La Très Grande Maquette (the very large model).

The commitment of young Bukavu's architects to the enlarging (of their) city

Dag **Boutsen**, Carl **Bourgeois**, Ruben **D'hont** and Mac Mugumaoderha **Cubaka**

Résumé

La *très grande maquette* is the first model to examine the realistic, kind of pragmatic, elements necessary for the much discussed expansion of the city of Bukavu. Numerous articles have exactly been predicting the population growth in the next ten years and the necessity of opening debates on the geographical growth of the city. A few articles have tried to go deeper in matters of the build environment as a consequence of this phenomenal growth. The most important article here is entitled “Uncontrolled urbanization and expected unclogging of Congolese cities: Case of Bukavu city, Eastern DR Congo” (2022). Vertical and horizontal growth has been described and situated using a lot of facts and figures. The *Plan Urbain de Référence* (PUR) pour Bukavu from 2021 is looking towards the horizon of 2035.

But never before a visual, imaginative and engaging research has been carried out on the exploration of the unavoidable spatial growth of the city of Bukavu.

Uncontrolled urbanization and expected unclogging of Congolese cities: Case of Bukavu city, Eastern DR Congo (uliege.be)

Because references to socio-cultural context for a study into the expansion of the city of Bukavu are largely lacking, this article

- first discusses the state of affairs regarding architecture and urban planning, based on a historical sketch.

- It then explains how the design research was conceived, developed and carried out.

- The most important lessons are highlighted and,

- finally, important next steps are examined.

A short historical story about the debate around appropriate architecture for Bukavu

Modernist features

The speed at which the city grew until the independence, and the quite totalitarian discourse from Belgium surrounding the colonization dynamics, has led, very differently from other colonies, to a lack of debate about the correctness of architectural form or language adapted to the colony.

The difficult question of how an architectural form would respond to the cultural context and needs of the colonial locations was rarely asked.

A 1920's Art Deco Heritage Walk Through Bandung: 'Paris of the East'

Bukavu, same period!

In the 1920s and 1930s, important Dutch architects who grew up and worked in Indonesia discussed the necessity of interweaving European modern principles and achievements with significant or otherwise local and original artefacts through articles, lectures and university studies and training.

Semarang, Sobokarti Theatre, 1930, architect Th. Karsten

In the book 'Tropical Modernity', Jan van Dullemen describes how architect Charles Prosper Wolff Schoemaker mainly criticized colleagues Karsten and Maclaine for their use of basic indigenous architectural forms combined with 'modern' construction methods rather than excessive or specifically Indonesian-style ornaments.

An important point of discussion was whether or not there was still a living architectural tradition on which modern, Indo-European architecture could be based.

Paternalistic vision

In Congo, architecture simply continued to be based on imperialism. The following two examples speak for themselves.

The OCA housing schemes remained extremely paternalistic in their conception of African dwelling practices. In that sense they are not so far removed from the profound social engineering embedded in the design of labour camps and workers' houses, a key topic of architectural investigation in the postwar years. A 1950s scheme for an ideal *cité indigène*, organised around an administrative building, a church, a sports field and a market, **leaves little doubt of who was in charge of all aspects of everyday life.**

Architect Paul Dequeker (°Roeselare, 1930) joined the missionaries of Scheut as a brother in 1954. To prepare himself for building in the humid tropical climate of Congo, he qualified in 1956-1957 at the renowned Tropical Department of the Architectural Association School of Architecture in London.
A year later he left for Congo, where he drew and realized hundreds of buildings - churches and monasteries, schools and all kinds of utility buildings and even bridges - until 1993.
In the book 'Architecture and mission in Africa', written by Luc Dequeker and Greet De Neef, Johan Lagae made a critical analysis of Dequeker's oeuvre: **the Scheutist has never really concerned himself with local customs or culture.**

Missing ‘African Modernism’

Images from the book African Modernism by Manuel Herz

The absence of this important architectural period of optimistic and often brutalist modernism in eastern DRC feels like a void. No space has been made for this period in hyperdense Bukavu. In this Bukavu, it seems that there is still no room anywhere.

Authenticity

Hybrid architecture in Bukavu (Dag Boutsen)

During a working visit for her master's thesis in 2024, Déborah Muhanzi visited several construction sites. She was also able to talk to the designer here and there. Déborah understood that despite many construction problems due to technical limitations and insufficient adequate materials, everything was done to blow the environment away with a show. *Pinterest architecture* was the correct name that Déborah used during an interim presentation. Hybrid architecture!

D. Muhanzi. Compositions, Construire pour habiter le centre urbain de Bukavu, Travail de fin d'études, LOCI-LLN – UCLouvain, 2024, co-promoteurs : Denis Zastavni & Dag Boutsen

The same questions today

The absence of this debate around appropriate architecture has not gone away today. In Bukavu it occupied far too little space in the last century and today young architecture students and recently graduated architects ask the same questions. The search for an Afro-European architecture is alive again. Many young students from the recently established UCB Faculty of Architecture and Urban Planning choose themes such as cultural centers, indigenous museums, art schools, design centers, etc. for their bachelor or graduation projects with the aim of recovering lost knowledge about (architectural) traditions.

A short historical story about the debate around appropriate urbanism for Bukavu

Masterplan, origins

The city's development only took off at the very end of the 1920s with the first masterplan for the city by Raphaël Verwilghen. In the beginning of the 1950s the *Office des Cités Africaines* was charged with the development of two cités in Bukavu, namely Bagira and Kadutu. Together with the European city which followed Verwilghen's plan of 1930, these neighbourhoods are the only parts of the city that have been developed following an urban masterplan.

M. Lootens, Urban development as a reflection of dynamics of mobility – The case of Bukavu, Master dissertation UGhent, 2019

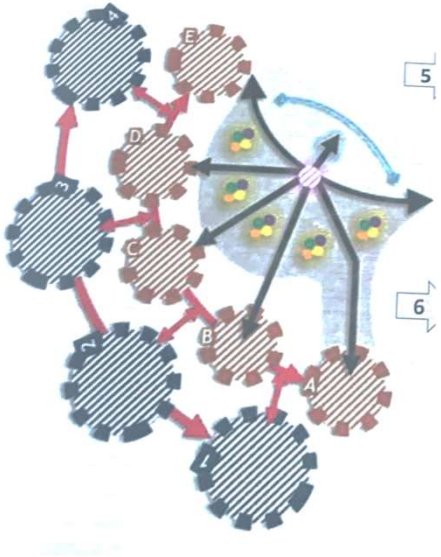
Unprecedented urban growth

From a regional perspective of violence and uncertainty, Bukavu holds the image of a port. Yet for many, the city is quickly turning into a "death trap", as there is no longer suitable land available to settle, nor many income-generating jobs. Hundreds of thousands of people live on land without any form of title. Most of these uncertified claims were suddenly deemed unfit for habitation, as these plots are prone to erosion, contributing to dozens of deaths each year as well as crumbling urban infrastructure.

Suitable or non-suitable areas for more and more inhabitants

The most recent report from Statistics Korea, for 2023, mentions an average of 0,72 children per woman. In Bukavu the average is 6,2! Add to this the rural-urban migration and it is easy to understand that the population will double and almost triple by 2050.

The 2021 *Plan Urbain de Référence* (PUR), developed by the Unité de Planification Spatiale (UPS), a lab within the ISAU (Institut Supérieur d'Architecture et Urbanisme Kinshasa), is a document that is representing the greater orientations on the scale of the city, in a perspective of a sustainable future. It suggests expanding the city with two rings. The first ring contains city extensions in the immediate hinterland of Bukavu (12 km form the centre), and the second ring contains satellite cities.



The horizon of this document is 15 years from now. It seems unnecessary to point out the impossibility of this plan because of lack of infrastructure, public transport, financial means, etc.

A mission for universities (and thus students)

Within this context of very little debate around the culture of architecture and urban planning, a future of the built environment in Bukavu must nevertheless be sought. The one-sided colonial perspectives of the past offer little guidance, nor does the complete absence of policy bodies for urban planning.

Researchers weariness

On March 11, 2020, Dennis Mukwege told the Congolese universities: “it is up to us to write a new page of our history with the ink of our intelligence and our sweat”.

At the same time Julia Ndaya Tshiteku says “*Tolobi tolobi tolembi*”: “we said, we said, we are tired”, this expression could reflect the weariness experienced by researchers and practitioners who devote their time to reporting and analyzing in their work the realities experienced by the Congolese. But they note that despite the slogans of the different governments, which ask the population to expect better living conditions, their observations and proposals as a contribution to developing social, economic and cultural policies in the management of the country are put forward. The redundancy of these themes in the abundant scientific production on Congo testifies to the permanence of failures in the management of the country.

Imagination needed

For the introduction of the research workshop in Bukavu in April 2024, Carl Bourgeois declared:

"As architects, we sometimes still ask ourselves what we can do for the city. Disappointed by the great power that developers or administrators seem to exert on the evolution of our urban environment, we sometimes dare to think that it is no longer the architect who builds the city.

Planners literally watch from on high. They draw the city from the air via Google Earth or Maps. Useful for keeping an overview, setting out the big picture and converting demographic graphs or pressure on land prices into square meters of development area.
We, architects, apparently difficult to deploy on this large scale, in this enormous complexity, nevertheless have one great asset: our imagination.

No one can observe the city better than us, from an intrinsic interest in the small detail, the daily actions, intrigued by the people in motion, and fascinated by the colors of the city.
No one can translate better than us the smells that sometimes make the city stink, but at the same time can also announce the seasons and the weather.
No one can translate the user's experience of the city better than us into a form, a drawing, a collage or artistic impression.
No one can capture and understand the experience of height differences and impressions of alleys and squares better than us as qualities of a dynamic and dense city.

Together we are able to combine the wealth of all these important details and create one large model of our city. Where we no longer look from the air, but vice versa, by adding up the smallest walk, the smallest encounter, the smallest fascination, until we are able to reveal the aspects of this city.

We do not shy away from difficulties or challenges, looking at the consequences of erosion, unbridled development, suffocating alleys or chaotic scenes. We include the themes of rising population and the widening gap between rich and poor in our observations.

Along the way, on our walks, we sniff like archaeologists of the future, for what lies around as a sign of a better city. We record this, collect the artifacts, draw or take a photo.

Once again we will come up with a form to express this mental scan of the city in the strongest possible image, two-dimensional-three-dimensional or somewhere in between. Because our power to transform our imagination into convincing images is our strongest gift as designers.

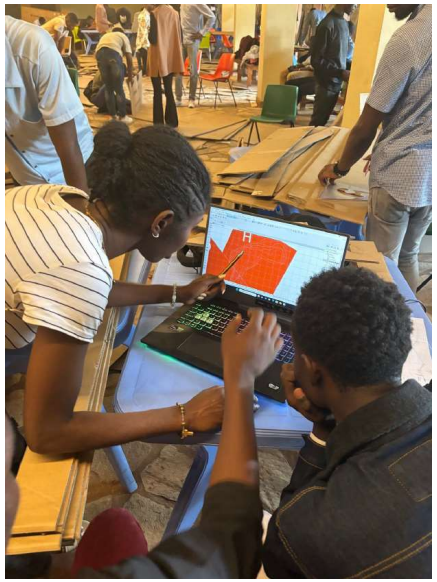
The TGM (Très Grande Maquette) becomes the largest collection of impressions of the smallest details. The space that people experience from the ground, and not from the air. And all of that together is the best gift we can give to the residents of the city."

La grande maquette as a sketch design

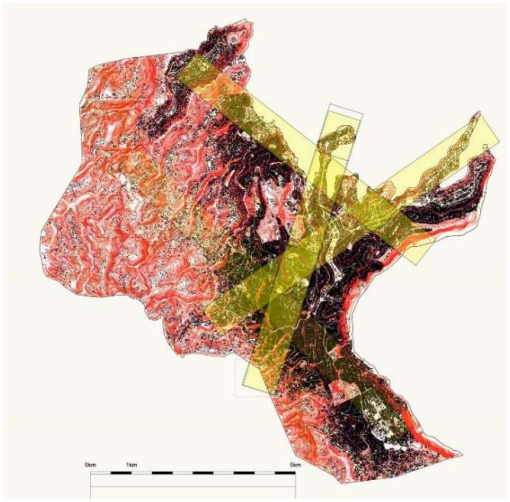
Design of the model

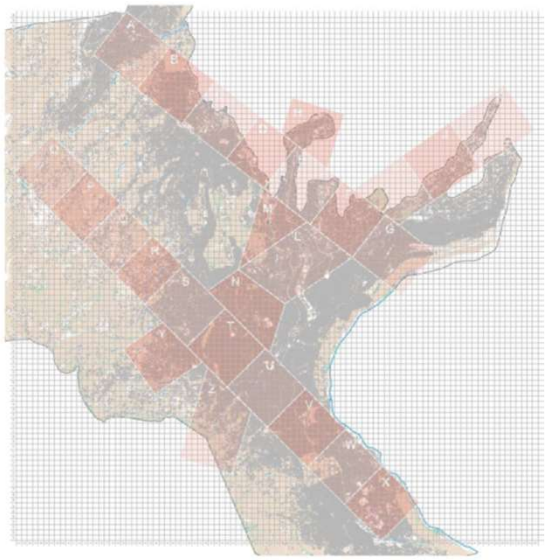
Students of the 3th, 4th and 5th year of the Faculty of Architecture and Urbanism of the UCB worked for a whole week (week of 8th April 2024) under supervision of professors Dag Boutsen, Carl Bourgeois and Ruben D'hont. Newly appointed assistants Paul, Charlie, David, Raphael, Numerien, Innocent and Carine were charged with the steering and practical concerns. The workshop took place in the Centre de la Paix Communauté Sant'Egidio, next to the building site of the new faculty building.

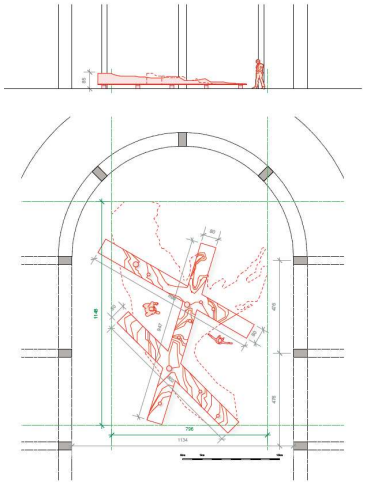
To get a grip on the difficult relief of the city and to make the visual interventions understandable and attractive, a model scale of 1/1000 was chosen. At that scale, one building floor is 0.6 cm high. The current city including open, rural boundaries is approximately 13km by 8km. Based on various basic information and available maps, a heavy AutoCAD file was created, allowing the students to make a cardboard base for their part in which the structure of the topography became visible.

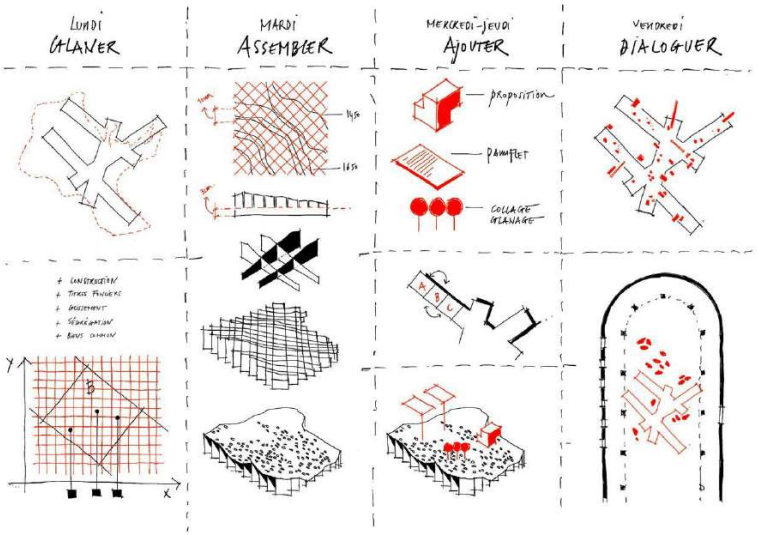


Because too much model material would have to be used to make the entire city on that scale and because working with typological city zones both in the center and far beyond is more interesting, a model was devised with 4 large city strips. Each city strip was divided into manageable and numbered parts. In this way, the various interventions, devised and developed by student groups of 4 to 5 people, can be extrapolated, as it were, to other similar urban areas. The 4 strips were carefully chosen: every urban or rural problem specific to Bukavu is present.





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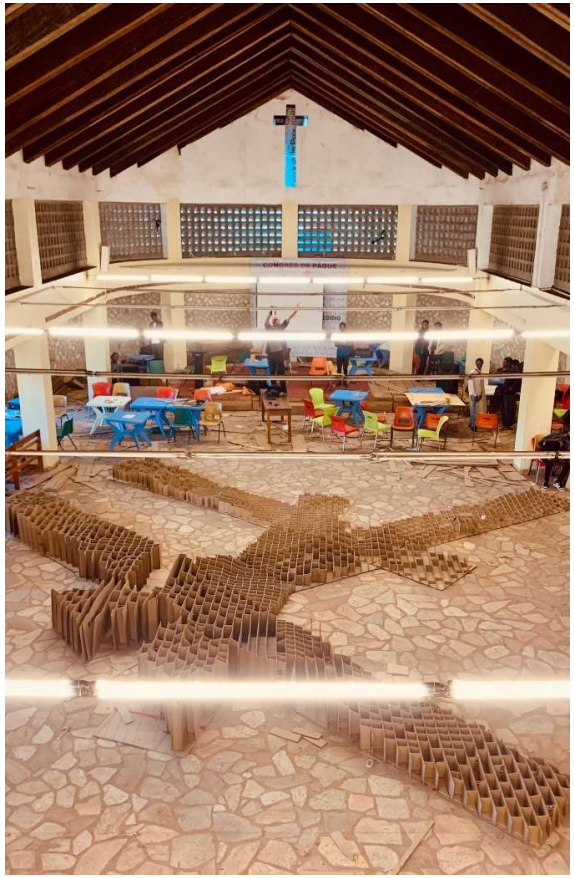


The main output

Before listing the most important findings, it should be noted that this workshop, in which the students from different years were divided into a group, also called a 'vertical studio', were able to enjoy an unprecedented and enthusiastic drive. Within the current faculty, group studio experiences are extremely rare due to the difficult circumstances. Design studios as physical workspaces are currently lacking on campuses.

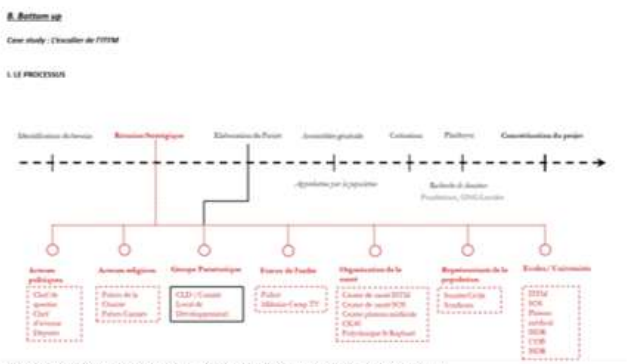
For the visual final performance, in addition to the large-scale model itself, a presentation of images was shown, regularly interrupted by the words or phrases below.

Human settlements - Personne ne sait nager - Pro-deo architecte - Architecte à pied à pied nus - Zone d'étude - Organisation spatiale plus aisée - « la terre est mauvaise » - Zonifier les plateaux - Toitures vertes publiques - Officialiser un certain nombre de 'Kanjias' - Réglementations urbaines repensé de façon situé - Arrêt de bus - Heineken city - Souligner les zone verte aéré en forte pente - Réunions stratégiques - Ligne de temps - Nouvelles associations politiques - Bottom-up politiques - Tilatopia - Processus d'influence sur les acteurs et populations locales - Commencer par un marché comme équipement prioritaire - Les bus bateaux - Pont piétons - Selfsustaining community - Boosting plane – Ligala - Château d'eau - Pont marché - Contraste entre les couches sociales - great wall - Nyamugo très dense - Incendie à répétition - Public qui bloque le privé

The above words, the work of the various groups, the findings from conversations with students during the working week and the local context surrounding architecture and urban planning described in the first chapters are further described in various parts below.

Officializing important kanjia's

This chapter is about a plea for a new statute for the recognition and appreciation of connecting paths that are important to the city. *Kanjia* is the local name for the mostly informal small paths created within the informal build environment. Often the paths are incorporating steps.



Case study : L'escalier de l'ITF, made by Chandelle Cifende Akonkwa

In Bukavu, a number of kanjias are essential because they crucially connect different zones quickly. The meandering streets often require long detours. Some kanjias also form structures between different city or population layers. By mapping these kanjias, researching them and then, if appropriate, giving them a special status, new bridges can be built and invisible walls can be dismantled. These connections can be upgraded with external or internal local financing, or even government financing. Concrete colored in the mass can be used for this, color codes can be applied, as can signage, lighting, etc. The city sewerage and rainwater drainage can be integrated in a well-thought-out manner. Adjusted new urbanistic regulations regarding dimensions, adjacent buildings and common areas can be described in official documents.

Group W had a close look into the different types of kanjia's in the Panzi area.

Images from group W

The students of group E (workshop zone in the historic center) have poetically depicted the connection between *two worlds*, *two social layers*.

UNE VILLE, DEUX MONDES ...

LE KANJIYA...POIGNET SOCIAL ...

Images from group E

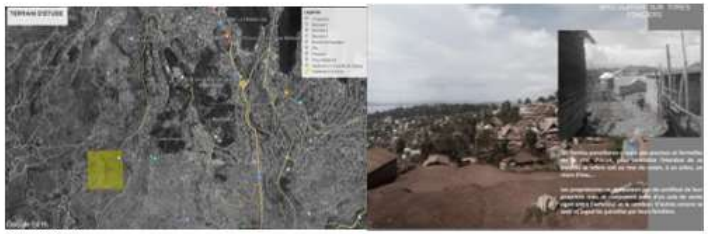
A renewed kanjia, image from group E

Group T looked for better accessibility in the area of Kadutu

Local design offices acting as laboratories of ideas

Building on the expertise of these 'réunions stratégiques', the idea arises to encourage governance networks and give them unofficial or even official shape. Many of the workshop groups worked on new forms of bottom-up politics based on citizen associations and think tanks of young anthropologists, sociologists, architects and designers.

The best architect, assistant Charlie Namuyamba explained, is the architect who walks barefoot through the neighborhood.
Architecte à pied à pied nus



Zone group R

After carefully reviewing observations from our study area, our group came together to identify the essential elements for its development. Among these, we highlighted the crucial need to improve the basic infrastructure that makes deficiency in this part of the city, particularly in terms of educational facilities, sanitary, commercial but also the housing side. We have also implemented before the importance of efficient management of water resources, well-defined streets, and an optimal organization of spaces, including built spaces, green spaces, places of relaxation, and cultivable areas.

During our deliberations, a key question emerged: how transform these proposals into concrete actions? Should we count on the participation of the population despite their modest income, or should we seek the support from the state, knowing that its commitment to such initiatives is uncertain?

Group R has developed the proposal to install a temporary urban laboratory in certain urban areas, as a follow-up to the UCB faculty of architecture. A temporary and locally scheduled part of the Academic Design Office (ADO) described above.

Access is given to this space by the public in favor of learning about sustainable construction practices and urban planning. ADO involves different partners following different sectors of activity.
The ADO wants to work in collaboration with the decision of town planning and favor the formulation or reformulation of standards, guides and regulations of town planning.
The ADO is attached to the School of Architecture and the knowledge generated can be translated to feed the training curriculum.

Local and small-scale workshops and design studio's with local stakeholders will be organized in these design labs, offering creative and feasible solutions for the build environment in these area's.

Visualisation of local design workshop by group R

Description of the ingenious DIY in the area of Ciriri by group Y

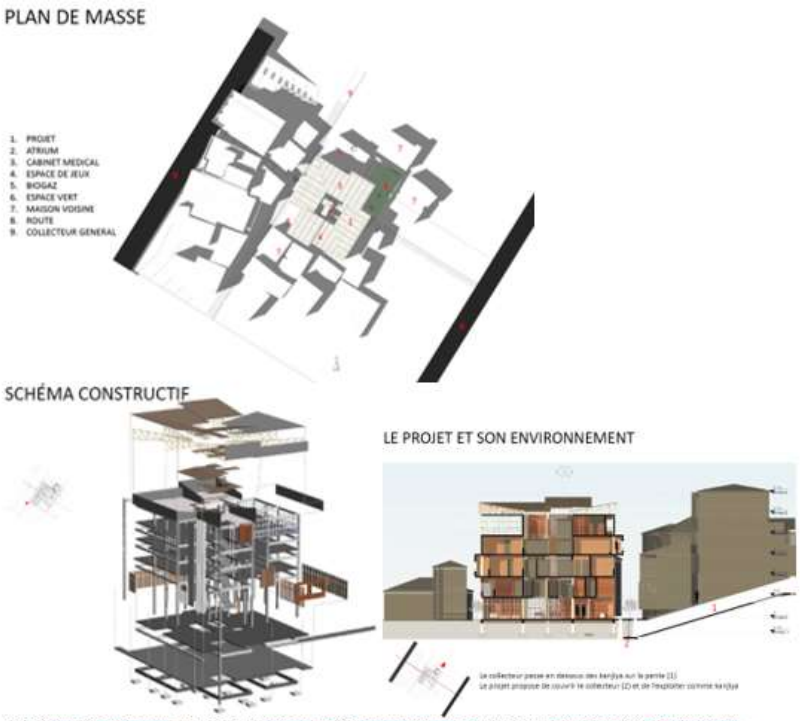
One group worked on an area called Cikari in the region of Kabare.

"Although the research area is located at an altitude of more than 1800m, we insisted on returning there physically in order to acquire the situation in the Kabare territory. It was not without effort given the difficulty of access and the difficulty of converging with the 'native' people who only expresses theirself in "Mashi". But after several exchanges we got a general idea of the evils which affect the population of Cikera and have provided certain ways of solution in order to put this beautiful part of the South Kivu province in forefront in different sectors."

Densification as a positive story

In the chapter on the urban development context of Bukavu, reference was made to the growing lack of available land for new urban developments, especially in existing urban areas. This does not mean that the density level is saturated. There is still not enough height being built. A renewed and positive view of the culture of density is needed.

Many projects showed that within the existing and apparently overbuilt urban context and culture, there was room for innovative multifunctional buildings.



Project from Elias Ruhamaya, Jean-Mathieu Mapendo, Elie Malembo Baganda, Jordan Aganze Birali and Albin Ngalu Bagalwa

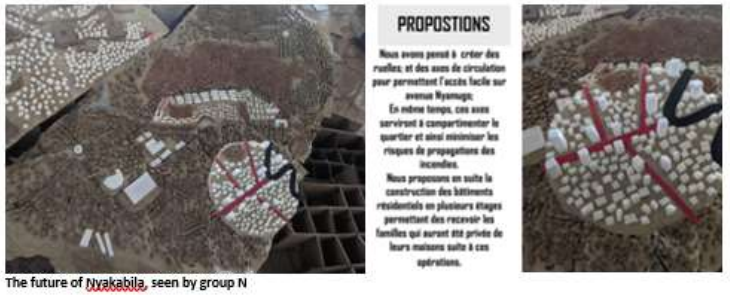
In the autumn of 2022, *reconversion* was the theme of a design studio: the reconversion of disused or unfinished buildings or building structures including work on measurement, context, program definition, several scales, recycling, interior architecture, design, installations, renovation over time, staging and presentation techniques.
This studio wanted to develop a particular interest in the fragile and more hidden real meanings of built heritage, alongside recognized historical, architectural, artistic, anthropological and archaeological characteristics. The studio was particularly fascinated by the way locals and newcomers interact with heritage on a small scale and the impact of this interaction on the way they experience their environment.

Reconversion of 'Hotel de la Poste', Bukavu by Charlie Kangene Namuyamba

Both studio's show flexibility in the use of land and buildings, existing or not.
Flexible construction systems, based on the local conditions are also proposed in the masterthesis of Deborah Muhanzi.[25] The main objective of Deborah is to propose a quality spatial composition which could meet the needs to densify the historic center of the city of Bukavu, while identifying the elements limiting, on the building scale, this densification. The project does not just theorize the research results, but attempts to apply them in a tangible way, thus offering a practical and critical solution by cross-referencing the data collected and the analyzes carried out, in order to demonstrate how the theoretical concepts can be put into practice. implemented within the framework of a real project. This project highlights the importance of taking into account the parameters specific to buildings in a specific context in any reflection on urban densification strategies.

The TGM-model translated the above mentioned elements in a request for *situated* urban rules: new rules that are based on existing preconditions and open for flexible building.

Group N introduced some appropriate and small urban axes in order to arrange some compartmentalized zones for new housing blocks in the area of Nyakabila.



The future of Nyakabila, seen by group N

Triggering slopes

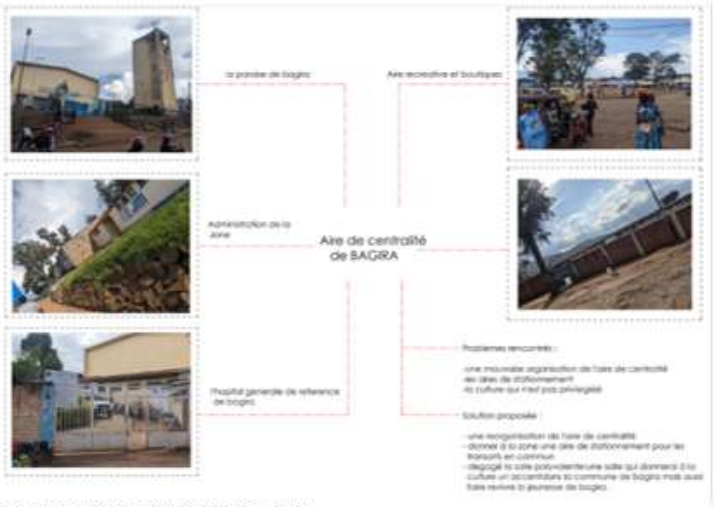
Walking through Bukavu is quite tiring. Not only is there a lot of pedestrian and carriage traffic, the landscape is never flat. Very little use is made of the slopes and relief in an architectural or urban sense.
However, simple bridges for pedestrians could provide a lot of progress. Firstly, cheap wooden pedestrian bridges at the Beach Mwanzi Market, for example, can provide a safe crossing over the Katana route and a quiet connection to new developments on the shores of Lake Kivu. Secondly, pedestrian bridges between two higher residential areas can avoid a busy valley.
Some workshop groups also explored how pedestrian bridges can make way for informal or even formal markets. Such examples can be seen in many cities.
If a piece of terrain is really too steep, it could be designated and protected as a green oxygen area.
It is not the ground that is unstable, as even professionals say today, but it is the way in which the steep ground and any buildings on it are tackled. Good management and maintenance of drainage, sturdy retaining walls and tree roots as reinforcing material are necessary. And good management means collective management.

Image by group P, area of Kasha, Bagira

Promising architecture

Many workshop groups state in the analysis of their assigned urban area that important urban functions are simply missing. For young students and architects, this not only shows the failure of urban management, the shortcomings also lead to a lack of optimism. Good and contemporary architecture ensures respect for the city, people and their environment thanks to its appearance. It is not without reason that architects such as Wolff Schoemaker, described earlier, searched for the right architectural language throughout their lives. The examples in Manuel Herz's book African Modernism show architecture speaking of courage and optimism, promising to bring progress to the country cannot be found today in the city of Bukavu.

Group A correctly indicates for their assigned zone in Bagira how, in order to upgrade the urban area, youth culture must first be upgraded by providing adapted and contemporary facilities.
Social sensitivity, commitment, care and concern for that young environment are even more important than the difficult search for the right African architectural language for it.



Search for a polyvalent youth hall by group A

A renewed respect for tribal cultures and visual language is also something that is very common in the choices for subjects for bachelor's and graduation theses.

Group S worked on the area of Mushekere and discovered a total lack of sanitation infrastructure, primary schools, shops, cultural areas, etc. Because of a great conviviality they experienced between all ages, they propose a small urban scheme including joyful architecture and even a playground for children.

Proposals from group S

No more master plans

A workshop group explored the idea of a *'Heineken City*'. The owners of the large Bralima brewery have already made several attempts to involve the edges of their brewery site and local residents in future developments. A form of public-private partnership would offer a lot of relief. Housing, employment, road works, education and culture can be united in such a partnership.

But: 'Le public bloque le private’.

This form of micro-urban planning is much more realistic than the large and long-term vision of classic master plans.

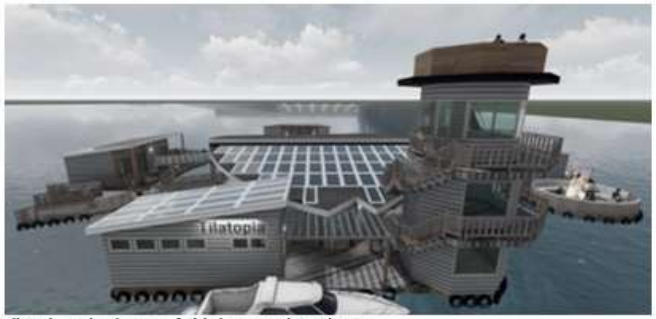
A city on a lake

Is Bukavu located on Lake Kivu or is the city withdrawing from that lake? The answer is simple. By privatizing the banks, through poor connections to the water, by using the lake as a garbage dump and by not making use of the urban potential that large water surfaces offer, the city has literally and figuratively rejected the source of its origins.

The workshop groups investigated the following issues and elaborated them with images:

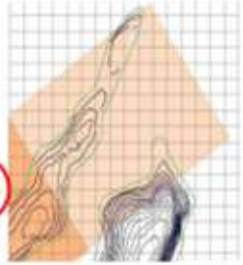
- Public transport should be expanded with simple bus boats serving the coastline.
- Construction can and must be done on the water using floating foundations. Tilatopia's example is cherished by everyone!
- Many more relaxation areas are needed near the water, even if the majority of the population cannot swim.
- The lake must be protected from further pollution.
- Greenery along the water is desperately needed.

Proposition by group J to install surfaces for volleyball, a restaurant at the lake in the Muhumba area



Tilatopia, project by Leo Yafeticheko & Josaphat Rubenga

L'équipe de travail



Group K: "In our proposals, we will see that a queue will be added to the site to streamline the traffic and enjoy the lake."

Group I proposed urban lighting on Labotte and floating housing

The power of a large scale model

A very large model, made by more than 150 students during a whole week, has a lot of expressiveness. By adding simple lighting at the bottom of the semi-transparent model, an impressive visual spectacle could be seen.
The great efforts of the makers to show a final product on Friday of the workshop week are also experienced by the visitors.
The intentions and proposals are strengthened by the emotional involvement of everyone.
The presence of the press during and at the end of the workshop week provides additional strength.

Working on this model was an opportunity to spark debate around the demographic boom expected to take place over the next ten years.

The large model focuses on the critical exploration and (re)imagination of the future of African cities.
The large model takes a critical look at mapping as a methodology for inclusive urban development.

The model is triggering socio-economic viewpoints, and as such contributing to the production of a specific set of knowledge open to other domains. Because of the scale and competences of the participants, the model provided enough critical vigilance.

During the last quarter of the 20th Century, urban planning has significantly enriched its expert knowledge owing to the contribution of sociology. Today, the inhabitants are no longer only considered as a simple measurable category, analyzed according to familial types and generational series, but as actors having the right to intervene in the definition of their place of residence.

By depicting spatial proposals, the model is a very effective urban planning instrument for functional local governments.

Atmospheric images 1

Atmospheric images 2

Atmospheric images 3 There is also a video of the workshop atmosphere: https://vimeo.com/935052354/2be18553ae

To be continued

It remains remarkable that 150 future architects - known for their mostly idiosyncratic approach - have entered into every form of collaboration with each other to arrive at one striking result in one week. It proves that urban renewal in consultation and collective spatial decisions are possible through the initiative of workshops and participation.

In the future, the key question is not to establish if the contributions from the large model meet the standards of a science (which differ from a non-science), but to see how a specific contribution adds something to current knowledge about human settlements, and their production from a specific point of view.

Most important for the future of Bukavu is the pooling of efforts between all stakeholders, notably the population, civil society and its member organizations, authorities at local and national levels: city hall, ministries, private partners, would be one of the ways to consider in order to guarantee development and sustainable urban life in Bukavu.

As such, the large model provides a roadmap for increasing debate and work on the city future.

Concrete actions for the near future:

- the further elaboration of a number of the proposed interventions,
- the installation of a few test labs (ADO success centers) in well-chosen city areas,
- the development of stakeholder teams for strategic meetings for a number of pilot projects
- and the further expansion of multidisciplinary academic teams (such as for the project ‘From Handmade Gravel to Handmade Urbanism’)


CONGRÈS DE PÂQUES
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