

Designing nature as infrastructure – a profession looking for new metaphors for its relation with nature

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Renaissance of green infrastructure

In the past years we can witness a renaissance of the concept of green infrastructures as a widely used planning concept. At the same time a recent discourse in landscape architecture and planning has also produced some new functionalistic terms related to urban green and landscape.

We will compare, as examples of this new landscape-functionalism, the concepts of landscape as infrastructure (Belanger 2009, 2012) and of landscape machines (Roncken et al. 2011) with the well-established concept of green infrastructure to find out why this successful concept is obviously not satisfying for some planners and architects. Otherwise such a multitude of alternative concepts would not emerge. Furthermore the term landscape still seems to play an important role, so that it is not exaggerated to talk about a new landscape-functionalism.

The social background for this renaissance of infrastructural approaches to green planning is obvious. On an overall level it is the perception of a so-called ecological crisis (Latour 2009), related and cumulated to the detection of climate change and as a consequence of an emerging culture of sustainability (Eisel, Körner 2006).

On an expert and planning level there are three reasons:

1. The Return of the "big plan" in urban planning in the form of strategic development plans after the planning crises (Polinna 2010). This demands also green planning on a metropolitan or regional scale e.g. The All London Green Grid (Greater London Authority 2012), PlaNYC (The City of New York 2011).
2. A more pragmatic approach in nature preservation. The preservation of nature on a landscape level was not especially successful. The special formation as ecological networks or habitat networks is more obvious, especially to persuade the opponents of "preservationism" – civil engineers. They are building so called grey infrastructures. To complement this with green and blue infrastructure is a win-win situation for planners and politicians.
3. The concept of ecosystem services. In the past green infrastructure was justified by miasma theory, and the support for physical and mental health by green spaces. With ecosystem services this "soft" or even wrong justifications were replaced by hard facts like carbon sequestration or water purification (MEA 2005).

Innovations of the new landscape-functionalism

What are the innovations that the new landscape-functionalism has to offer compared to green infrastructure?

1. In both concepts the authors dissociate themselves from the romantic, bucolic and picturesque pattern of Landscape and deliver manifestos for a new landscape aesthetic based upon efficiency. That's an important difference to the concept of green infrastructure, where beauty is only one of the many features that "green" has to offer anyway. That's why more square meters of green means more beauty. The new functionalists are following a different aesthetic concept. A landscape is beautiful (or even sublime) when it expresses its utility in an optimal way. That means without frills and ornaments and redundant formality.

2. The authors understand their concepts as working methods to establish a new kind of infrastructure. They state that there is a modernist kind of infrastructure that is centralized, mono-functional, separated from context and mainly based on non-renewable energy sources. This old infrastructure has to get substituted by infrastructure that is decentralized, multilayered, site specific (interlinked with local ecosystems) and regionally renewable.

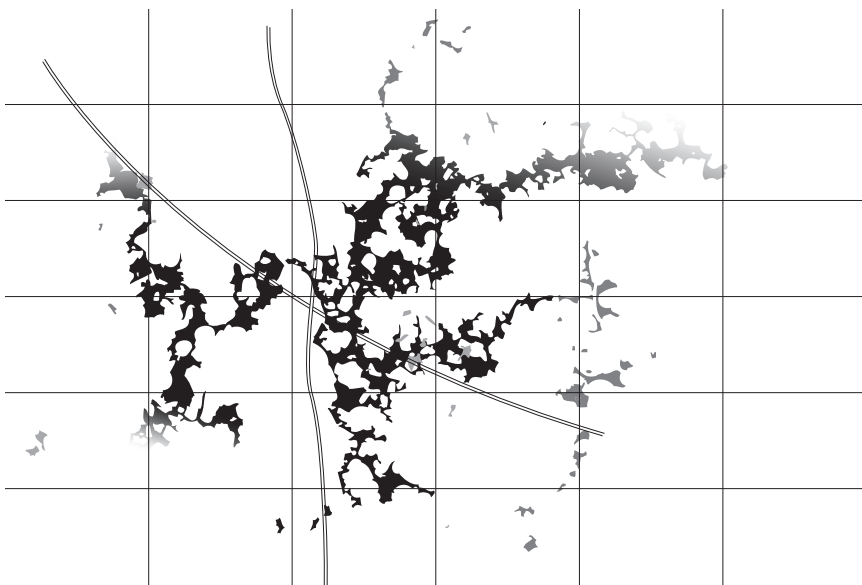
3. Based on this functionalistic aesthetic principles and this new infrastructural approach the authors can combine landscape and infrastructure into a new spatial entity, they call landscape machines or landscape infrastructure.

But would these concepts be adequate as planning principles if considered on a more general level? To identify some characteristics and differences as general principles for planning we will compare the three concepts looking how they are related to three very general planning goals: participation, practicability and aesthetics.

a. Is the concept applicable in participative or argumentative planning processes? Or, in other words is it or can it be a democratic planning instrument?

b. Is the concept implementable and for what? Is it an efficient planning instrument to achieve specific planning goals?

c. Is the concept enabling and stimulating new aesthetic ideas? Is it a creative and aesthetically innovative planning instrument?



Spatial pattern of green infrastructures
Abb. T. Hauck

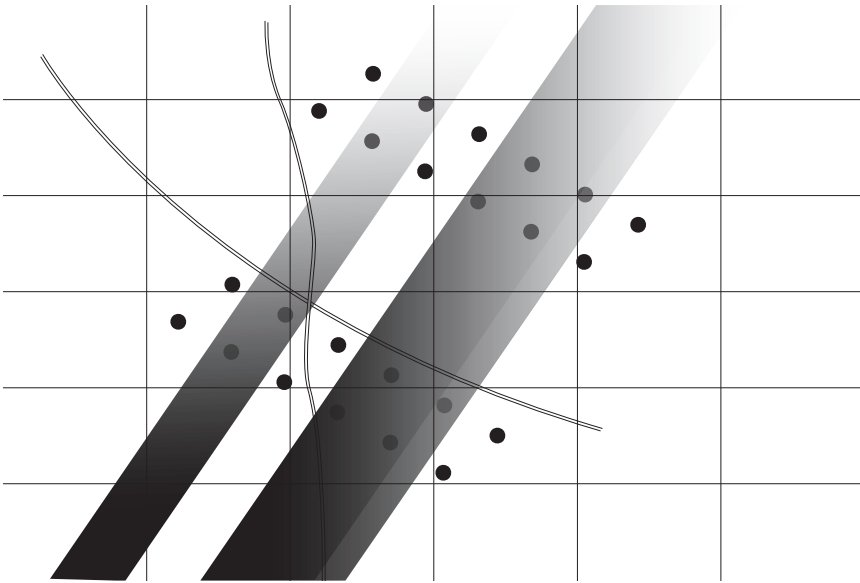
Participation, practicability and aesthetics of green infrastructure

We include in our consideration urban green systems (like green grids) and ecological networks.

a. Green infrastructure planning is based on the identification of areas that supply some relevant ecosystem services. The planning goal is to tie these valuable areas into a network to accumulate these services. This spatial organization makes it possible to spread these services over a maximum domain and to provide maximum users with them. Areas are selected because of their utility and their position related to other areas. But in the case that some stake holders disagree with that selection the planner can propose some alternative areas with possibly the same value or an alternative area can be prepared to be as useful as the other one. So areas and their spatial formation are exchangeable and flexible because their value is abstract and not site-specific. These are excellent requirements to implement green infrastructure in argumentative planning processes.

b. The planning goals are the preservation, construction and connection of habitats and/or urban green spaces. Because a network is a flexible form and the knots of a net don't have to be on specific places (but in specific relations) its possible to find alternative spatial compositions if e.g. some selected areas are not available. So the network is a practical geometric model to create a spatial correlation. Before this background the concept of green infrastructure and green infrastructure planning provides a pragmatic working method to preserve and develop green spaces well grounded on their functions for human well-being.

c. Aesthetics is the weak point of the method. As having a long tradition in 19th century urban park planning and nature preservation the concept has incorporated the traditional pattern of landscape aesthetics in their performance. As this aesthetic pattern is functionalized and naturalized in the method of green infrastructure planning new aesthetic patterns can hardly emerge. Aesthetic value is not necessary to give reason to establish green infrastructure, what counts are the ecosystem services they can provide.



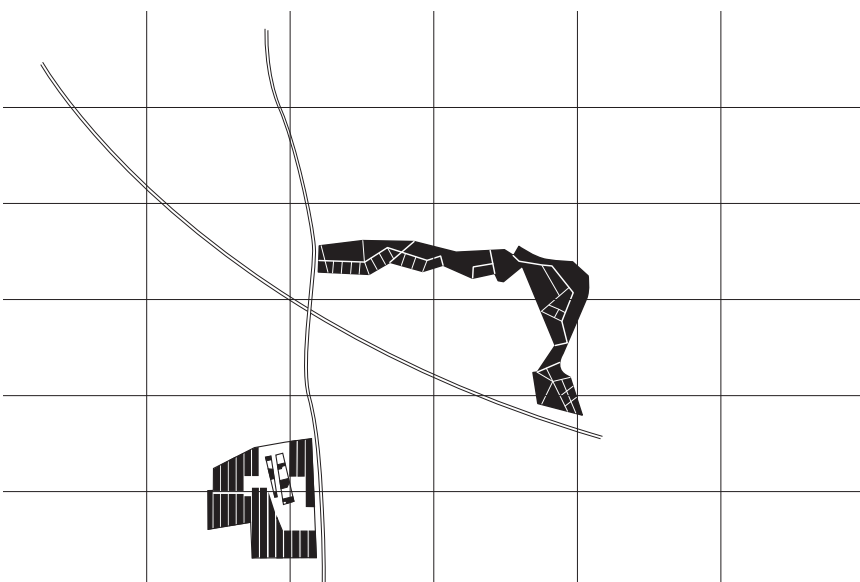
Spatial pattern of landscape infrastructures
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Participation, practicability and aesthetics of landscape infrastructures

a. The idea of decentralization and site specificity of infrastructure raises the hope of the author that this makes it possible to establish a regime of technology that can be reconnected to the order of landscape and/or makes it possible to create a new spatial pattern that will be received as landscape. The crucial question is if this new universal landscape pattern is flexible and open enough to incorporate results of democratic decisions that contradict this new order e.g. decisions for mono-functional and centralized infrastructures like a pump storage power plant or decisions to keep old bucolic landscape patterns. One of the problems of the concept is that the incorporability of infrastructures into a landscape pattern has nothing to do with the question if they are the most efficient technical and also sustainable solution. So it will be still necessary for a society to decide between practical/economic and aesthetic values, like we do it now in all the landscape vs. infrastructure discussions.

b. The planning goal is to create landscapes based on the spatial patterns that are caused by infrastructures based on the site specificity of natural resources like hydrological systems, wind conditions etc. If following the site specificity of resources is necessary for technical reasons (e.g. positioning of wind turbines) landscape infrastructures could be a practical and also social relevant planning concept to design the transformation of landscapes.

c. The aesthetic value of landscape infrastructure is grounded in the efficiency of its alternative infrastructure. This might prove problematic if this kind of infrastructure is not a socially preferred option, but if this option is perceived as a destruction of the traditional pattern of landscape. To tackle this problem it would be helpful to integrate an idea like Corboz's land as palimpsest (Corboz 1983) into the concept of infrastructural landscapes. Then the outcome of landscape transformation would not be a new totality based on a new infrastructural regime, but could be a process where the layers and patterns of the existing landscape are respected and the change is perceived as enrichment and not destruction.



Spatial pattern of landscape machines
Abb. T. Hauck

Participation, practicability and aesthetics of landscape machines

a. Landscape machines are well designed biotechnological facilities e.g. for water purification, fish or energy production. On a spatial level there is not a big difference to classical technical facilities like factories or power plants. Both claim a defined territory more or less separated from other uses e.g. housing. The difference is the technology used. The authors would claim that landscape machines are site specific because they are bound to use natural resources and ecosystems of the site. But from that perspective every atomic power station is site-specific. Its location was chosen because of the amount of water that is available there that is needed for cooling the reactor. Because landscape machines are not site specific on a technical level its always possible to discuss alternative locations in argumentative planning processes.

b. Biotechnical facilities are getting constructed en masse and they are often perceived as alien elements in the landscape. So if the public awareness of this problem will rise there will be a need for well-designed biotechnical facilities; even better if they will be perceived as part of the landscape or maybe even as landscapes on their own. But to achieve this goal it is very important to provide public access to those facilities.

c. The planning goal is to create productive biotechnical facilities that have also a value as landscape. The authors state that the beauty of this landscape will arise from the productivity and efficiency of the production process. This could be true if the facility could be used by the public for landscape activities like walking, biking and social activities and at the same time makes it possible to experience the production process that happens on the site. That land could be useful and beautiful at the same time is an appealing but not new idea – we call it (after Virgil's didactic poem) georgic landscape.

Conclusion

This comparison shows that the new concepts are not alternatives that can substitute green infrastructures, but they are possible planning concepts than can deal with problems that cannot be solved by the traditional functionalistic approach - but they also have their problematic points especially related to participation and practicability. The task of landscape infrastructures as a planning concept could be to design the transformation of landscapes caused by new decentralized infrastructures like wind turbines or biomass plants. The task of landscape machines as a planning approach could be the design of biotechnological plants that are "walkable" and can so be experienced as landscapes. Both concepts are following strong aesthetic approaches; even tough they disguise them as functional – but that's how functionalists have always thought about their designs.

Acknowledgements

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