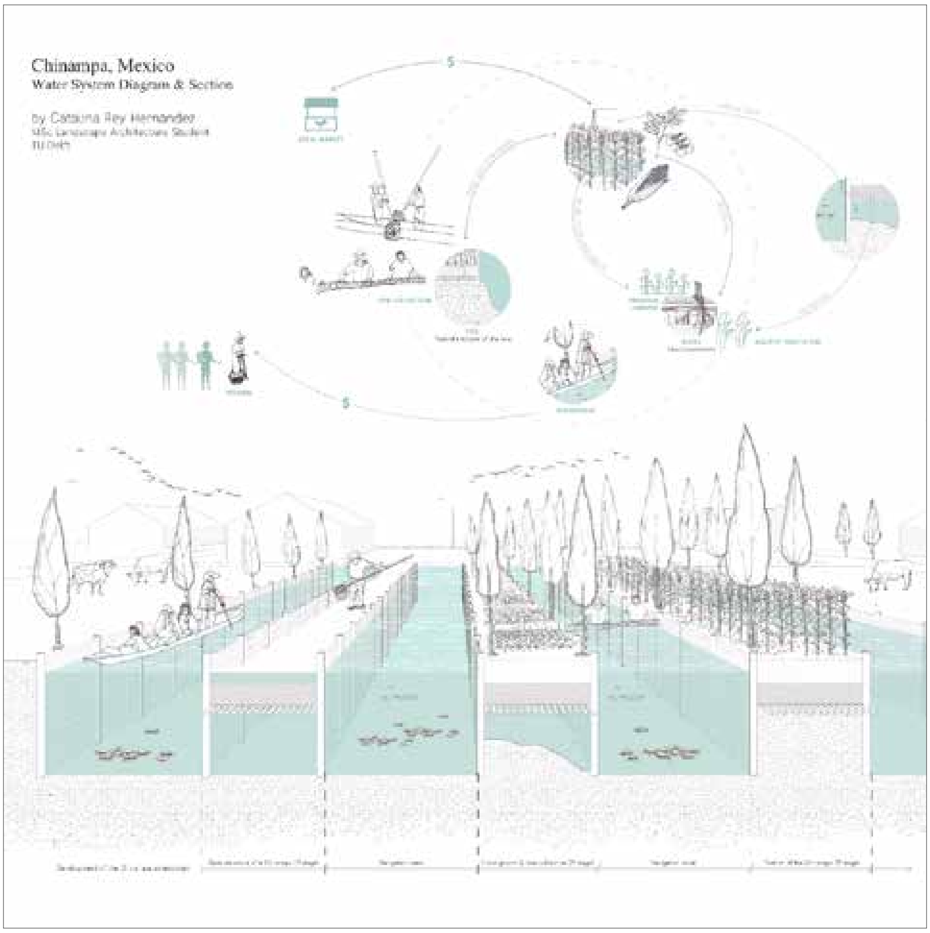
Knowledge stored in traditional water systems can inspire spatial, smart and sustainable approaches on water management (Ryu 2012). To design with water, one has to understand the geomorphology of the landscape, the operation of the natural water system and its transformation in order to relate to it. The work of the students proves that the illustrative method can be used regardless of scale, complexity and cultural background of the water system to reveal knowledge on the relation between landscape, water management and people. In general, the research on traditional water systems delivers first of all knowledge from the past for sustainable, adaptive water design. For the students, the analytical work at this stage delivers tools for their final design-thesis.

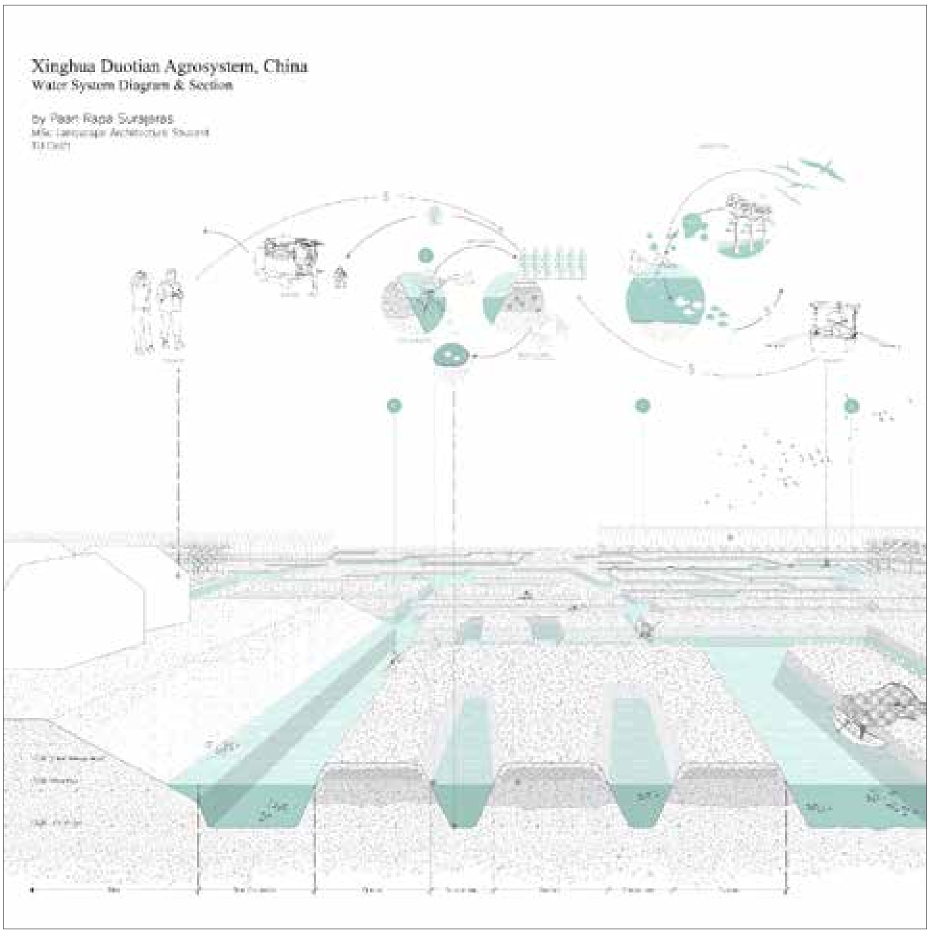
References

Bobbink, I. (2016). De Landschapsarchitectuur van het Polder-boezemsysteem: Structuur en vorm van waterstelsel, waterpatroon en waterwerk in het Nederlandse laagland. DOI 10.7480/abe.2016.16.

Ryu, M. (2012). Typologies for Sustainable Water Use in Historical Japanese Towns. Retrieved from: http://stimuleringsfonds.nl/toekenningen/928/typologies_for_sustainable_water_use_in_historical_japanese_towns. Accessed 27 July 2017.

Steenbergen, C.M. and Reh, W. (2003). Architecture and Landscape, the Design Experiment of the Great European Gardens and Landscapes. Basel, Boston, Berlin: Birkhäuser, 2003.


Chinampa, Mexico
Water System Diagram & Section
by Catalina Rey Hernandez
MSc Landscape Architecture Student
TU Delft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TU Delft