Habitat, Ecology and System Theory

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Habitat, Ecology and System Theory

According to the cybernetic theory of the mathematician Norbert Wiener there is no fundamental difference between networks of machines and ecological habitats. Both can be described as interactive feedback systems, in which the flow of communication enables the control of dynamic environments.

In the 1950s and 1960s this new insight contributed to a different understanding of architecture and cities as relational and system-based, an assumption that was also supported through research in the fields of anthropology and sociology. Together with the introduction of the computer and the need for buildings to accommodate computer centres, this has lead to an interest in abstract spatial configurations of interlocking geometries.

Thus, in the archive of the national collection of Dutch architecture and urban planning, one encounters an uncanny resemblance between design proposals for animal shelters in zoos and the new workspaces of a post-industrial society.

DIGITAL TRACES IN THE ARCHIVE

The selection that we present here stems from the installation ‘Animal Encounters’, which was designed and curated by Studio Ossidiana for Het Nieuwe Instituut and which was on show from 13 October 2019, until 2 February 2020. Studio Ossidiana, Giovanni Bellotti and Alessandra Covini, presented their design and material research into the staging of a variety of encounters and interactions between people and ‘other’ animals. The spatial installation presented a micro-environment of its own and was occupied by drawings, diagrams and architectural models – creature-like objects – that addressed issues of proximity, scale and cross-species politics. Ecological and environmental notions were translated into experiments with textures, niches, frames and cages to question the interrelations between humans and birds in particular.

Following Norbert Wiener, we started a parallel search in the archives of the national collection of Het Nieuwe Instituut, looking for digital traces so to speak, even before the computer would start to dominate architectural practice. Especially, Dutch Structuralism and the teachings of Aldo van Eyck and Herman Hertzberger proved fruitful sources to identify cross-links between spatial design and systems theory. Student work of Jan Verhoeven

and Joost Váhl hold wonderful examples of abstract configurations that stage encounters between humans and other animals. Diagrams of a game concept by John Habraken and others bring to light the possible impact of decision-making processes on the organisation of space and territories. Early examples of data centres, for universities and bank companies among others, demonstrate a fruitful exchange of ideas, too, which resulted in innovative architectural proposals for hitherto unknown spaces such as computer rooms.

The most intriguing archival objects are the two space boxes from the archive of the office of Van den Broek and Bakema, one for the Siemens research centre in Munich, and one for the headquarters of the AMRO bank company in Amstelveen. The two objects sit between an actual architectural model and a 3D diagram of spatial and functional relationships. With their colourful plastic and perspex units and fiches they are testimony of the playfulness of the period of early experimentation with computers in architectural design.

TOTAL SPACE

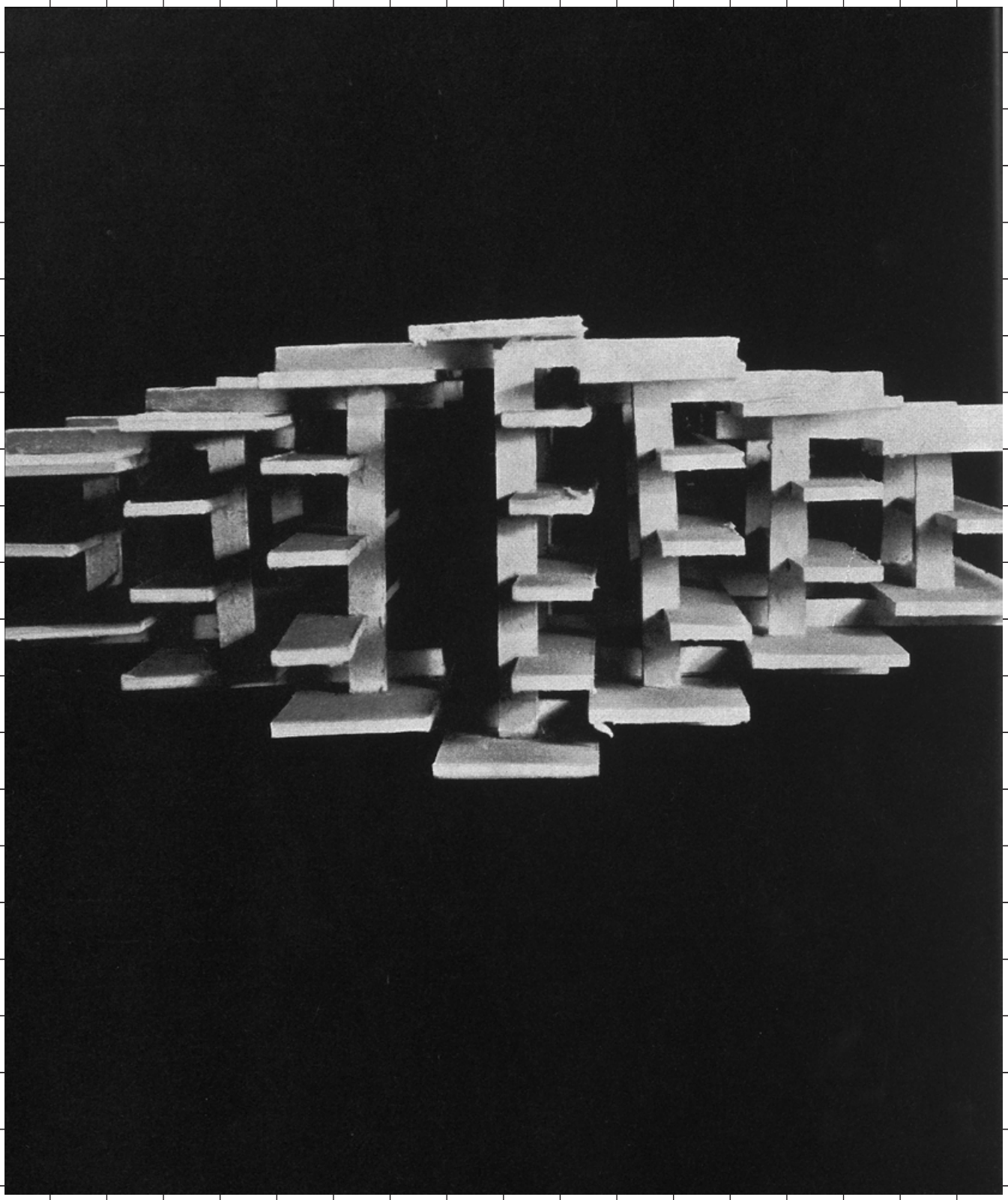
The installation ‘Animal Encounters’ and the archival research into digital traces of system theory and ecological thinking were part of the Total Space programme, a continuing series of projects of the Jaap Bakema Study Centre, which explores the interdisciplinary exchanges between the fields of architecture, urban planning, anthropology and systems theory. From the first propositions for networked cities and megastructures in the 1950s and 60s, up to developments such as smart cities and virtual territories today, the concept of a total, all-encompassing space or environment remains a recurrent motif.

The term ‘total space’ was coined by the Dutch architect Jaap Bakema (1914–1981). For him, the concept signified a relational approach to humans and their environment, implying an almost cosmological understanding of space. This relational and ecological understanding of architecture and urban planning constitutes a radical redefinition of these disciplines and their tools in a technological, but most of all cultural sense. Notions of permanence, autonomy and monumentality are eschewed while those of process, growth and chance take prominence.

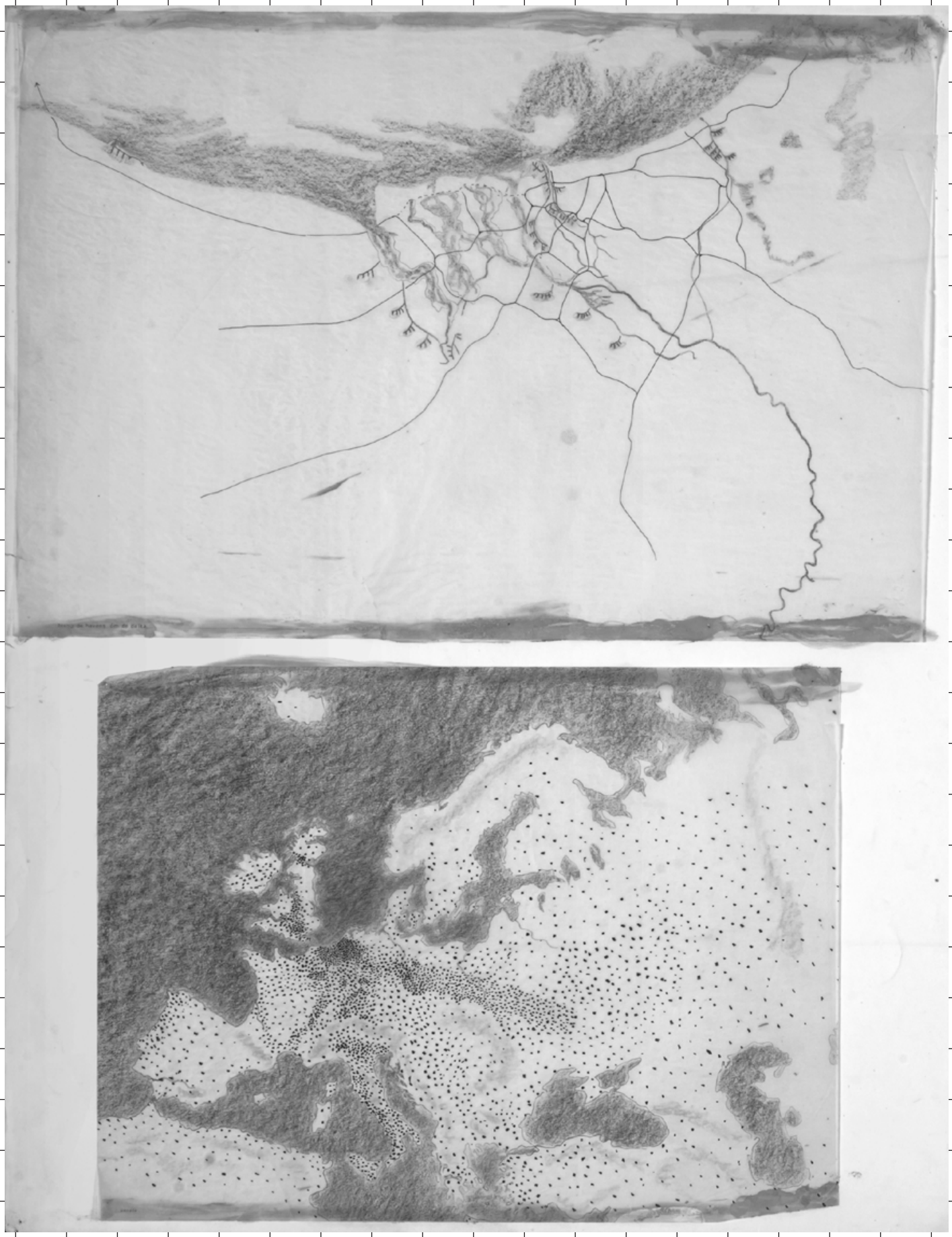
Total Space explores these far-reaching changes through a public events programme of research seminars, publications and exhibitions. The project locates and investigates important moments of cross-pollination and redefinition as embodied by the historical materials in the collection of Het Nieuwe Instituut, while questioning the nature of their epistemological and socio-cultural repercussions.

Aquarium by Jan Verhoeven, 1958, as published in Forum, nr. 2 1960–61 with assessment by Aldo van Eyck

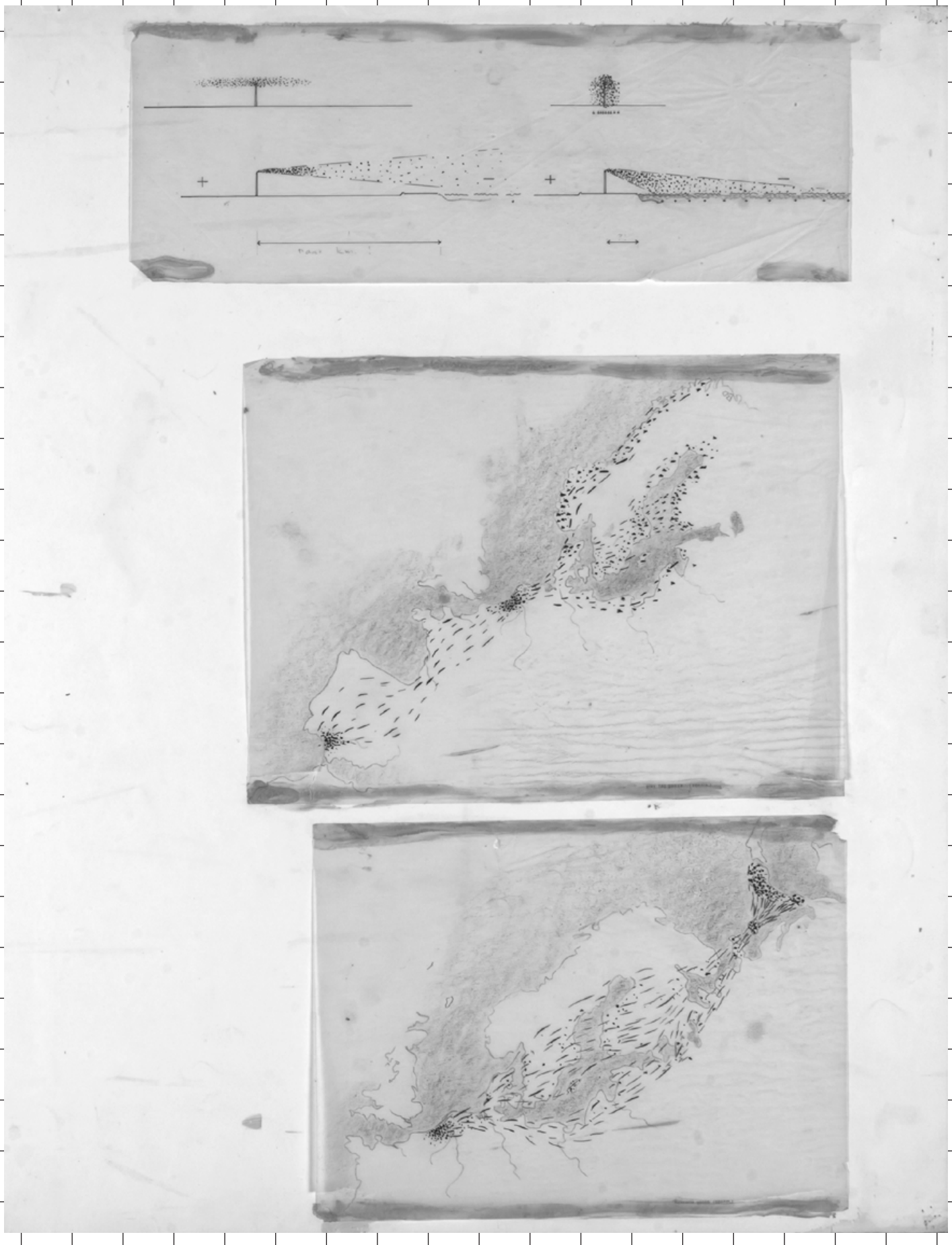
As a student Jan Verhoeven designed an aquarium, half of which was situated below sea level. Through an ingenious meandering of spaces, the human domain and the aquatic world seem to interlock. His teacher Aldo van Eyck published the design together with his own review in the Forum journal.



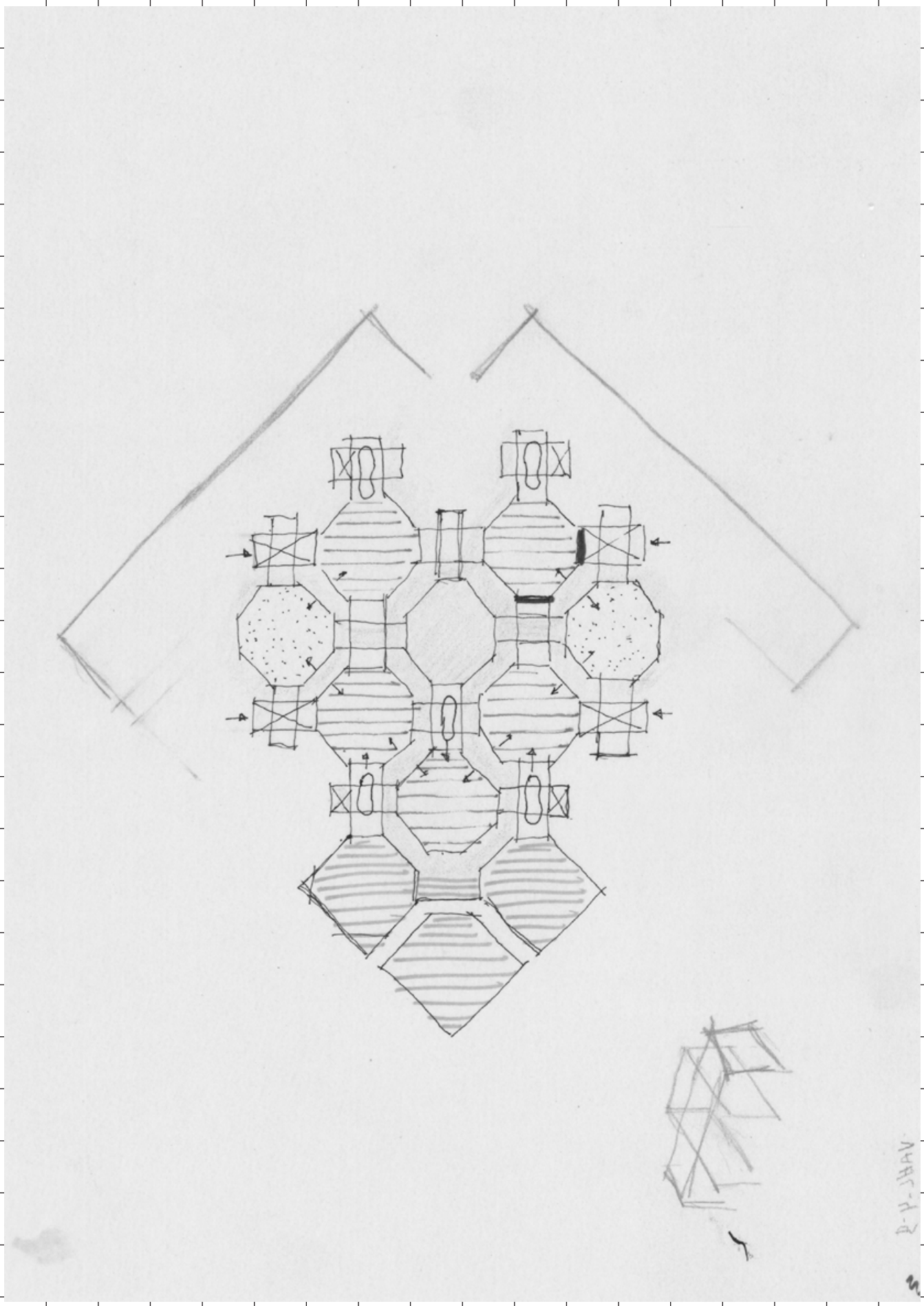
P. Gonggrijp, Europe, Delta, birds, people, industry, drawings for graduation project TH Delft, 1969. Reproduction



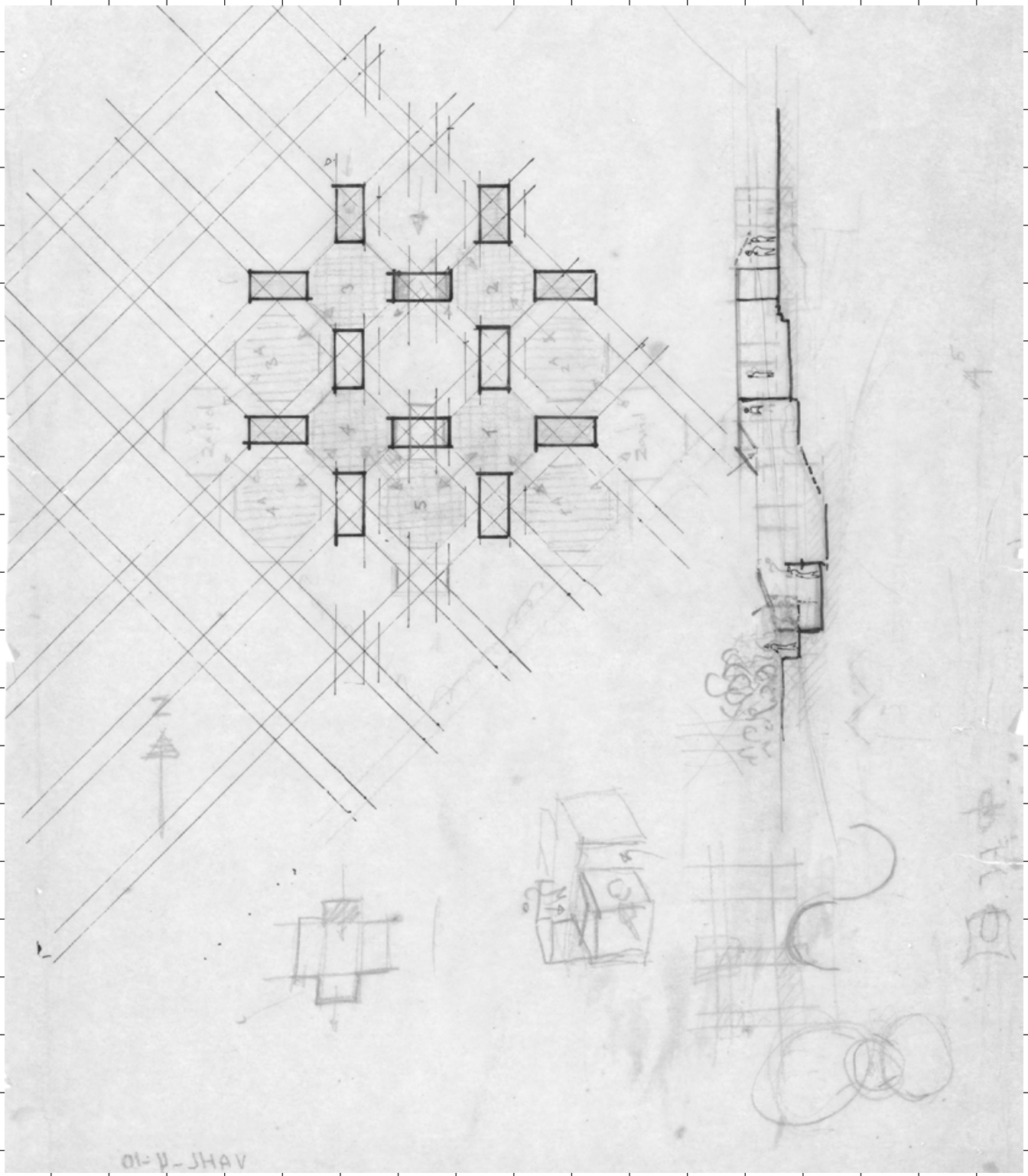
These hand-drawn maps are examples of Gonggrijp's profound analysis of the Dutch delta and its defining geological landscape formations in relation to different settlement and migration patterns. For Gonggrijp these drawings were a way to conceptualize the specific identity of the Dutch delta landscape and its inhabitants.



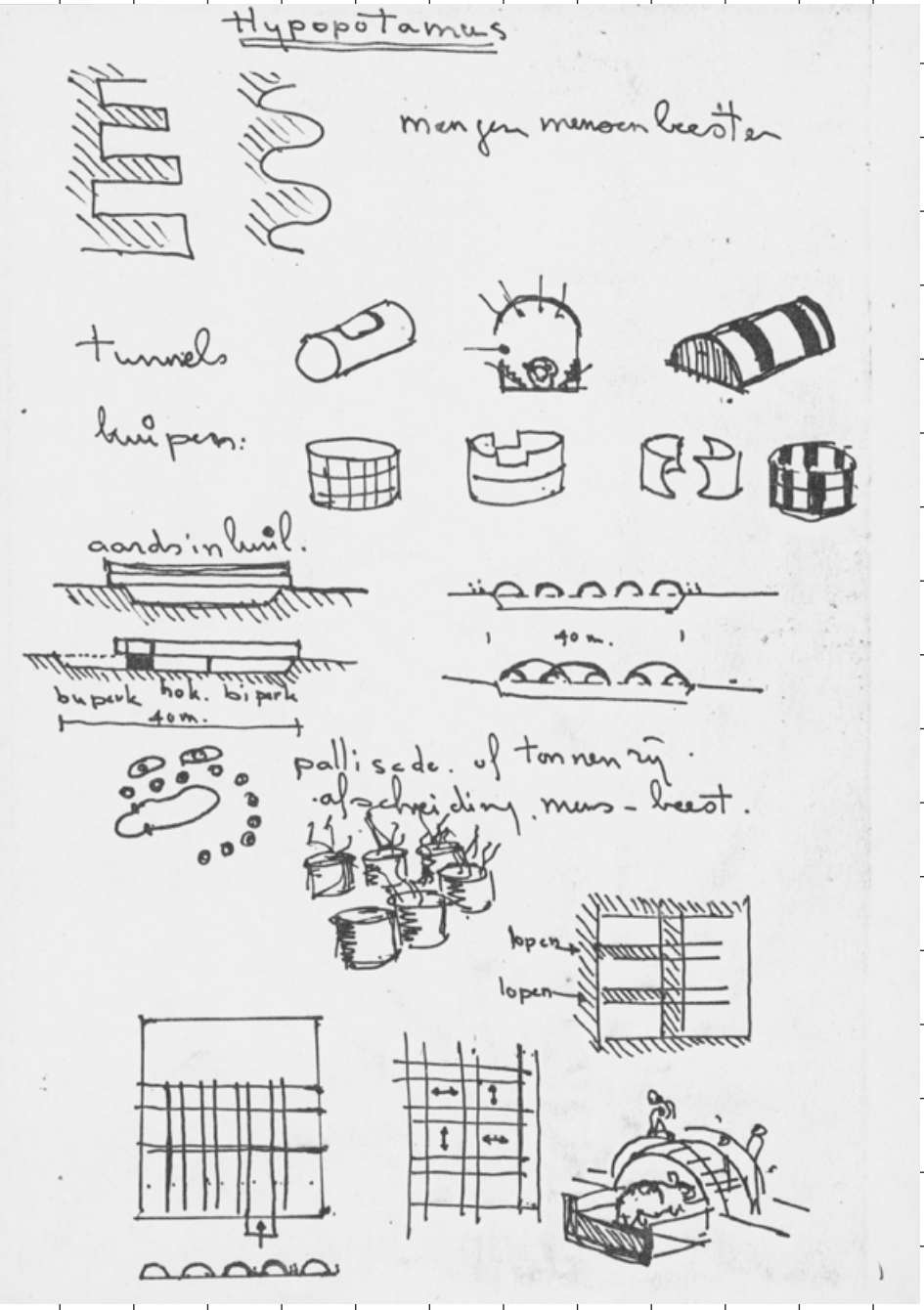
J. Váhl, Hippopotamus House, sketches of student project TH Delft, 1966



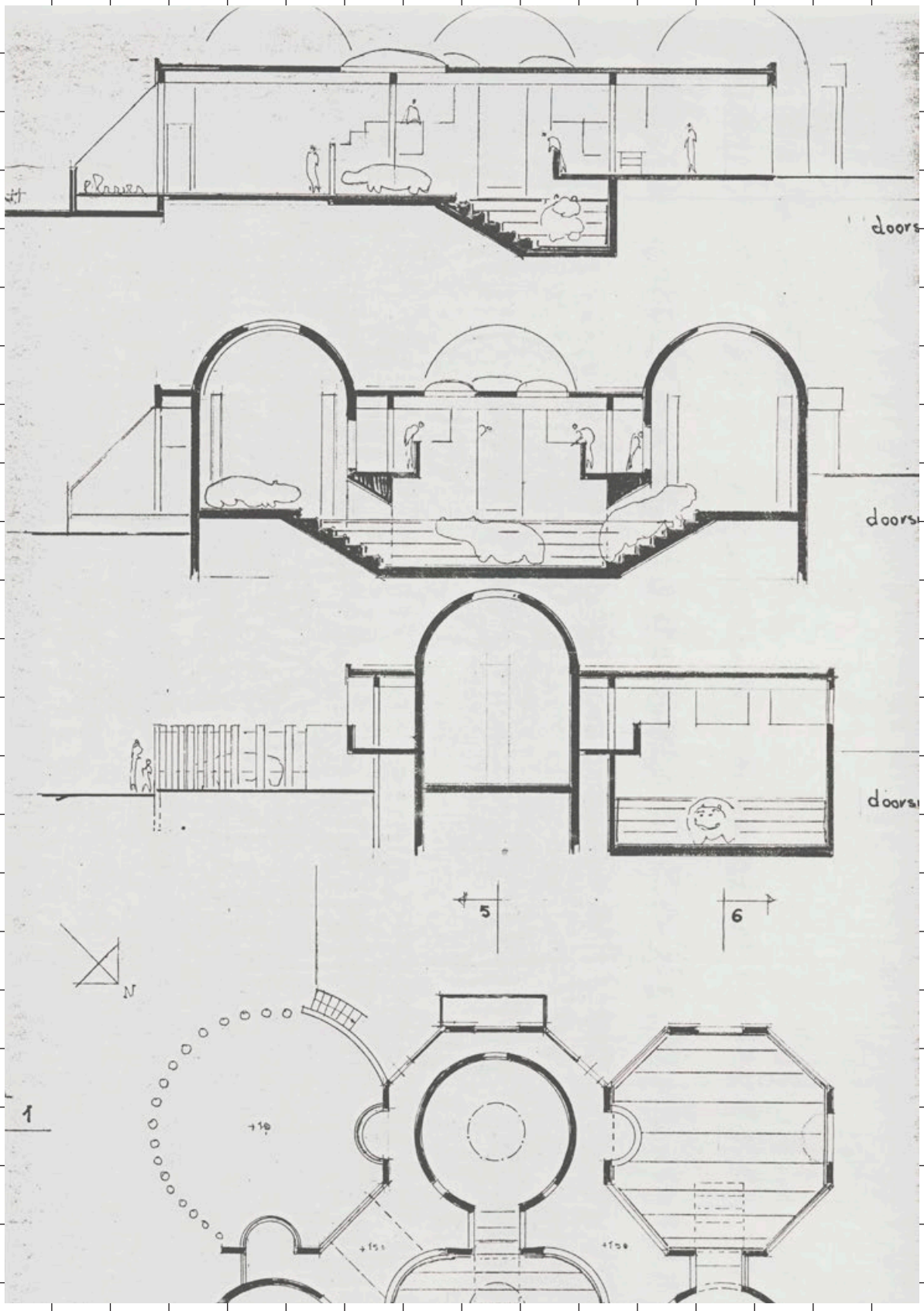
While teaching at the former TH Delft and Academie van Bouwkunst Amsterdam, Aldo van Eyck frequently challenged his students with design assignments for animals. Among the students was urban planner Joost Váhl. These sketches document Váhl's search for a solution for his idea of two intertwining spatial structures: one for humans, the other for animals. His design proposal is inspired by a Japanese pattern book from 1901, which shows a range of designs for fabric, paper and ornamentation using multiple geometric ordering systems.



J. Váhl, The Hippopotamus House, sketches and drawings of student project TH Delft, 1966



The design proposal by Joost Váhl for a hippopotamus house enables hippos and humans to observe each other and even interact; through a hole in the air-bridges, the two can carefully touch one another, and it is even possible for people to enter the hippo house.



J. Habraken, Concept Design Games: Design games for Experimentation in Design Theory and Methodology, an introductory paper, 1986–1987

CONCEPT DESIGN GAMES

Design games for Experimentation in Design Theory and Methodology.

an introductory paper.

This paper has two parts. The first is the introductory chapter to the two reports in which we give an account of our work. These two are the report proper and the 'manuals' of the games we developed.

The second part of the paper discusses a few aspects of Concept Design Games that seem of particular interest and may serve to give the reader an impression of what the games are like.

PART ONE: THE APPROACH WE TOOK.

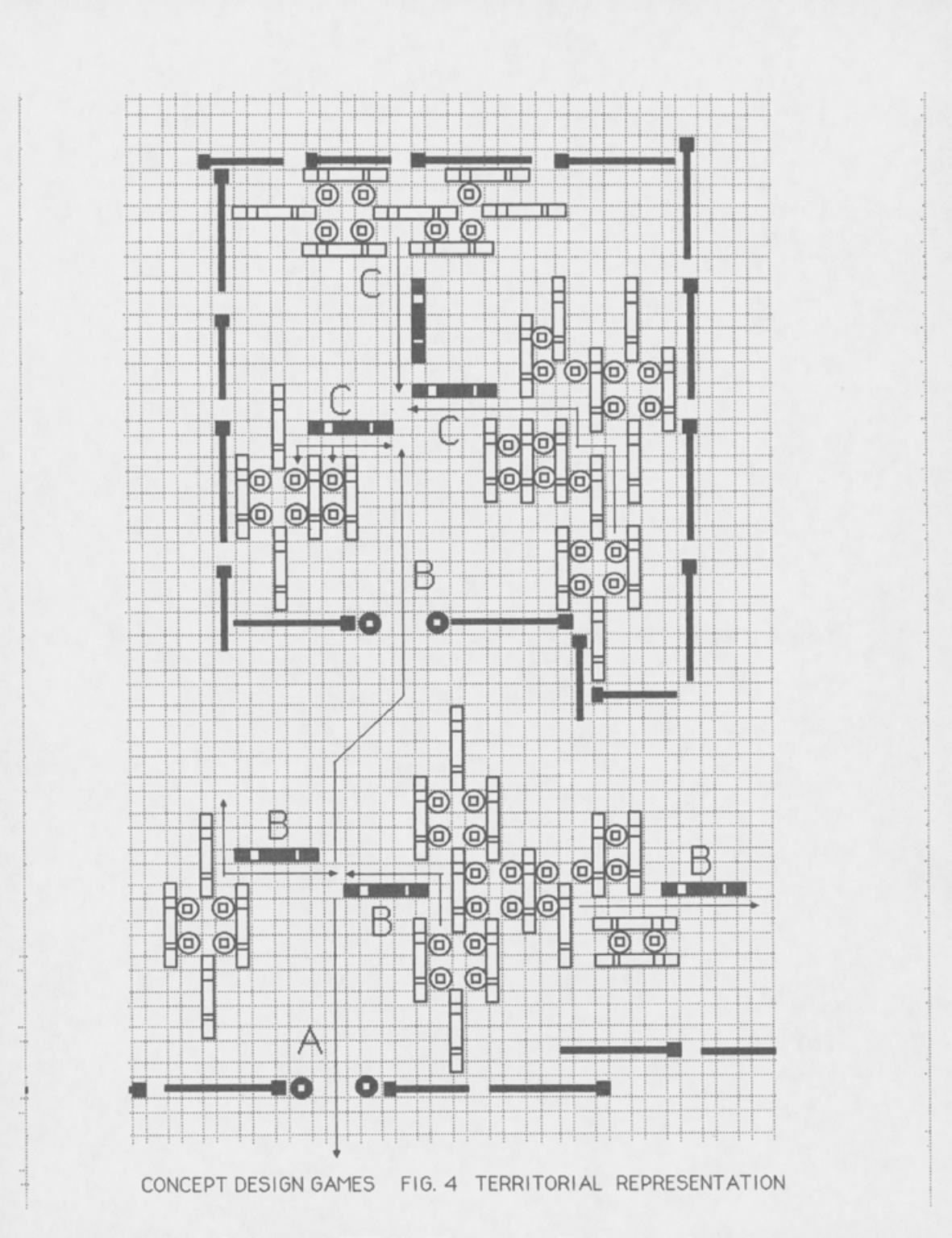
1 Architecture and problems of complexity.

Looking at games as a tool for research in design methods follows naturally the work in design methodology and theory we have done over the years.

Human settlements are complex artefacts. They are often large in scale and may extend over vast areas. They differ considerably from one culture to another. They also are used over long periods during which they can be subject to dramatic transformations.

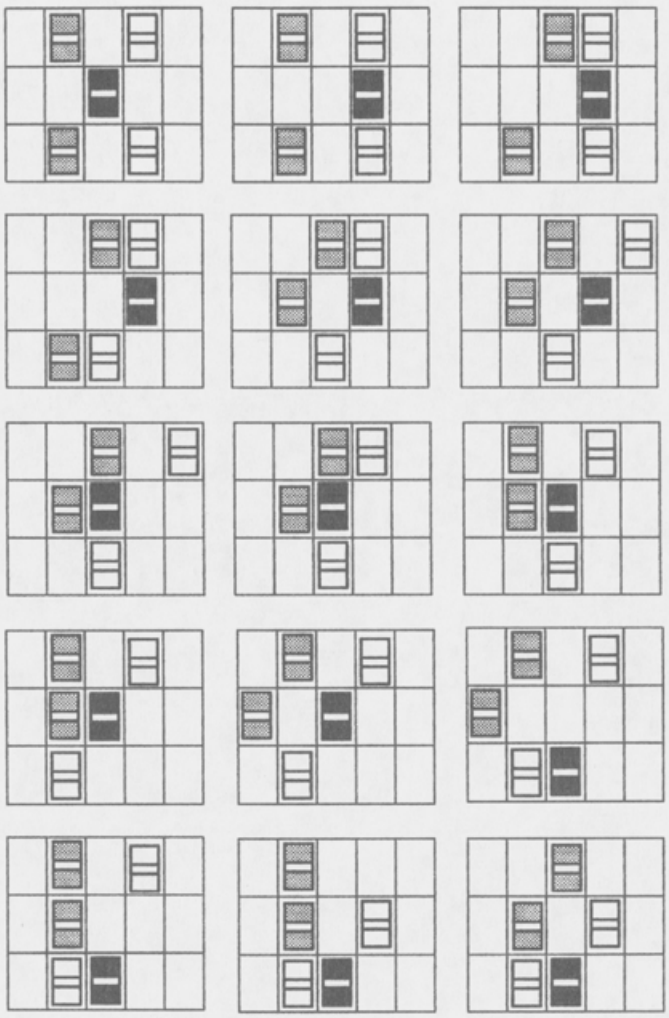
Even a single building today is a fairly complex thing. It embodies an array of subsystems: the structure, various systems of partitioning, envelopes to shield it, and systems for heating, ventilation, electricity, water, gas, and communications. It must house many and interrelated

While teaching at MIT, John Habraken developed Concept Design Games, open-ended research tools to understand how we design 'complex physical organizations', i.e. buildings. Following Habraken's view on participation design, these boardgames take the interaction of many actors into consideration. The recording scheme for all games could be manipulated by a computer.



CONCEPT DESIGN GAMES FIG. 4 TERRITORIAL REPRESENTATION

J. Habraken, Concept Design Games: Design games for Experimentation in Design Theory and Methodology, an introductory paper, 1986–1987



CONCEPT DESIGN GAMES FIG. 1 'DOMINANCE GAME'

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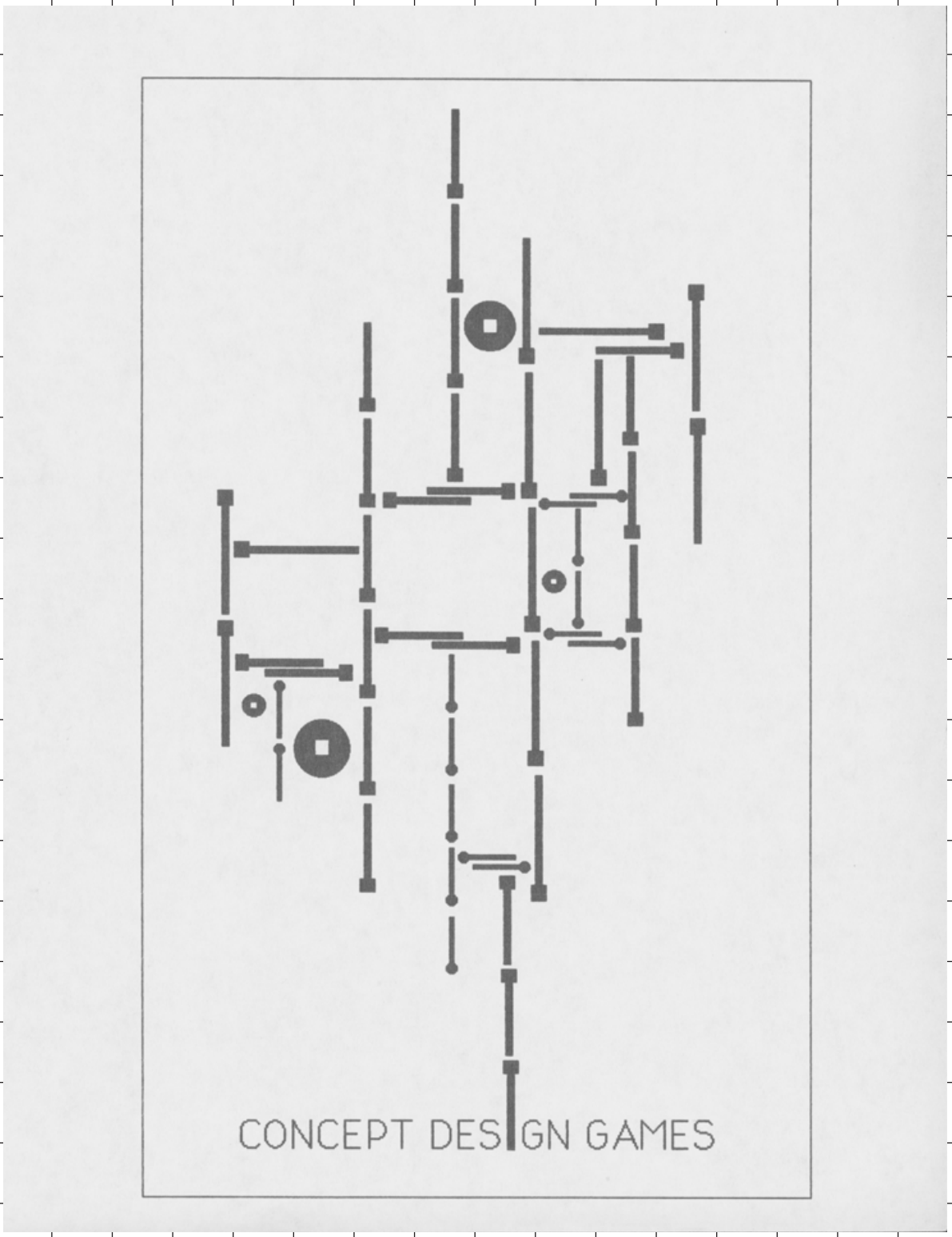
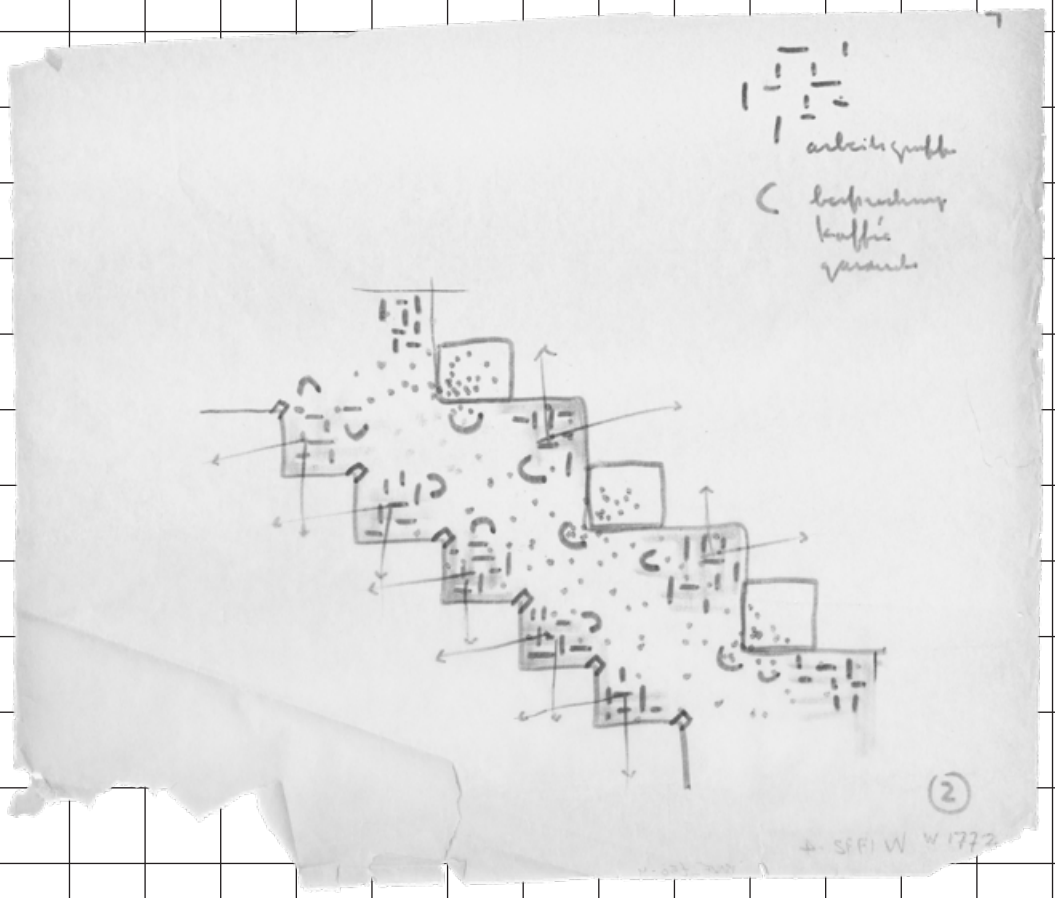
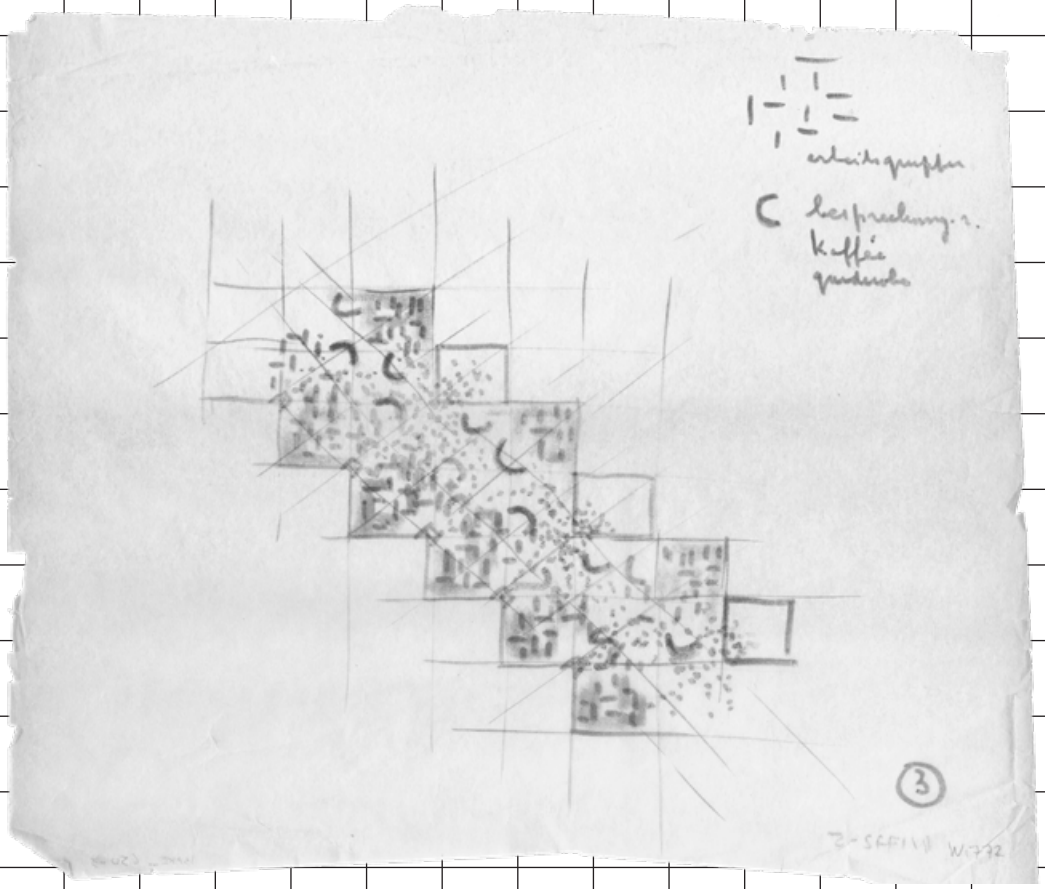


Van den Broek and Bakema, Siemens office complex München-Perlach, sketches, 1971

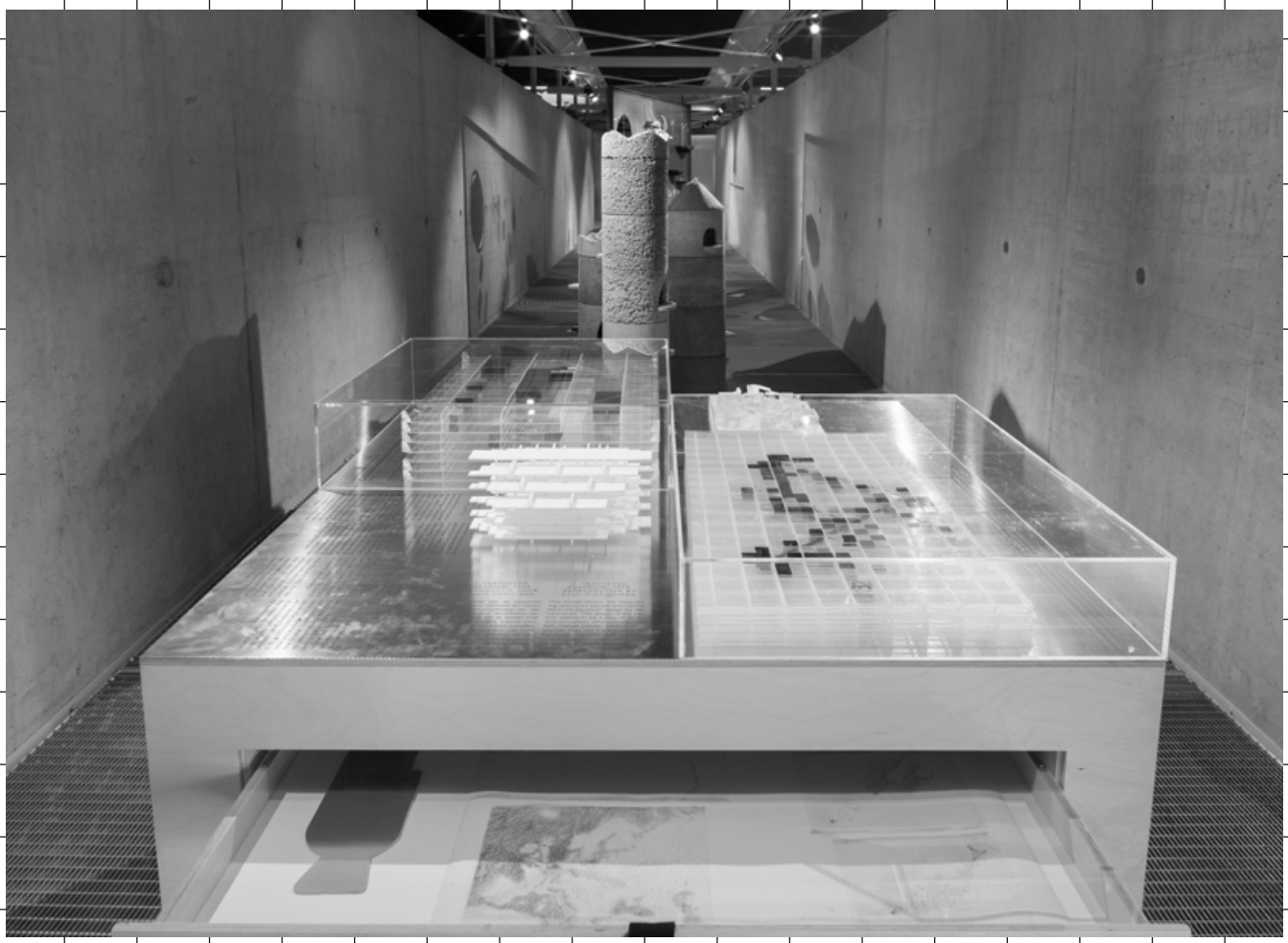


Conceptual sketches of the bürolandschaft for Siemens' new research centre and offices. The diagonal grid was developed as a programmatic organization scheme to accommodate the departments and integrate the various technical systems throughout the complex.



Right: Van den Broek and Bakema, project architect J. Boot, so-called ‘space box’ for Siemens Computer Research Centre, München-Perlach, 1972

This model can be seen as a three-dimensional diagram that communicated the programmatic organization, complexity and flexibility of the design to the clients. Each floor was represented by a transparent perspex grid that could be filled in with colour-coded fiches. The model was transportable in a custom-made suitcase. Design sketches are also on display in the drawers of this cabinet.



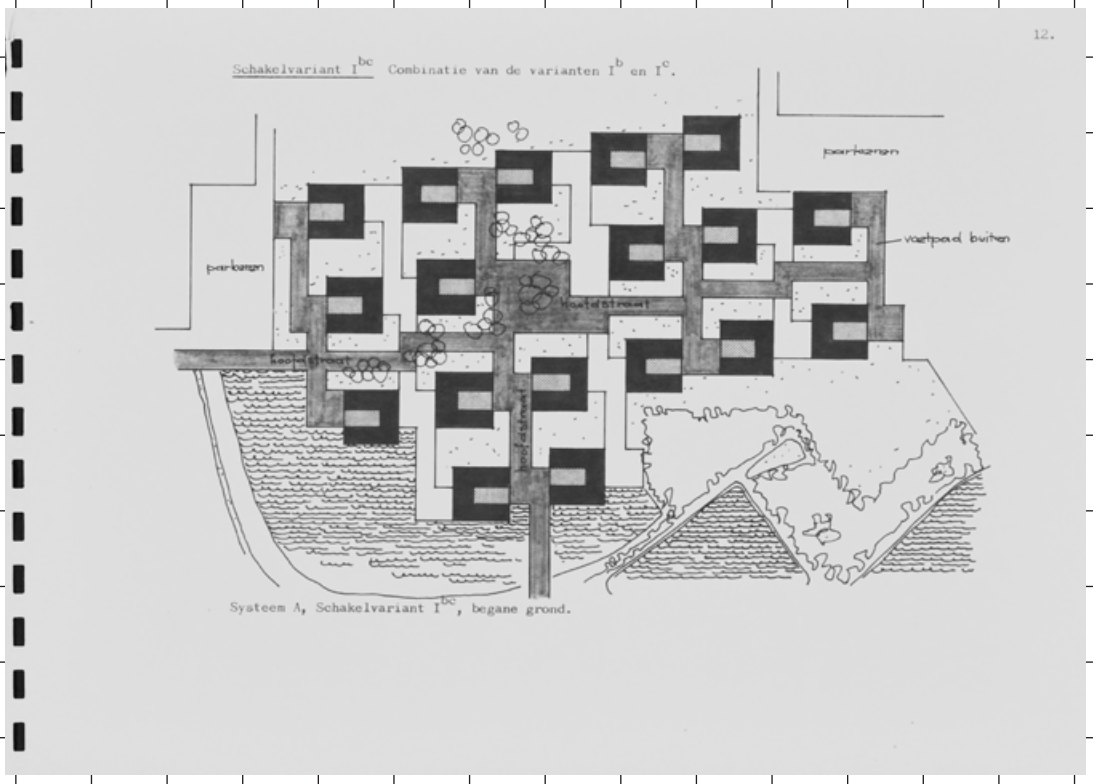
Left: Van den Broek and Bakema, project architect J. Boot, so-called ‘space box’ for Siemens Computer Research Centre, München-Perlach, 1972

Right: Van den Broek and Bakema, project architect J. Boot, Space box of computer centre and headquarters Amrobank, 1970–1973

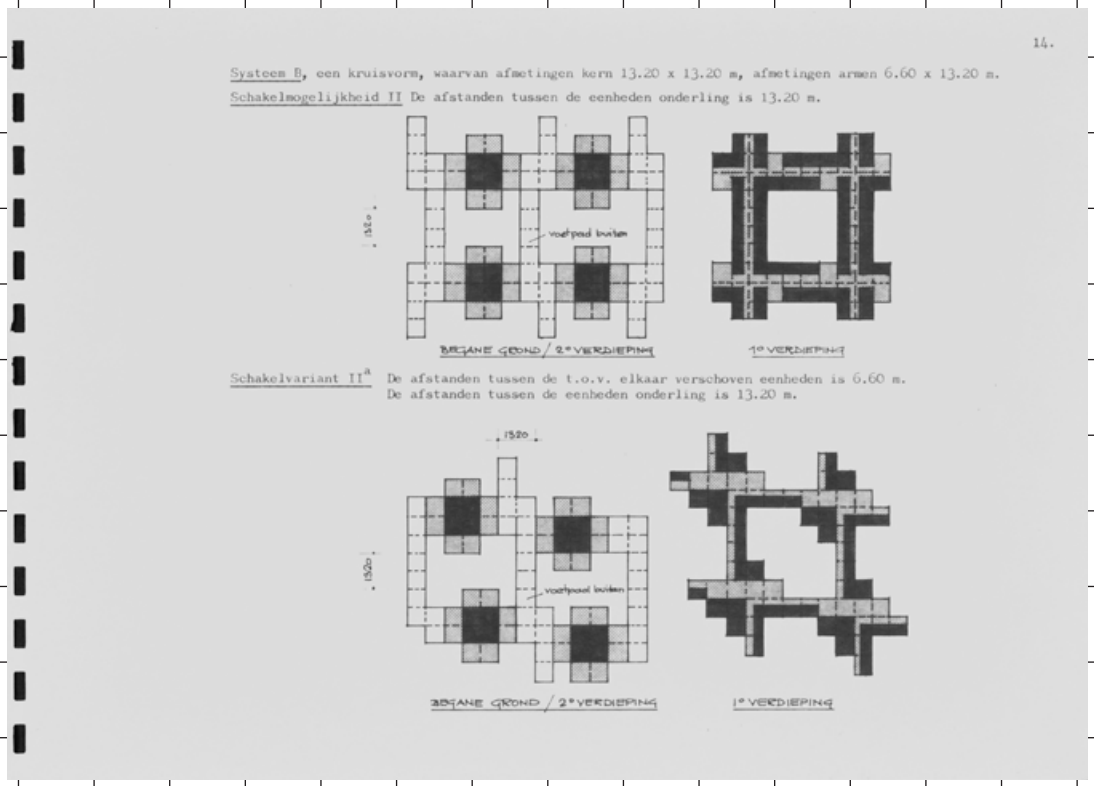
This study model consists of structural layers of transparent perspex in which separate coloured blocks can be placed. The colours indicate standardized functions of the programme. The perspex layers with blocks can be stacked into serialist compositions, showing the possible spatial configurations of the building.

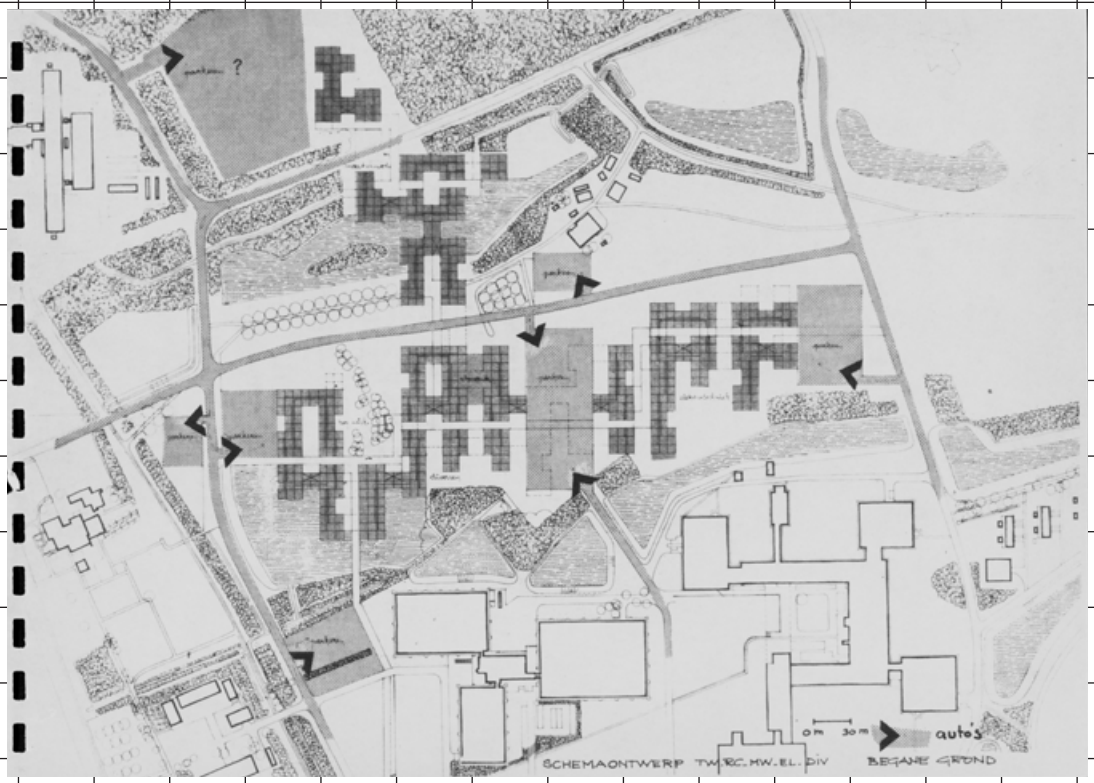
On display during *Animal Encounters*, Het Nieuwe Instituut, 13 October 2019 – 2 February 2020.

L.J. Heijdenrijk, J. Hermes, L.J. van der Stap, J. Mol, Faculty for Applied Mathematics and Computer Centre, TH Twente in Drienerlo, Enschede, 1969–1974, pages from the initial design booklet



The design for this university complex, including an early computer centre, is based on a repetitive unit combined with larger spaces for the computer and lecture rooms. The urban plan of the TH Twente university campus was devised by Sam Van Embden and Willem Van Tijen, with buildings by Piet Blom, Joop van Stigt and Herman Haan.





L.J. Heijdenrijk, J. Hermes, L.J. van der Stap, J. Mol, Faculty for Applied Mathematics and Computer Centre, TH Twente in Drienerlo, Enschede, 1969–1974, photo series by Cas Oorthuys / Nederlands Fotomuseum, Rotterdam

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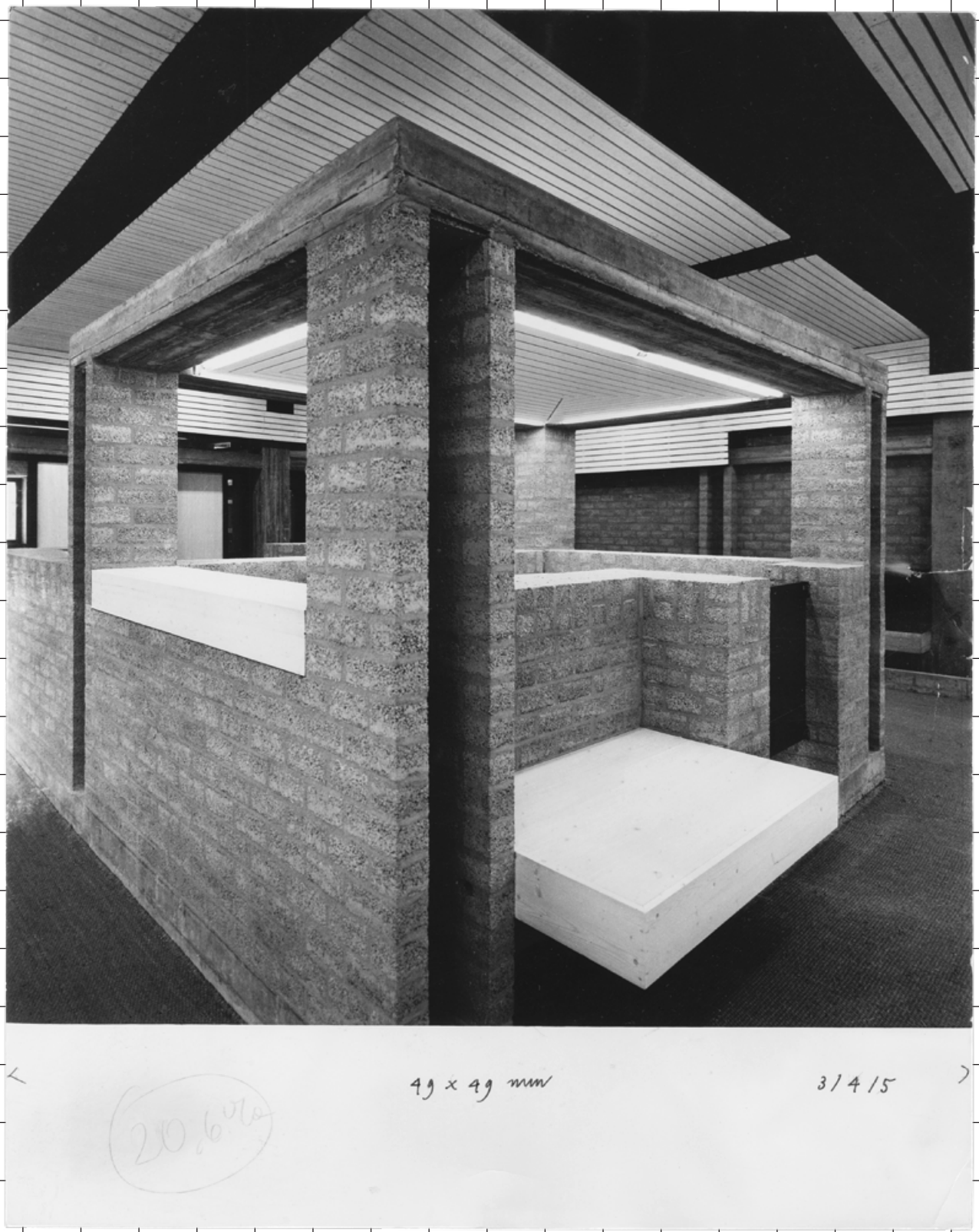

R. D. Bleeker, Bankgirocentrale Rekencentrum Algemene Bank Nederland in Leusden, exterior and interior photos, 1975

Rudi Bleeker designed numerous school buildings and offices, including several early computer centres in Breda, Amstelveen and Leusden. The robust character of these large-scale buildings is defined by sculptural facades and raw concrete prefab panels.

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Neutelings Riedijk Architecten, Competition entry for ABN-AMRO bank headquarters, Amsterdam, 1992

The model demonstrates the spatial configurations of standardized units of the bank headquarters, including the dealing room, which are manipulated into an abstract sculpture of voids and solids.