

51 DESIGNING NATURALIS IN A CHANGING CONTEXT

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51.1 INTRODUCTION

This is the report of a design process of Fons Verheijen. The report describes the design for the Naturalis Museum for natural history in the city of Leiden. Each illustration is indicating an important step in the design process.

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Two things are important to me during the beginning of the design process: the programme of requirements and the context in terms of urban architecture. I do a lot of thinking about the programme of requirements; making calculations while manipulating the numbers. I want to get the programme of requirements completely in my head: numbers, relations and square metres. The context in terms of urban architecture is studied on its material and immaterial boundary conditions. In the case of Naturalis this was particularly important, since the entire area was still lacking order. The Leiden municipality had a global plan for the area, but no further detailing.

When this first ordering is ready, the second stage starts: the sketched design. The programme of requirements does not bring me far: so much is clear when I talk to the commissioner. Often, the commissioner is someone without a lot of knowledge of building; so he can not make his wishes clear in an unambiguous way. Usually, he does not know himself as yet what he really wants. He will always present concrete pictures. I consider it to be the task of the architect to watch out during an interview for immaterial things the commissioner is saying unintentionally. The architect is making the concrete pictures of the commissioner abstract and gives them then his own form. I enjoy finding oppositions, since they are leading usually to innovative solutions. In the case of Naturalis I had to do with professional commissioners.

One of the first things I do, is to make an urban model and exercise on it with the programme of requirements. Usually there are a lot of wishes, proceeded from the context in terms of urban architecture and from the interviews with the commissioner. This can all be put in a drawing, but this drawing is then much too full and too rich; but this will get alright during the next stage, the stage of reduction. Reducing is a wonderful process. It is the slow removal of all that is superfluous, while maintaining the essentials of the requirements, wishes and thoughts that have been drawn. At some moment, all of a sudden a very beautiful structure is then coming to the fore. This requires that one should be drawing shamelessly. It means drawing endlessly, without any regard for beauty. Only when you are drawing something do you see whether something is wrong somewhere.

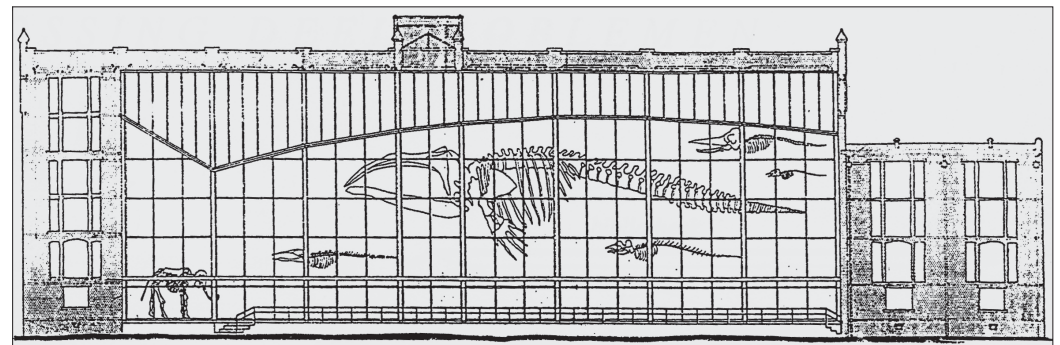
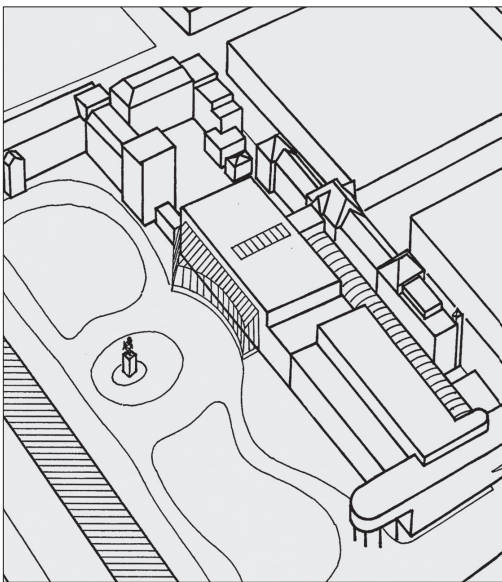
In this project the commissioner had as yet no concept of the exhibits in the building. The design of the building and the design of the exhibition went hand in hand. Therefore, communication with the commissioner was very important. By making very many models and many simple drawings it was attempted to create as many pictures as possible on which the discussion (and so the design) could go on. I never reject a first idea totally. It is always further embroidered upon. The date on which the sketched design should be ready is fixed. On the moment you are filing it, you think your design to be the work of genius. Later you think it a mess. However, it is a necessary step in getting on; for the commissioner as well as for the architect. Usually the sketched design is, as yet, less than perfect. After a while, all of a sudden discoveries are emerging. In this project there has been a number of these clairvoyant moments giving the feeling that everything was inter-locking together. Now it is a matter of erasing and making things more simple; with occasionally a sound solution for something only your subconscious self knew to be less than perfect. At a given moment in time the final

design must be ready. In the design process as a whole this is a moment selected at random. You are working towards it; but you could have been designing much longer; or perhaps even better (what should not be the case ideally).

The final design is the ‘concept’; now further work must be done on the details. These detail sketches are crucial. Bad detailing may ruin a good concept completely. Detailing is a feast. Everything ends up alright. A building will become a good building if the concept is carried into the details. So in this process there have been several ‘final’ designs. Also during this stage it is of great importance to try out all solutions in models and to preserve good communications with the commissioner.

Next to the commissioner there are many more people to reckon with during the process. For sticking to your building you have to talk endlessly. For bolstering your story you will be needing a lot of visuals: models of all kinds, but also things like cartoons and very simple pictures.

51.2 DESIGN PROCESS



491 First idea

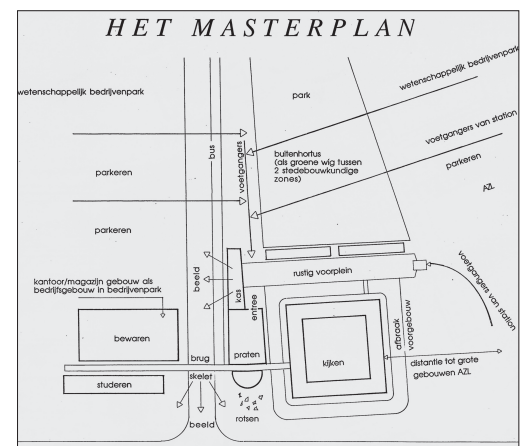
When I had restored and modernised the monumental ‘Droge Magazijn’ (1911) of the NNM, the National Museum of Natural History in Leiden, I was given the commission of the national buildings service to make a master plan with variants for the combinations and the extension of the museum buildings. Part of it was a glasshouse for storing (and exhibiting) large skeletons.

The illustrations above are a spatial drawing of the existing building with a new glasshouse and the idea of a whale floating in the air in the glasshouse that can be seen from the Van de Werff Park in Leiden.

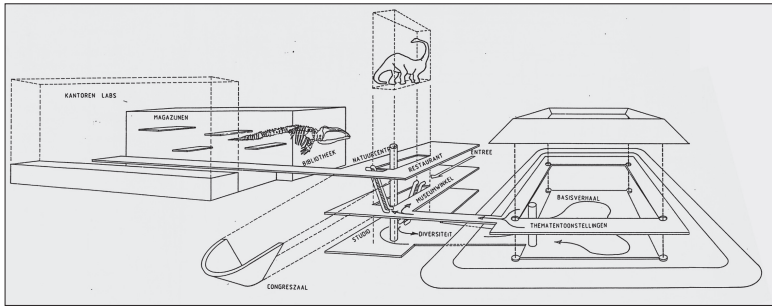


492 Twin-city vision for Leiden

There was no exhibition space included in this museum; it was a museum of just two functions: housing a collection of conserved animals and scientific study. The ‘Plague House’ in Leiden was ear-marked as the location for the new exhibition space. In olden days this Plague House was standing completely apart from the city. Now, it is starting to become totally surrounded by new buildings. For that part of Leiden no urban plan existed; there was just the idea of the twin-city. With the railway station for a centre, a new city should come into existence, next to the historical inner city. Now it was the idea to add new building to the Plague House, so that both other functions could also move to this location, transforming Naturalis into one whole.



493 Blueprint of the new building

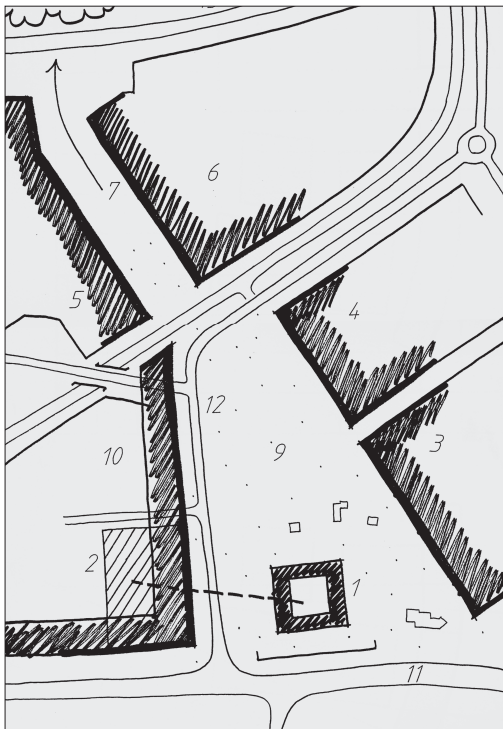


494 Spatial drawing of the new building; in it an idea for the exhibition

It was important for the new building that the new museum would get three functions: science, collection and exhibition. All three should be accommodated well in the new building. Because of conservation problems, it was decided that the old Plague House would not house collection or exhibition. Finally it was decided to go for a new building.



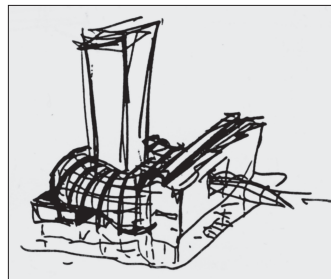
495 Workshop: all together around the model



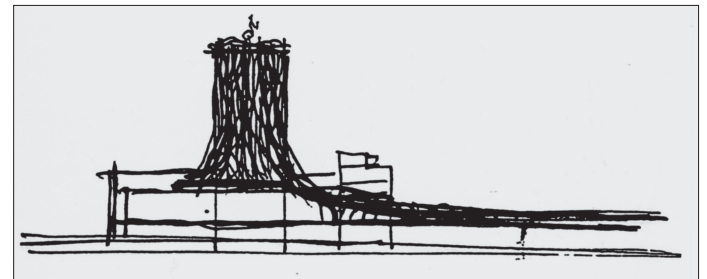
496 Urban plan

These illustrations show the plan in terms of urban architecture for leaving the Plague House area open. The museum park is also the park for the 'new city'. Form was given to this by way of a workshop with a model.

The analysis of the urban architecture resulted in the idea that the Plague House should be standing on its own with a park surrounding it. The new building would line up with the blueprint for the city.

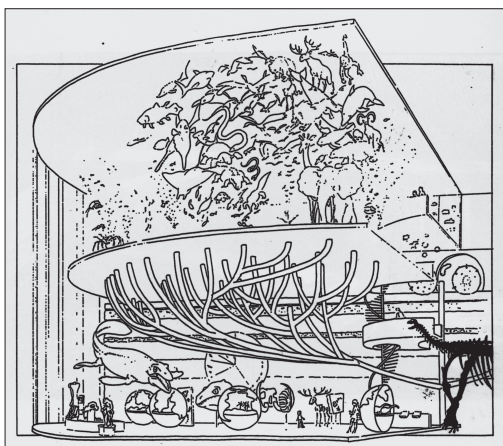


497 Tower in the middle of the building



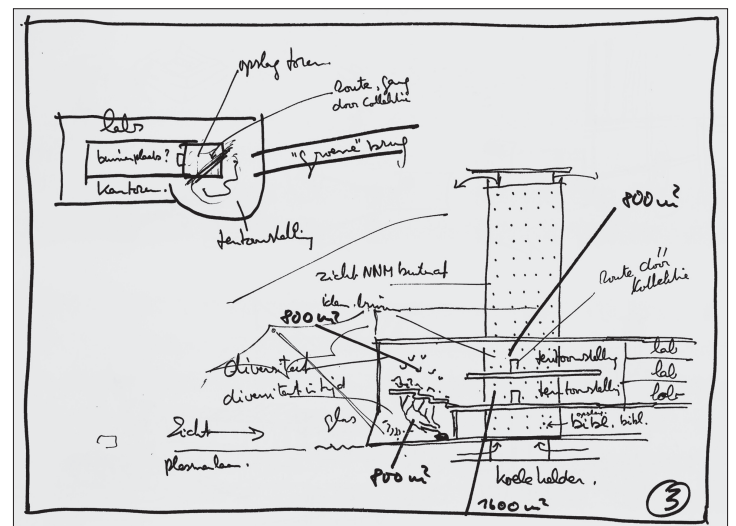
498 Through the scientific department to the collection in the tower.

The idea emerged to house the collection in a proud tower. The workshop did also show that the Plague House would also stand out better by a tower on that spot. Spatially it looked as follows: via the scientific department one arrives at the collection in the tower. The exhibition is embracing this. I made these sketches during a holiday.

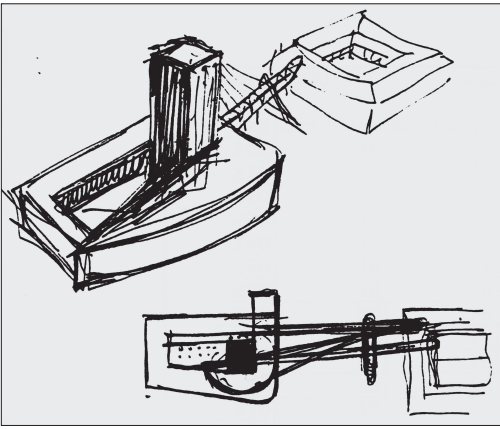


499 Exhibition concept

With the help of this picture biologists tried to explain their ideas on the exhibition.

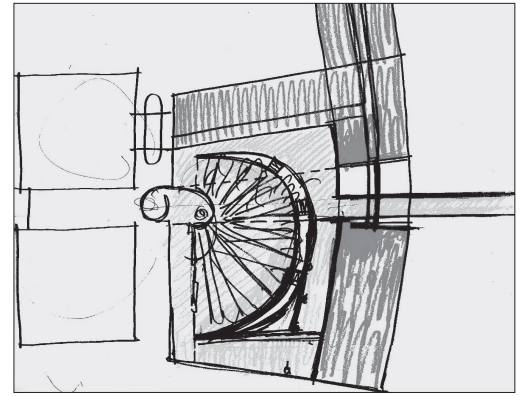


500 Aerial view and vertical cross-section



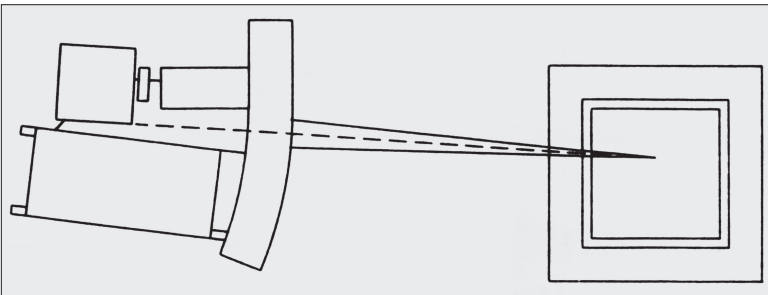
501 3D image and aerial view

Adaptation of the picture given by the biologists to the building thought out so far.



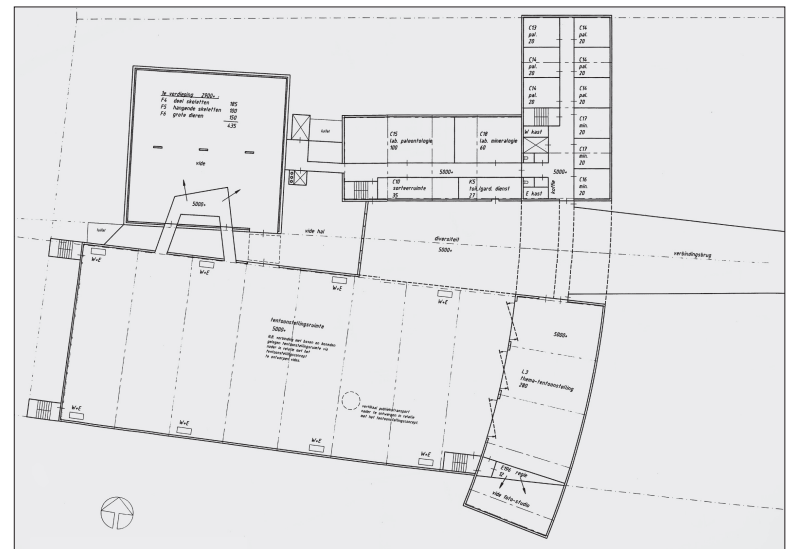
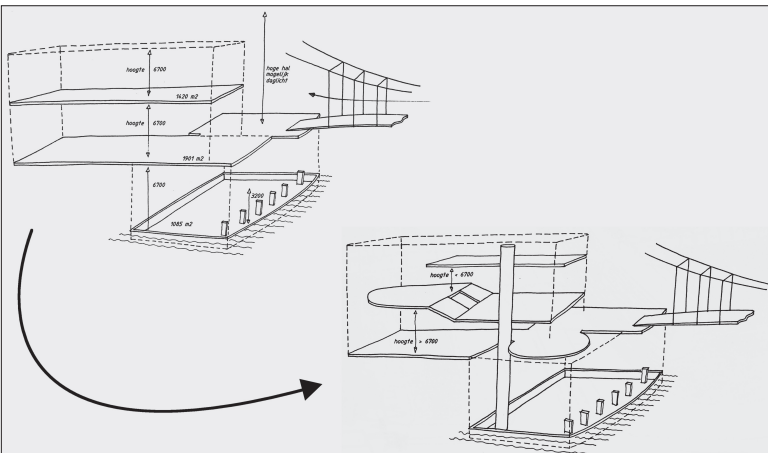
502 Test of form

This illustration represents the further working out of an idea. The major part of the idea survives: the passing through the scientific department and the exhibition space behind it, although the last two rooms have become square ones now.

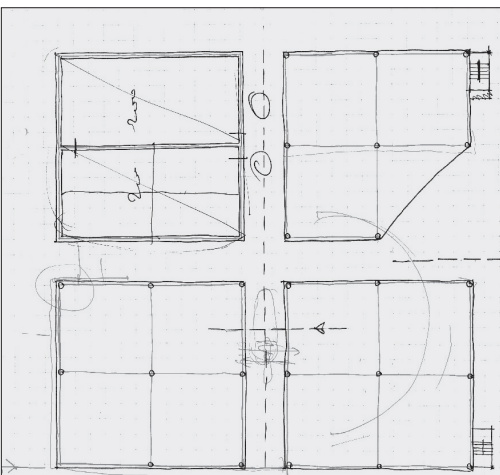


503 Blueprint

The spatial drawings indicate the spaces for the exhibition. They should be kneaded further. For the museum it now became serious to come with an exhibition concept.

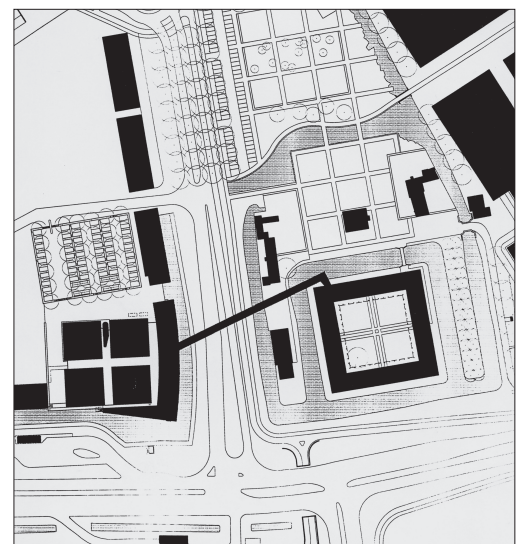


504 Blueprint from the sketched design

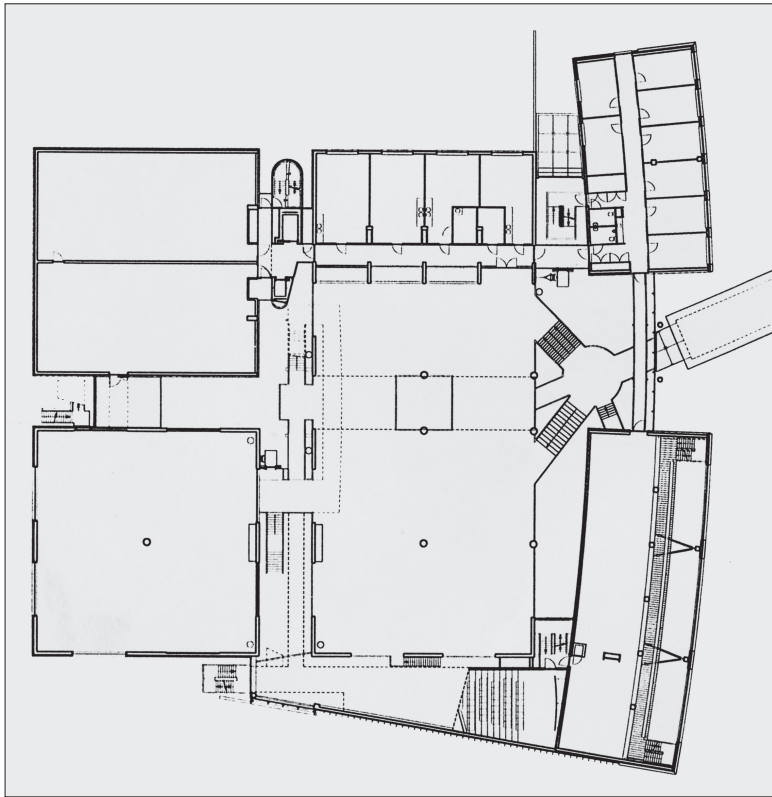


505 Timelessness

The director of the museum opposed casting the exhibition concept in stone for the building. Exhibition concepts do change in time and the building should be capable to adapt to changes like that. Finally, all wishes and ideas melted into a clear schema. The drawing represents the final stage, the last reduction: the square top-right is done simply rectangular; the diagonal is crossed out.

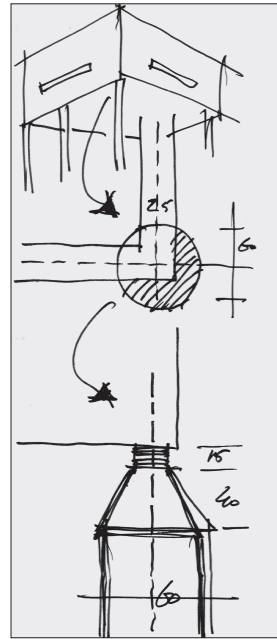


506 Urban plan



507 *Blueprint final design*

After quite an odyssey, the grid of four squares that emerged proved to match with the structure of the Plague House.



508 *Design sketch of the column*

509 *Final result*

One out of many detailing aspects: the column. The engineer calculated a column with a thickness of 60 cm. Connecting it to a wall 25 cm thick presented a problem. The solution (point of a pencil) was yielding a strengthening of the concept (floating box).



510 *Photographs of the final result*

The building is still standing out, but will become part of the urban landscape.



511 *The image of the skeleton of the whale proves to be a constant during the design process.*

51.2 LOOKING BACK

Golden moment

The simplifying of the blueprint, the way in which the zebra crossing's bridge touches the Plague House, the astronaut's suit idea for the climatic requirements within the tower and the snake's skin of the tower were the golden moments.

Impact colleagues

Particularly with connection to the models and the detailing my colleagues had significant impact on the work.

Requirement not linked to concept

A requirement not linked to the concept is that the museum is comprising three parts, not just the exhibition building. Architecturally many museums have exclusively the look of an exhibition building. In the case of Naturalis I did not want to make the elements already existing for 175 years: a scientific institute of repute and a phenomenal collection, marginal in order to glorify the exhibition department. I wanted to combine all three elements making a museum into a museum on an equal footing.

Impact of budget

The commission was characterised by high ambitions and low budgets; it was alluded to as a 'social housing museum'. However, half of the programme of requirements was earmarked for storing the collection, with a great sum budget-wise for temperature control, since the scientific collection is containing predominantly organic materials. By not conditioning the storage in the tower (20.000 m³), but in the inner skin of the outside wall (200 m³) a significant part of the budget could be transferred to the rest of the building.

Interface with the builders

For the tower clever constructions were devised: 2 x 4 social housing modules per floor.

Interface with the constructor

I think the architect should make the construction; the constructor is coaching and calculating. Understanding the principles of applied mechanics is giving the designer wings. Working a concept through into details may strengthen the concept unexpectedly. If one is a full sparring partner to the constructor, the construction can be managed; as in the case of the concrete beams under the scientific wing: I could halve them, with many fewer steel diagonals, by convincing the constructor of the merits of a different stability principle.

Significant transformation

The design process took its largest and highest flight during the intensive co-operation with the Director and the Faculty of Biology staff when the designing for the building went hand in hand with the exhibition concept. This design adventure resulted in the quadratic structure with the tower for one of the quadrants and in the split-level accumulation of the exhibition space: an unambiguous clear structure, in which the visitor may freely roam through the building in several ways, while keeping a birds eye view of the space as a whole without constraint.

Post scriptum

In a search process the moments of euphoria are delightful. Discussing the design with other people will sharpen one's concept. Responsibility for the design decisions; not just one's personal infatuation.