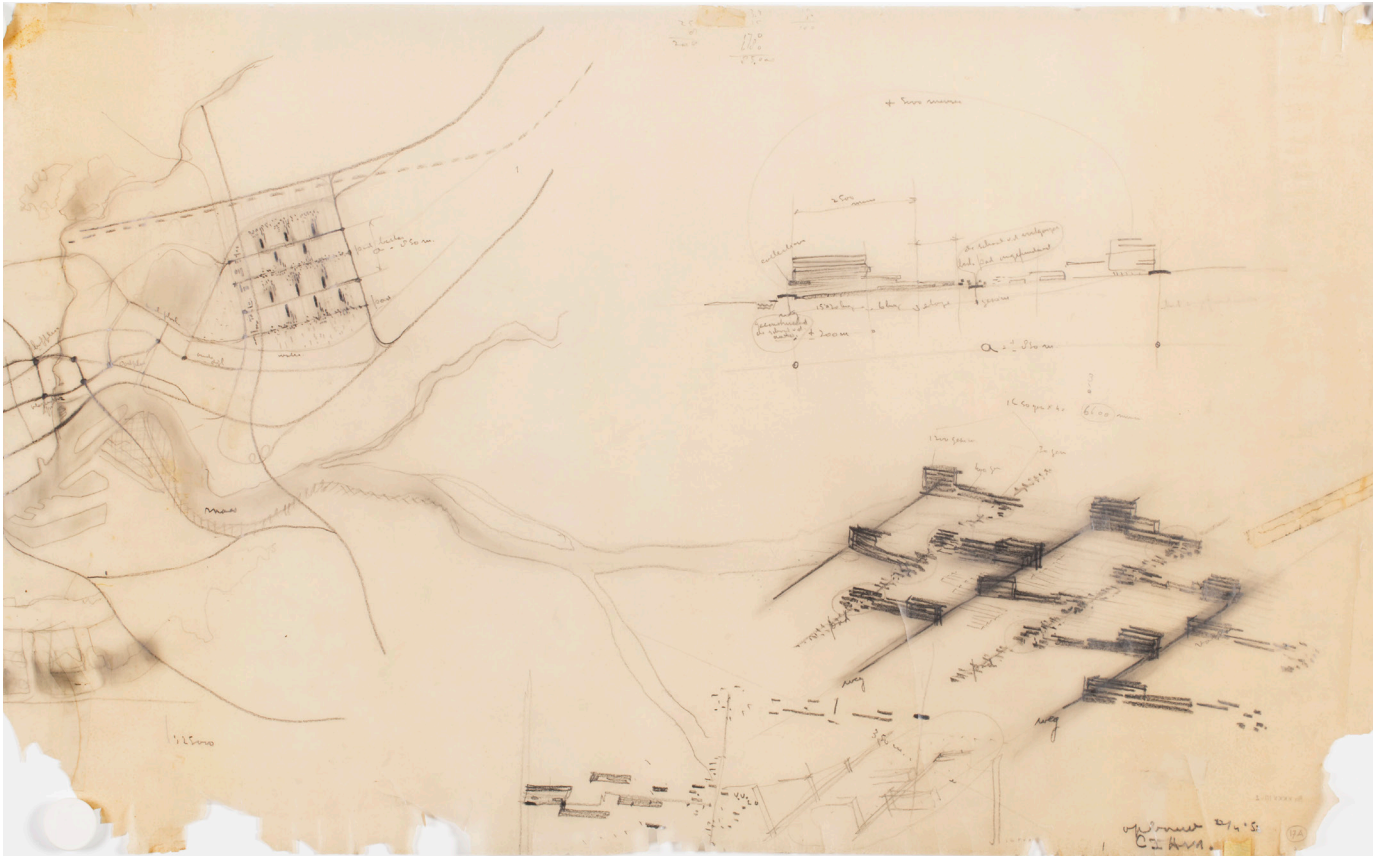


*Deltaic  
Megaforms*

*Fransje L. Hooimeijer*

Kenneth Frampton presented in the Raoul Wallenberg Memoria lecture in 1999 an overview of megastructures over time and space. He showed how megastructures respond to the landscape and are related to infrastructures. Especially the two examples in the Netherlands and Japan are interesting for relating the history and conceptualisation of megastructures to the deltaic conditions. Due to the technological approach in urbanisation the natural conditions have been neglected creating a new chaos between humans and nature. Besides the fact that the lecture by Frampton is extremely relevant today, it is also a lens towards this typology that we elaborate on by highlighting the history of the realisation of a deltaic megastructure. This can be taken as an example of extreme (landscape) engineering, which can be a way to respect and not trying to disturb nature. The megaform is therefore an urban landscape in its own merits, having a balanced but distant relation to nature. In this project section we elaborate the project by Jaap Bakema for Lage Land in Rotterdam. Here the original megastructure of the “mammoth” as a concept has been elaborated and developed as an urban neighborhood which is built in a typical ‘thick water’ polder of the Netherlands.



Vertical Visual Units. Sketch by Bakema showing the principle of roads connecting Mammoths, free from the polder landscape.  
Source: HNI Archives BROX t4072

Approaching a megaform strategy in a deltaic condition can be found in the work of the Dutch branch of the CIAM, the Opbouw, in the Jacob Bakema's Mammoth of 1952 and his Plan Pampus for Amsterdam of 1965. Both the Mammoth and the Plan Pampus are the creation of a megaform in relation to the deltaic landscape (Hooimeijer, 2014).

Jaap Bakema, presented his plans for Lage Land (in Rotterdam) at the CIAM conference on Habitat, in Aix-en-Provence, 1953. The choice for this site was the idea of the director of City Development, Cornelis van Traa, because the needed expansion of the city in these low-lying polders was a huge challenge. Due to limited possibilities to expand in the Northern direction, and the orientation of the city centre to the west, an eastern expansion, even in the deep wet polders, was the best option for the demand for urbanization. The expansion had to be spatially flexible and adaptable and able to grow fast or gradually on the basis of temporary needs. Moreover, the geographical circumstances of the polder allotment and the soft and wet soil conditions had to be considered. Two years later, in 1955, the original ideas and further elaborations were presented in a huge model as 'the city of tomorrow' at Exhibition E-55 in Rotterdam (Damen, 1993).

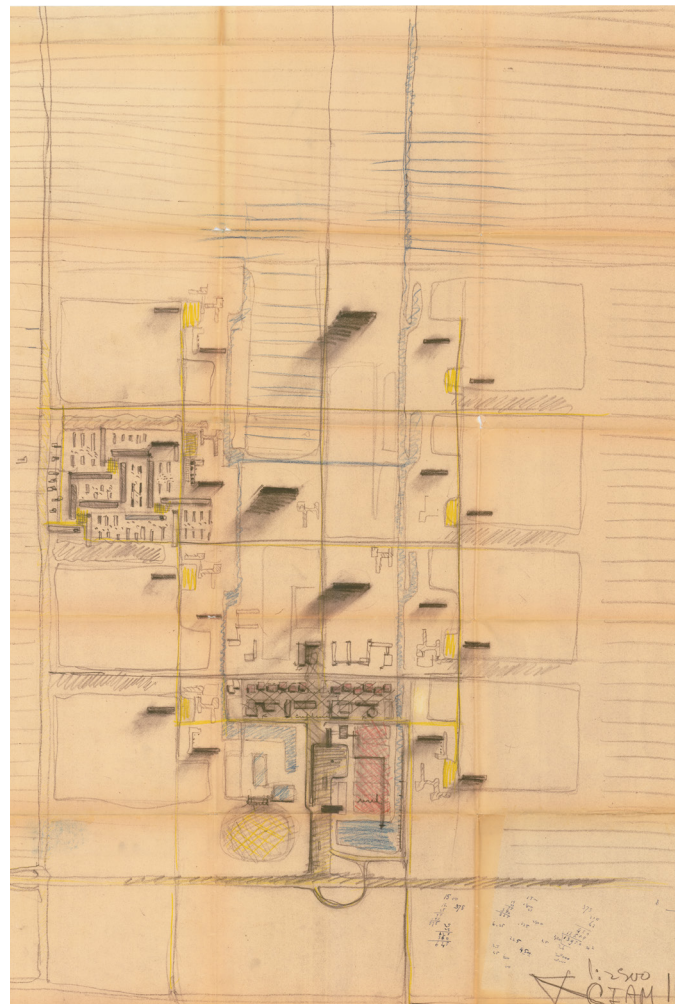
Bakema took the challenge in Lage Land as an option to connect the concepts of the 'Visual Unit' and the 'Neighbourhood City' (*wijkgedachte*). Visual Units are "The way in which high, low, big and small buildings are

*spatially related, can help man feel at home in total space."* (Bakema, 1961) The Neighbourhood City Concept was very much connected to the Dutch way of making inclusive new neighborhoods, in which structural order, both physical and social, is connecting scales in functionality. The 'Visual Units' made the plan oriented Neighbourhood City Concept, a three-dimensional composition in which architecture and urban design converge. Bakema's work the Visual Units take on an increasingly larger scale, becoming a megastructure and culminating in his Pampus Plan of 1965.

In the plan for Lage Land the 'visual units' are directly linked to the highway and as such function as autonomous urban units not connected to the polder landscape. The megastructures were separated from the geographical circumstances of the low-lying polder and the poor soil conditions. This was also the main idea and reason for Opbouw to introduce the idea of these Vertical Neighbourhoods (Schilt, 1982). The highway and these "Mammoths", as Bakema calls them, float above the polder landscape that remains in use for agriculture or recreation (Palmbloom, 1993).

The plan is reminiscent of New Babylon (1950), the life-work of architect and artist Constant Nieuwenhuys (1920-2005), known as Constant. It is a Utopian anti-capitalist city in a post-revolutionary society in which the "playing" human, *homo ludens*, can have alternative life experiences.

Picture 7.11d. Polder structure and urban plan. This sketch shows how the plan by Stam-Beese and Bakema fits the polder pattern. Part of the plan is a new water system.  
Source: HNI Archives BROX t4072

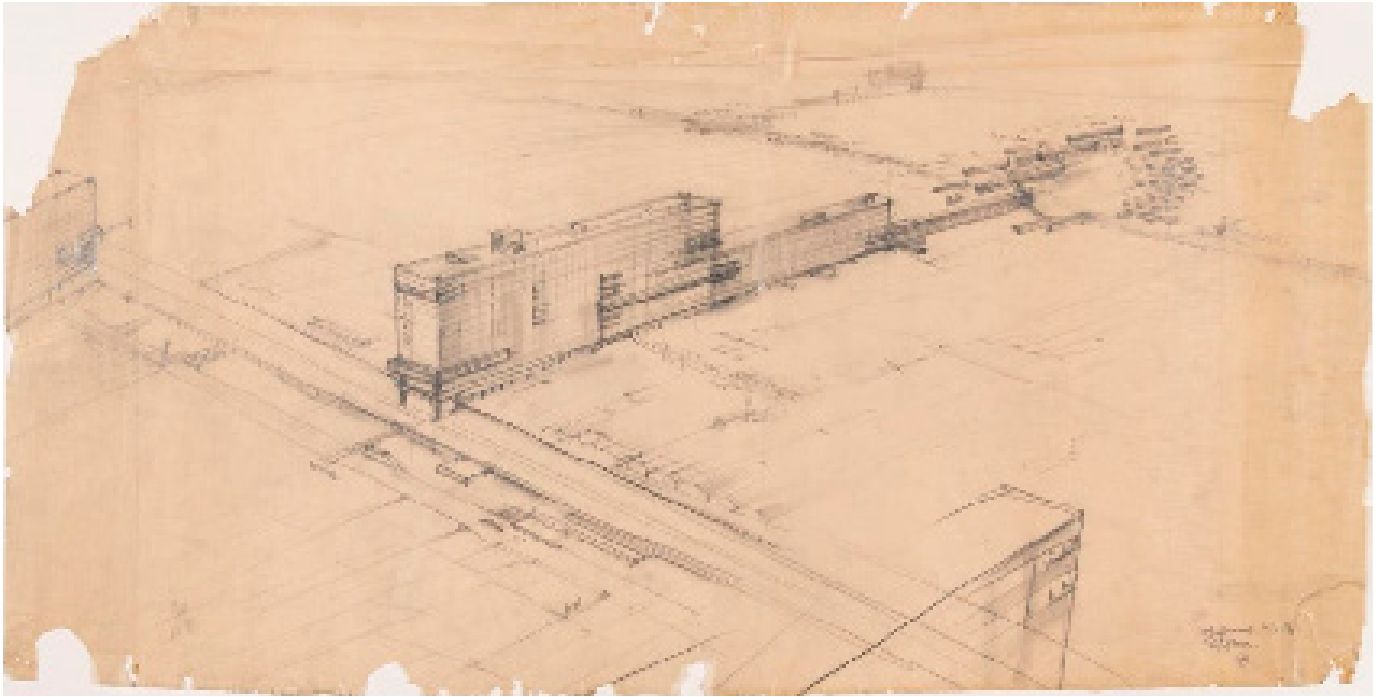


The city is a megastructure that is continuous and built up from a transformable structure containing smaller units, or even smaller cities. Constant's megastructures that are lifted and disconnected from the landscape, will literally leave the bourgeois metropolis below and is populated by *homo ludens*.

Jaap Bakema worked on this Research by Design (reflected in the series of drawings presented here), with Lotte Stam Beese, the municipal urban designer in Rotterdam. She took this research and transformed it into the actual expansion plans of the Lage Land. In the 'Samenvatting van overwegingen bij nadere doorwerking van het plan' (Summary of thoughts considering the development of the plan) Stam-Beese (1953) describes the different steps in taking the concepts of Bakema towards a concrete expansion plan, and arguments used for these steps. The sketches of the Mammoths made by Bakema were related to the housing demand and projected in different types of structures projected onto the polder structure. Important for the design study are the variants and analyses of problems and potentials by the different compositions, configurations of the element's 'core' (the sub-city). In the final plan for Lage Land (195) by Stam Beese there are two residential zones that consist of two districts of each 4000 people. In the middle there is a green belt that accommodates the core and three Mammoths for 350 families each. The dimensions (scale and positioning of the blocks) of

the new expansion are directly connected to the scale and dimensions of the surrounding landscape, the agricultural allotment, suggesting that the city can grow over the countryside in this pattern endlessly (Palmboom, 1993). Each dwelling typology (family house, apartment building and high-rise Mammoth) has a typical allotment unit, a defined character and a relation to the surroundings. The family houses are connected to a private garden, the apartment buildings to a common garden and the Mammoths to public space and the existing agricultural surroundings. The Mammoths, which free the land from private use, are only for open-minded people because they can connect to the open landscape (according to Bakema).

Bakema proposed with the same intentions the Plan Pampus (1965). The proposed water city in Amsterdam's IJ River is similarly seeking solutions for a shortage of space by taking over areas of water with a megastructure. It is quite similar to the plan by Kenzo Tange for Tokyo Bay (as you can see in the both images). These plans are interesting in that they are the ultimate expression of the *maakbaarheid* principle using the megaform as a vehicle and furthermore demonstrate total control of the polder. Pampus City was never realized, though it is the conceptual seed of IJburg that is built, as Lage land has been built with the in the background the concept of the Mammoth as megastructure.

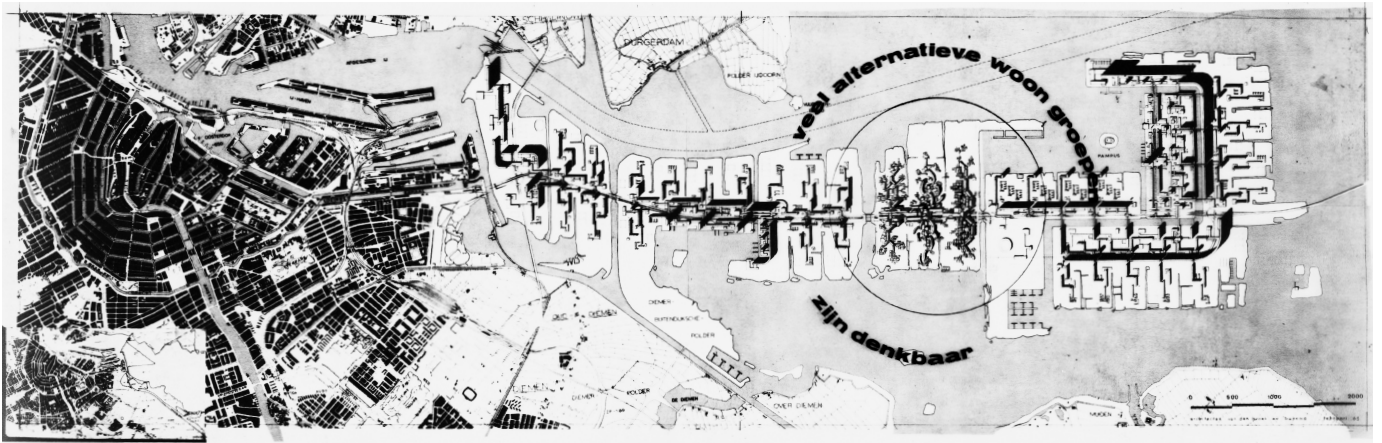


The Mammoth. Sketch by Bakema showing the principle of roads connecting Mammoths, free from the polder landscape.

Source: HNI Archives BROX t4072

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Plan Pampus 1965. Designed by Van den Broek & Bakema this water city resembles Tange's plan for Tokyo Bay, not only because of the situation in a bay but moreover the linearity of the structure.  
Source: Het Nieuwe Instituut Archives BROX t4072



Tokyo Bay by Kenzo Tange After a drawing published in Japan Architect (April 1961)  
Tange proposed a highly structured extension of Tokyo into Tokyo Bay as a linear system with many smaller centres and people living along the axis.  
Source: Akira Inodomi (1961) Kenzo Tange Tokyo Bay. Japan Architect (April 1961)

JDU is a project by Delta Urbanism Research Group and DIMI Delft Deltas, Infrastructure and Mobility Initiative Delft University of Technology

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bruno, Venice (Italy)

*Typefaces*

Union, Radim Peško, 2006  
JJannon, François Rappo, 2019

*Publisher*

TU Delft OPEN  
<https://www.tudelft.nl/library/openpublishing>

*Subscription and Printing on Demand*

Open access journal: available subscription on the journal website  
For subscriptions and any further information: [JDU-BK@tudelft.nl](mailto:JDU-BK@tudelft.nl)  
Printing on demand will be available from January 2021

*Frequency: 1 volume per year*

*Publication Funding*

TU Delft Delta, Infrastructure and Mobility Initiative

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*N.2 | Longue Durée | Project | 02*  
*Fall | Winter 2021*

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*Citation*

Hooimeijer, F. L., Deltaic Megaforms, *J. Delta Urbanism* 2(2021), [doi.org/10.7480/jdu.2.2021.6226](https://doi.org/10.7480/jdu.2.2021.6226)

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ISSN: 2666-7851  
p-ISSN 2667-3487