



## LOOKING FOR BALANCE

*The discovery of an integral approach*

*A report of the Workshop in VERIA;*

*Lecture by J. Roos, May 24 2011*

*Den Haag, June 22 2011*

**BRAAKSMA & ROOS**  
ARCHITECTENBUREAU BV



# Content

1.	Theoretical framework	5.
	Introduction: The City of Delft and the building of the Faculty of Architecture	5.
2.	The story of BK City, 'Red Chemistry	7.
	. History of the campus	7.
	. Context of the assignment	7.
	. History of Red Chemistry and its broad Value Assessment	9.
	. The development of the plan	9.
	. Do battle	11.
	. Imperfection as a source for inspiration	11.
	. Here to stay: BK-City Slim	13.
	. New Competition	13.
	. Outcomes, possible measures	15.
3.	Reflection	17.
4.	References	19.



1. Dies Natalis, TU Delft Zuidserre September 2008

# 1. Theoretical framework

## *Introduction*

For me sustainability has to do with balance, in fact active balancing. I am not an expert on sustainability, I am a curious architect at TU-Delft Faculty of Architecture looking for interesting ways to search. Like the inspector: who committed the murder, by bits and pieces, to lay the complex puzzle. I am interested in use by people to be conversed in building, re-use even more for its complexity and the interesting time-layers of predecessors. A story of use meeting history, of growing interest in our time, of culture to be handled with care and understanding.

Thus I feel not an autonomous author, I feel like a co-author with time, and I feel also the responsibility to bring further what is or was valuable and may be even place it into new perspectives. Thus, make visible what was forgotten, use its potential with the means of today and tomorrow. To make this into a success is a complex task that asks for a lot of knowledge one person can never have: time for team-work to find the balance in design between past and future in a cultural-driven way.

But not only! It should also be a balance for eco and societal drivers. Because building is about our future and the challenges we meet today are huge. The complex balancing could be compared to a sensitive neurologic system which makes our body function: the result goes without saying. For a thorough re-use applied sciences are needed for an integral approach. Very recent we constituted a department (working title hyperBmit), which deals with *technology driven design*.

Technology should be explained in terms of underpinning the design task. I would prefer to definition of technology to: "the total of processes needed in knowledge and processes resulting in products and services for societal needs". So we should leave the one-sided and hard technical side and choose for the approach in which both alpha en beta sciences processes are involved such as culture and ecology.

Ecology for me has to do with balance, now still often neglected in the design process often disturbed over the various scales, like for instance on the urban scale only where inner cities just remain as tourist's focus. Ecology is the science that matters about the balance between living organisms (people) and their environment or the mutual relationship between biological and a-biological elements on different levels of scale. This is a pretty subtle and even a nice metaphor for architecture, if you add at least social and cultural aspects.

Main question: how can we be in control in the transformation processes, to weigh and balance the social, cultural and ecological needs What are the incentives and constraints, what are the opportunities? I did an attempt for a theoretical framework on methodology in my book 'Discovering the Assignment', which resulted in a model of thought. Looking for a firm methodology, this was the outcome. Particular open for debate and further research.

## *Case-study: The City of Delft and the building for The Faculty of Architecture*

My story today is about the City of Delft and its transformation within in a timeframe of about 10 years. Three years have passed now. The focus is on the re-use on behalf of the Faculty of Architecture of a huge listed monument, caused by a major disaster: The destruction by fire overnight in 2008, of the previous modern building of The Faculty. The re-use handles about the scale of the monumental building but we will also have to go beyond its borders.

BK-City (the name of the new Faculty Building implemented in the existing building) fulfilled now in the past three years only partly the social needs and the eco-needs, and more over the cultural needs. Eco-needs and partly social needs still have to be implemented. This still is a big challenge to be met and asks for cunning, inspired and innovative/integral engineering.

It is a story about sustainability: re-using the existing building and the potential to anchor a whole community to the historical city (again). It concerns of course lots of facts and figures, but above all it concerns the process of looking for balance in the complex design task of re-use that is still going on today. (Photo 1)



5. The unique process



2. The Faculty of architecture on fire May 13 2008



3. The former Faculty of Architecture (Van de Broek en Bakema)

## 2. The Story of BK-CITY

### *History of the campus*

There was a huge fire on the 13th of May 2008. A solid and huge modernistic building was destroyed within a couple of hours. We never thought that our building was even so vulnerable, that it could vanish into thin air so soon. (Photo 2) The impact of this emergency was the beginning of a different scope on the development of the TU-Delft campus.

The University and the Faculty of Architecture were originally located in historical buildings in the City centre of Delft. At the beginning of the twentieth century the faculties of TU Delft already (also spread originally throughout the Historical City of Delft), were replaced in a new campus at the southern borders of the City center. Around 1950 the campus slowly moved further to the south, actually a total new modern campus was laid out in the 'polders'. The evacuation of the first and former campus near the City-Centre was concluded around 2005. One of the last buildings to be left was 'Red Chemistry', a large building with an urban pattern of about 30.000 square meters.

The new campus was of course a child of its time (CIAM/satellite-city), very conceptual like individual buildings on an 'empty screen'. There was great ambition at that time and the Faculty of Architecture was one of the last buildings at the far end of the campus. The architect Van de Broek en Bakema designed the building in 1968 for its purpose following the program for the school at that time. (Photo 3)

Through the years the population of students grew tremendously, and other needs evolved. New plans were designed to enlarge and refurbish the building. Also new recent plans for the campus were designed to 'compact' and change the identity of monoculture (originally only school-buildings) to multi culture mixed with other urban functions. This should result in a better social sustainability. The huge fire on 13<sup>th</sup> of May in the year 2008 ended those dreams radically, as far as the faculty of architecture was involved we thought at that time. The building could not be saved. If there had not been a fire, I can imagine that the building by the City of Delft would have been listed in the coming years as a piece of valuable heritage of modern times. Just as is happening to other buildings on the campus right now.

Within a few weeks after the fire, the board of the TU-Delft decided that the Faculty of Architecture should have a new temporary housing very soon. The solution was to use the still available building of 'Red Chemistry'. (Photo 4) In fact this building should be developed into individual houses, but the crisis that started later in the autumn of 2008 already casted its shadow in advance. The investor was willing to interfere in his development of the building, in fact I think it was the right moment for them.

This was the beginning of a development that now after three years still hasn't stopped. Not as far as the building is concerned but also: it doesn't stop at the scale of the building. I will explain to you.

### *Context of the assignment*

The context in which the assignment for the new housing of the Faculty of Architecture was developed, was quite interesting. *High speed* (original aim about a half year to design and build) was needed to have a building for at least 5 years. And, also a whole new generation of architects had to be trained. So you can understand there was a great *ambition* for the building being an outstanding example of architecture in the field re-use and inspiring environment for learning and working. So the approach had to be professional.

And, from an emergency point of view there had to be a *pragmatic* approach: the best available building on short notice was 'Red Chemistry', a huge listed *monument* in the heart of the former campus. And not only listed as a building but also in its context together with other early 20<sup>th</sup> century University buildings. So a tremendous transformation had to be handled, there was a complex task to fulfill. How to handle? (Photo 5)

Already three weeks after the fire the building started, although there was no plan yet. At that moment the client (the board of the University and its representative the dean Wytze Patijn), organized a meeting with the most important stakeholders: this meant about thirty-five people around the table. Not less than 5 architects were involved!

This was the incentive beginning of a thrilling and unique process as we called "The making of BK-City. (Photo 6)

We can actually distinguish two stages in the project: one of them has been completed and met the needs of culture and to a certain extent also social needs.

The second stage is about the rest of social needs and mainly the ecological needs. This process just started.



6. The unique process



4. The Faculty of Red Chemistry



8. Birds eye BK-City

### *The history of 'Red Chemistry' and its broad value assessment*

The building of 'Red Chemistry' was built in the twenties, at that time the largest University building in the Netherlands (30.000 m<sup>2</sup>). It was designed in an urban like pattern of nine wings and several court-yards by the state-architect van Drecht. (Photo 7) Built originally in the spatial typology of a chemical laboratory and with the rich application of red brick and natural stone, the nickname of 'Red Chemistry' was born. It never fulfilled its purpose. It was used in different ways and ended as an administrative building of the University. In 2005 the building was abandoned and plans were drawn to converse the building into an apartment building. So these plans were stopped for two reasons: world crisis and the urgent temporary need for housing for the Faculty of Architecture. It needs hardly any explanation that the plans for conversion into individual houses in a former original public building, would have taken a lot of effort and energy to execute. One can put question marks from a sustainable point of view anyhow.

But also for the design it was not an easy task. A thorough historical, technical and architectural analysis and broad (in) tangible value assessment on the diverse levels of scale and value aspects, were the basis and inspiration for the main interventions in the building. The knowledge that was gathered here, was a good contribution to very valuable conditions for the discoveries needed to design BK-City. In fact, without this knowledge of the balance between the existing and to a certain extent firm interventions, could not have been found that soon and successful.

The fact that the building has been listed as a monument, has its roots in its firm and sustainable appearance in the city and the careful design in an alteration of brick and natural stone with a keen interest in a mix of classical and Amsterdam School stylistic elements. The huge building is to a certain extent an interesting urban like pattern in the early twentieth century lay-out of the former campus. (Photo 8)

### *The development of the plan*

Pragmatism, enthusiasm, inspiration, emergency-management, participation of many stakeholders, much knowledge and capability that could be applied, were the underpinning conditions for rather precise planning. The complexity and high speed of the execution, asked for a skillful team.

The choice that was made for five architects was maybe the most peculiar one. Many hands of course make the work lighter, but this was not the main reason. As we experienced, the intense workshops helped us to sharpen our starting points and concepts.

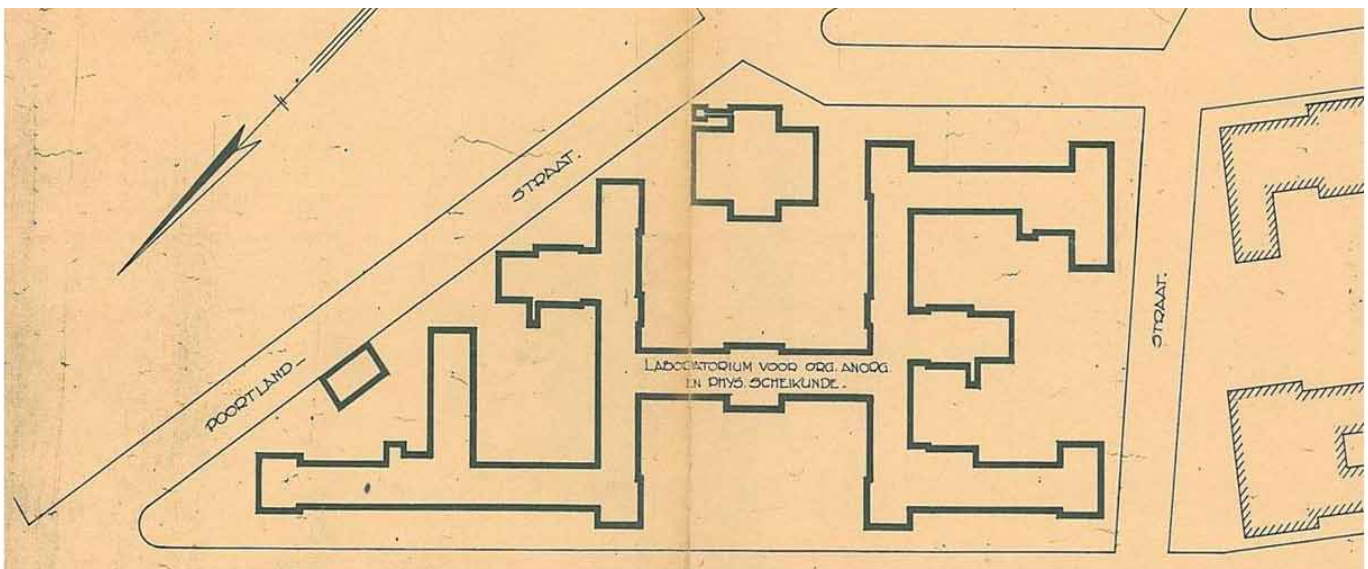
As a matter of fact the client organized its own criticism in an intellectual way, one might conclude after all. We went much further than aesthetics and conceptual sketches and theoretical debates and hobbyhorses riding. We were forced to deliver for our own community, we could not fail. So on one hand the experience of the new Faculty as a living organism was at stake, on the other we were aware we should take history very seriously. The integral approach was forced upon us and we liked it.

By May 2009 the new temporary Faculty Building was realized. About 35.000 m<sup>2</sup> (biggest faculty building with 3000 students and around 1000 staff members) living/vivid University community was realized at the other end of the University Campus, close to the historical City of Delft

*In December 2008 the results of a competition for a definite new faculty building between 450 architects, was exhibited and were announced. In fact three plans ended as the most successful: An 'icon' (sustainable and innovative) on the position of the former faculty building, a building as a linear connector 'all over the campus' (urban), and a continuation of BK-City. (re-use)*



9. Front facade, a very large classical Dutch building



7. Situation Julianalaan, by Drecht

## *Do Battle*

Because of the unorthodox process, the thinking about the re-use of the 'Red-Chemistry' building should be very contextual in the broadest sense of the word. Great concepts that were not focused on the integral approach, were doomed to fail. The difference in identity with the former modern faculty building was immense: a building that had been designed as a perfect architectural object on the campus, thirteen stories high, closely related to educational methods at that time and very much 'divided'.

'Red Chemistry' was different, but with about the same numbers in square meters just too small for its new function. The identity of the building is more related to an urban structure with open courtyards than a building. A vast surface in three stories, guileless in its urban lay-out because of unfortunate landownership in the twenties of the last century.

A very large classical Dutch building, (Photo 9) also influenced by Amsterdam School style elements. It was composed of red brick and natural stone building at that time, with low attention for an overall spatial quality in its lay-out: 1 kilometer of corridor for instance and because of the imperfect/ irregular shape of the building somewhat confusing for its visitors to orientate themselves. (Photo 10, 11)

In the understanding of the meaning of the lay-out of the building, as an historical 'urban structure', its historical imperfectness, its ability to facilitate a new community on a horizontal basis now and the notion of the new program, the discovery of the assignment could be done. 'All knowledge in advance' because of the former cultural historical value assessment was of great help. A master plan emerged which we called 'BK-CITY'.

In the terminology 'BK-CITY', the essence is revealed. The introduction of a new public infra-structure consisting of street(s) and glass-covered squares, the potential of the building could be used, enhanced and intertwined in a self evident manner. (Photo 12) This public structure had always been the missing link, and now the somewhat dull and uninspired building could reveal its hidden beauty. The BK-community meets each other on a regular basis in this vital urban and connecting structure. The social-cultural change towards the former modern housing of the Faculty of Architecture is obvious.

## *Imperfection as resource for inspiration*

The 5 architects that worked on the design of 'BK-City', made use of the 'knowledge in advance': they used it as a guideline; they also enhanced the new 'urban structure' of the building, as this was the main 'discovery of the assignment'.

The effect of several architects designing upon the same building was amazing. The existing and eclectic Dutch classical building was actually rather boring than thrilling from an experience point of view. The master plan facilitated a different perspective on the building-structure: a world of different places, colors and atmospheres could be developed within the firm structure of the master plan.

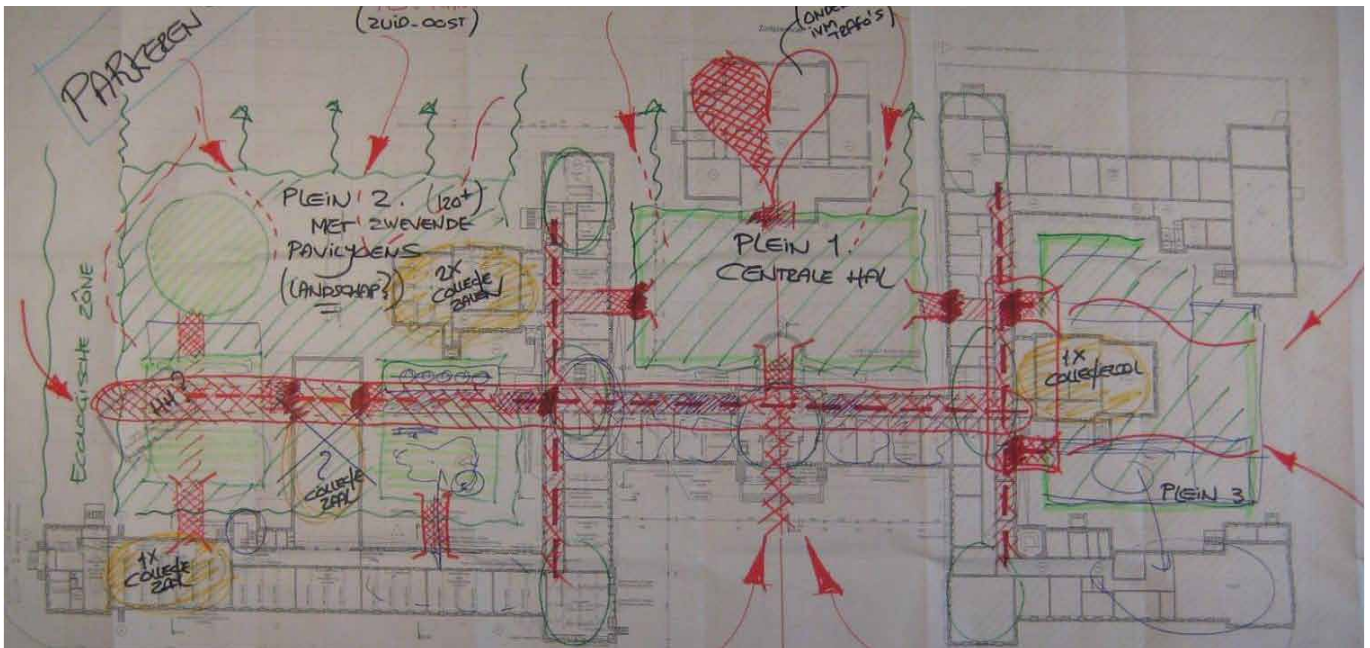
The five different architects (from very conceptual tot contextual) designed a coherent plan. There was a sharp debate and the interventions and refurbishment were all done within the context of the value assessment and the assignment. The original 'DNA' of the building was an important starting point.

Facilitated and inspired by the work that was executed by the builders almost at the same time we made the designs, the important theme of imperfection became a leading motive.

Taking out all artificial ceilings for instance and adjusting the technical structure with spatial new passages, the building emerged on one hand as a strong sustainable structure, on the other one could feel the imperfection seeing the building 'naked'.

One could experience the strong structure for instance already in the 'skin', the elevations, designed in a thorough balanced application of brick and the firm use of natural stone. The application of natural stone in the elevations itself can be observed in varieties of articulation of the architecture (window frames, lintels and cornices in Weibener and Ettringer tuff), the decoration (for instance the ceramic moldings for ventilation) and the plinth of the building in pink granite.

The imperfection now could be sensed in reading the building's interior in its structural outfits without almost any upholstery. (Photo 13) Actually at the start of the refurbishment we left the building from a pragmatic point of view 'unfinished', we didn't spend energy on it. Together with all the new visible infrastructure of technical installations, the reinterpretation of the original idea of a Laboratory Building emerged in a strong informal atmosphere. (Photo 14,15) In the end we hardly did upholster the building. Together with the very precise influence of the 5 architects, this resulted in something different than the original building and at the same time we remained very close to its original identity.



12. Draft Concept of 'the Street'



10. Lecture room



11. Hall



13. Redevelopment of het Ketelhuis as restaurant

(Photo 16, 17) In many ways the building can be experienced as an 'education permanent'; students can 'read' the structure, the history and at the same time sense every day the meaning of the intervention that could gain quality from a process that facilitated an integral and multidisciplinary approach.

Is this a Dutch approach? To some extent yes, it is hard for us to answer. We experienced the making of BK-CITY (also driven by the emergency and high speed), as something refreshing and an opening to new ways of thinking of connecting the future to the past.

### *BK-City Slim*

(Photo 18)

Already before the community of the Faculty of Architecture started to use the building, there was the idea of making the building the permanent housing for the Faculty. Of course much money was spent (almost 60 million euro's), but particularly the very special atmosphere in the building was very attractive to its new 'owners', students and staff.

The former iconic competition for a new building was still there but no longer of importance. In fact this building had become the icon, an 'icon of re-use', and from a social point of view very topical; because re-use undergoes a firm stimulus by Dutch Government today.

Peculiar detail that at the same time this Government, who funded originally 25 million euro's for an architectural icon for a new building, withdrew this offer. Since no longer this icon was purchased. The acknowledgement that re-use also is a complex and topical architectural skill, that still has to be gained here, is more or less shocking.

Maybe the fact that now in 2011 two serious prizes were awarded to BK-CITY may help: the Europa-Nostra prize in the field of conservation and the nomination for Dutch Renovation Award, both in June 2011.

As was stated before: in the process of the making of BK-CITY not all needs could be fulfilled within the severe constraints in time. Especially ecological needs and partly social needed do still have to be gained.

The first motives were pragmatic:

- Measures for energy reduction (CO2- neutral)
- Combination of these measures with the necessary maintenance
- To implement a better and sustainable use of the building  
(Still small extensions needed)

But of course inspired by the success of BK-CITY, there should be more ambition. As a Faculty of Architecture (education and research institute) we should use and enlarge our own knowledge here, make the building an example/landmark and icon for sustainability. Not just the energy-aspects but more-over the broad perception of sustainability, the innovative and inspired engineering should be enhanced and implemented.

But there is also some jeopardizing this ambitious project, caused by a financial crisis at Dutch Universities. Budgets for the coming years haven't been reduced dramatically, and we know that for the real ecological plans economical payback on short is not the most important feature. It did not stop us until now to proceed on the project. The first step was a competition for thorough integral designing: a competition was organized

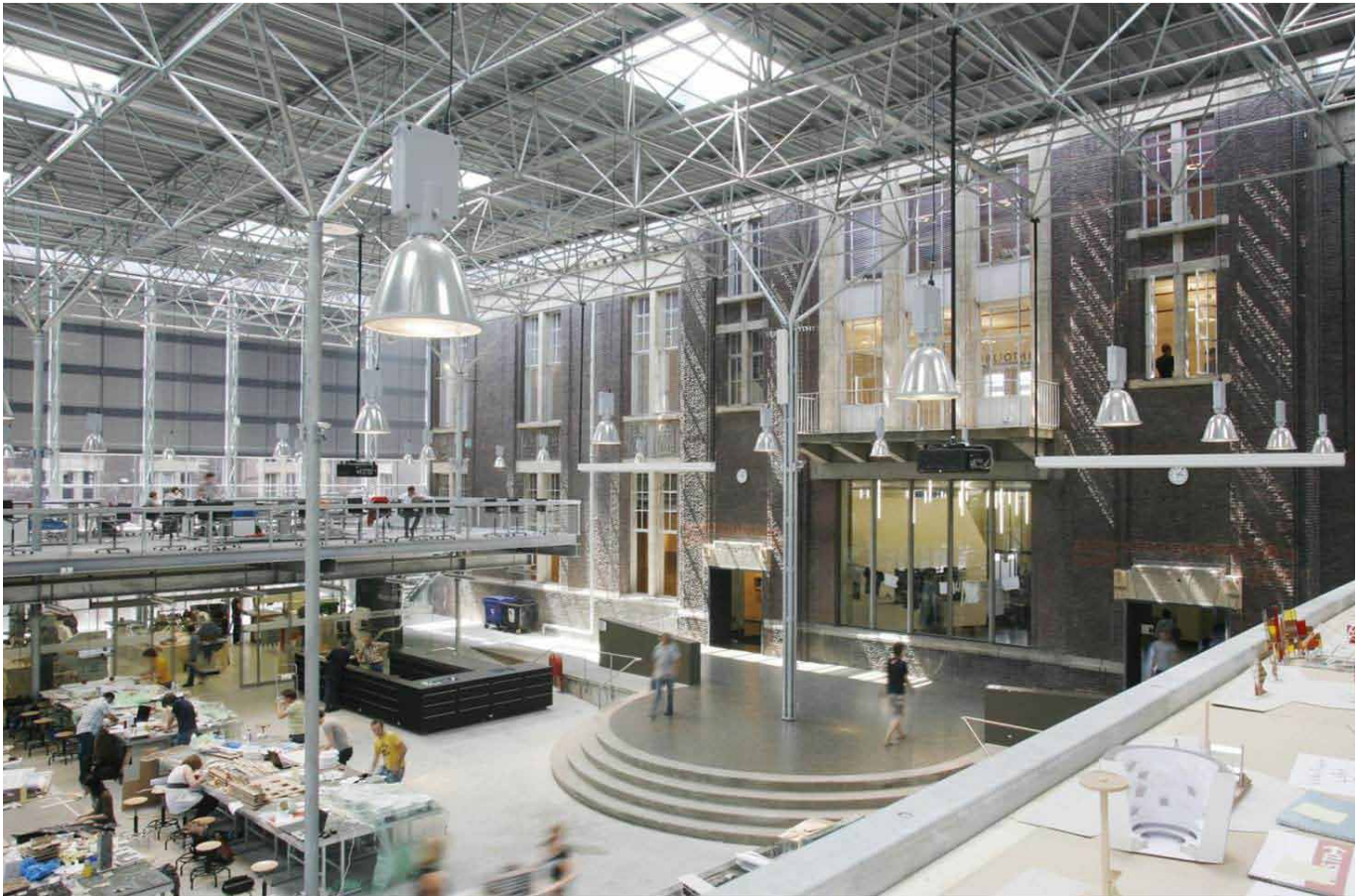
### *New competition*

A committee was formed to meet the challenge of the ambition of BK-CITY SLIM.

There was keen preparation for a competition between spans of architects and climate-experts. Since the building of BK-CITY had been transformed successfully in an unorthodox process, it was decided that the brief for the competition of a sustainable building should not be primarily the work of architects alone. The scope should be again the multi-disciplinary approach with the focus on Climate. Actually the engineering we required for BK-CITY SLIM and the safe-guarding the architectural features of BK-CITY, should be complementary. The exact assignment was called *E-Innovation*: on the long term the building should be independent of fossil energy resources.

Challenges to be met were :

- Ecological aspects (life-cycles of material and water)
- Social aspects
- Economical aspects



16. Zuidserre



14. Streetview east



15. Streetview west

### *Outcomes of the competition , possible measures.*

The project team of BK-CITY SLIM selected four spans of architects and climate-experts. They were asked to develop a concept/a real vision on E-innovation that could also be executed in several steps in time. The complex task was underpinned by a lot of relevant information. Not the least was a new value assessment of the building after the realization of BK-City.

Four spans of designers were selected, that to the opinion of the jury, were fit to fulfill this ambitious assignment. Next step was to formulate the criteria for the selection the best plans:

- Spatial quality
- The architectural features of E-innovation  
(also from an educational point of view)
- Treating the heritage after the interventions of BK-City
- The (realistic) vision on E-innovation

The products of the design teams were judged by a jury of experts in December 2010. The result was moreover a 'container of very interesting and pragmatic ideas'; a realistic plan could not be chosen and implemented. The complex task could not be fulfilled, partly because the integral approach and expected attitude/relationship between architects and climate experts did not happen to a satisfying extent. In fact the architectural ideas were not in line with the informal atmosphere of BK-CITY and had no relationship with proposals done by the Climate experts.

After balancing the results, the competition resulted in a number of possible several projects/measurements. Integration still has to be engineered. This will be the next challenging step that we are about to begin. I will summarize the most important outcomes of the competition:

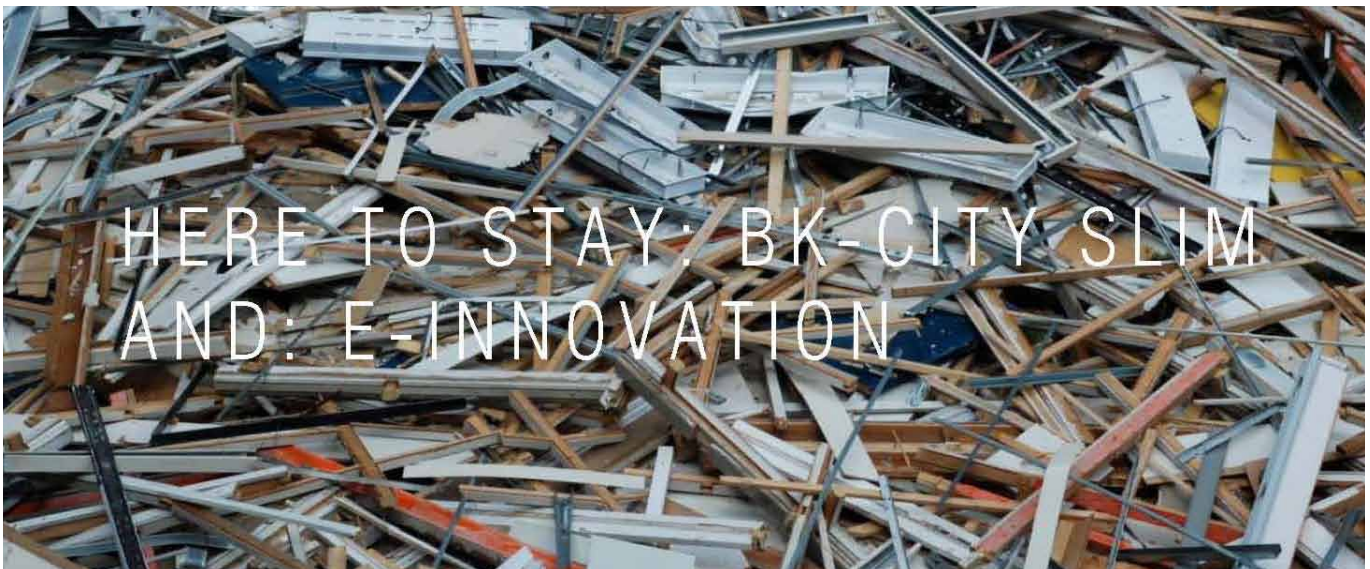
1. Reduction of electricity (lighting) by better a control system
2. Insulation of the brick facades and slate/wooden roofs
3. Insulations of the windows
4. No use of the attic
5. Glasshouse on the West side of the building

Further research was recommended:

6. Natural ventilation and the new concept of the *Breathing Window*
  7. The application of photo voltaic cells.
  8. The resources of energy: low temperature heating towards a comfortable building
  9. Further research for sustainability of University Plant
  10. Integration of all possible measures into a thorough concept
- One of the competing architects (except) had a thrilling and abstract concept that from an ecological point of view was quite interesting. Concrete implementation however could not be done. And now there's a big challenge for the project tot think and act and reckon differently just like in the emergency driven BK-CITY project. And to make the challenging link between context and concept.



17. Oostserre



18. BK-City SLIM

### 3. Reflection

First of all with all the recent effort that has been undertaken in favor of BK-CITY SLIM, *there is a real longing for good technology* for making buildings SMART, and that could help us solve the problems of balanced ecological design. However, despite all new innovative development we are still on our way. Perhaps in a decade or two we will have possibilities we only can dream of now. For instance the use of sun power in photovoltaic cells will improve drastically in about five years. So what more is there to come, we are curious about.

We really are in a dilemma to find a good balance between cultural, ecological, social and economical needs. BK-CITY SLIM we want to be an outstanding example, so we should use all the possible knowledge and skills we can obtain a good balancing in the building. But we know a part of the solution is still in the future ahead of us. As Faculty of Architecture we really should make our building the subject of constant research. We should enhance the complexity which is connected to the subject and invest in it. Despite all the questions of quick wins we should persist in meaningful research.

Secondly the successful project of *BK-CITY is a model for a new way of thinking*, a different attitude for architects. It is about the relation between history, present and future, to link them to the design-task. And it is not primarily all about the architectural design as an autonomous skill, it is about arguments that contribute to the story of needed conversion. Not a story of absolute truth, but a story that facilitates to discover the assignment where the architect should be an important team player. It is remarkable that the ambitious BK-community that trains new generations of architects, feels at home in the building.

I would like to stress again the future scope of *(broad) technology driven design*, as a solid footing the design task. Looking for balance between historical/cultural, ecological, social and economical aspects in an integral and innovative approach should be re-installed.

Third observation is the effect of the re-use of 'Red Chemistry' beyond the scale of the building. After the discovery of the great potential of permanent re-use, things started to be different now. The epic heart of the Campus shifted toward the north side, the interrelation with the heart of the historical City of Delft was re-established. The success of re-use may result that the Campus of TU-Delft will now longer be the footprint of the modern campus that was designed in the fifties. Other former University buildings may be of interest again. Together with new functions, the urban footprint of both old and new campus will be more social and cultural sustainable. This is beyond expectation.

It is interesting that caused by the emergency, something not planned but rather guileless, these conversions do happen. Like in landscape architecture, not everything foreseen and unplanned, aware of a context that goes beyond design.

I want to conclude with the challenges to be met in the project of BK-CITY SLIM. It is very interesting that in November 2010 Michael Kouli Prodromou finished his master study at the Faculty of Architecture with the subject: "The sustainable refurbishment of BK-City. These were his main conclusions and recommendations:

- The existing building is extremely wasteful, huge possibilities lie in its refurbishment
- Simple measures might result in cost-effective solutions
- Interrelated measures could be much more effective
- A careful design is needed to balance the different interests
- An energy-neutral building is impossible with current available technology
- More data is needed for life-cycles of applied materials
- BK-City provides already wonderful opportunities for sustainable energy applications, such as the empty attic space, the water tower, the flat parts of the roof, ventilation through the decorative nature stone façade elements originally used for that purpose.
- Ways to involve the users, make them aware of energy consumption in the building. The 'education permanence', trying to lower our personal carbon footprint by behavior.

Last but not least and I fully quote Michael here:

*'How the refurbishment project of BK-City can become the cornerstone of a broader Governmental, Municipal or University refurbishment program could be investigated. For example, a refurbishment scheme that involves other TU-Delft Faculties or even the entire City of Delft. This will, moreover, make the claims for subsidies and financial support stronger. That leaves us with a dilemma, or rather an assignment for future. The need to reduce costs in quick steps and the ambition for constant search for better resources, by means of improved and innovative technology. We should as Institute of Knowledge empowered by the needs of society do both. It is our main responsibility.'*

Job Roos

Den Haag, May 24 2011



**BRAAKSMA & ROOS**  
ARCHITECTENBUREAU BV

Braaksma & Roos Architectenbureau  
[info@braaksma-roos.nl](mailto:info@braaksma-roos.nl)  
[www.braaksma-roos.nl](http://www.braaksma-roos.nl)

Toussaintkade 52, 2513 CL Den Haag  
Tel: +31 (0)70 361 53 63  
Fax: +31 (0)70 361 55 84

## 4. References

- De ontdekking van de Opgave, *J. Roos*, Publisher VSSD in 2007
- Cradle to Cradle, *W. McDonough and M. Braungart*, Publisher "Remaking the way we make things" in 2002
- The Sustainable Refurbishment of BK-City, *M. Kouli Prodromou*, Master study November 2010
- Eindrapport BK-City Slim, aanbevelingen voor een duurzame BK-City, *W. Patijn*, TU Delft in concept April 2011
- Bk-City Slim startdocument, *M. van Dijken*, Architecture TU Delft, March 2010
- The Making of BK-City, Delft, Publisher TU Delft, December 2009
- Managing the University Campus, *Alexandra den Heyer*, Publisher Eburon in 2002
- Rode Scheikunde, Faculteitsgebouw Julianalaan 132-134, Workgroup 3: technical challenges to historic centres eco-restoration
- Compatible Strategies for Conservation of Natural Stone, *W. Quist*, Publisher TU Delft, 2011