

La Très Grande Maquette (the very large model)

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

Dag Boutsen, Carl Bourgeois, Ruben D'hont
and Mac C. Mugumaoderha



University of Antwerp

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Site web du projet : <https://www.uantwerpen.be/handmade-urbanism>

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Summary

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. 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 (figure 1).



Figure 1: Final presentation of the model

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.

1. Introduction

This designerly research is part of the project-framework “From Handmade Gravel to Handmade Urbanism”, running from 2022 to 2027 and financed by the VLIR-UOS.

In this project, we trace the value chain of sand and stones, manually extracted along Lake Kivu, transported to the city of Bukavu, and materially transformed into the city’s handmade architecture. Focusing on human labour, nature and material constructions, we envisage a threefold change: better protection of the environment around extraction, transport and construction sites, better protection of human labour (and particularly female labour) along the sand and stone value chain, and improved constructions and urbanisation of the city of Bukavu and future extensions. The VLIR-UOS framework allowed to install an Academic Design Office within the faculty for critical reflection on the built environment.

The improvement of the urbanization and the exploration of the future extensions is what is at stake in this article. 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).¹

Within the School of Architecture and Urbanism of the UCB, the professors, assistants and hundreds of students are questioning these matters. There is no political consensus or a frame scientific approach on how to proceed with Bukavu as a growing city. This research aims to take a first step in that direction.

2. A short history of the debate around appropriate architecture for Bukavu

Bukavu was established in 1901 by the Congo Free State which became the Belgian Congo in 1908. Originally named Bukavu, it was named "Costermansville" (in French) or "Costermansstad" (in Dutch) in 1927, after Vice Governor-General Paul Costermans. In 1953, the name was changed back to Bukavu. It had a prominent European population under colonial rule.

In the 19th and early 20th centuries, architecture was an important element that led to cultural change.² Therefore, understanding the connection between culture and architecture is necessary for creating a civilized environment. Colonial architecture is a hybrid architecture that incorporates the classic elements of the architecture of the motherland into the buildings or structures of overseas territories. Usually, the fusion of traditional elements and local culture will produce a mix of styles, which is a unique architectural style in the world. However, the colonists' buildings were mainly reserved for the cultural elite and were only available to local residents after the colonial country's demise.³ Therefore, colonial architecture is to a large extent a way of expressing the power, wealth and status of colonists.

2.1. Modernist features

Bukavu was founded as a rest resort, where the rugged contours of Lake Kivu, the relief, the greenery and the mild climate formed the starting points for the main structure of the city. Belgian architects built in different colonial styles. In a short overview the following styles were used: from the 1920s onwards, villas went back to standard models, also called architecture dupliquée. Bungalows were planted along the meandering streets. After the Second World War, a more refined form of rational tropical architecture emerged. This type of villas is much more common in the truly tropical cities of the DRC. A robust form of architecture that can be found throughout Congo was used for collective residential buildings on the large avenues: 'functional' sturdy and wide stone buildings with horizontal windows and terraces. Important public buildings found their authoritative character through powerful modernist features, but adapted for the colony in a then world-wide form of Streamline Modernism that emerged from Art Deco.

This type of architecture was perfect for exuding prestige with a view to modernizing the country, its cities and its population. A range of recurring typologies have been devised for school construction, always based on orthogonal wings and covered galleries constructed with pillars. For larger-scale atheneas, architectural work was always moved up a gear. Athénée Royal d'Ibanda is a good example (figure 2).

¹ [Uncontrolled urbanization and expected unclogging of Congolese cities: Case of Bukavu city, Eastern DR Congo \(uliege.be\)](#)

² K. A. Djar. Locating architecture, post-colonialism and culture: contextualisation in Algiers, *The Journal of Architecture*, Vol. 14, No. 2, 161-183, 2009 DOI: 10.1080/13602360902867392

³ Jacky. 20 Most Beautiful Examples of Colonial Architecture From Around The World, *Nomad Epicureans*, 2018, Online available from <https://www.nomadepicureans.com/architectural-guides/colonial-architecture/>

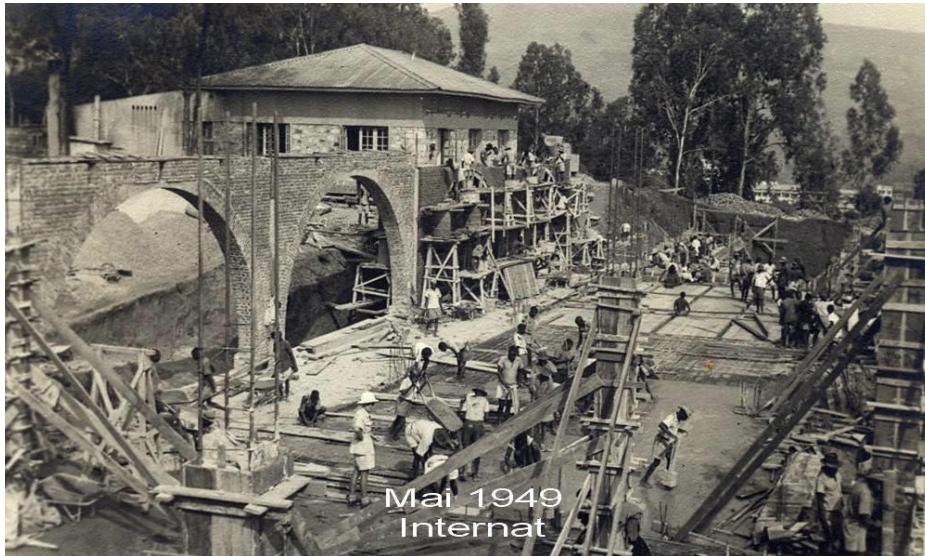


Figure 2: This educational establishment was built by the TraBeKa company, under the direction of Belgian engineer Lucien Smons.

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. For many architects, this question may have seemed answered, or no further questions were asked. But in a European context that was evolving very quickly for the architectural discipline in the twentieth century, it goes without saying that important architects constantly debated, even argued, about styles and forms that met all kinds of social, technical and societal requirements. Decoration or not, color or not, 'visible' material or not, 'international' or not, what degree of abstraction, whether or not to use references: art nouveau, art déco, international modernism, brutalist architecture, tropical modernism, expressionist architecture, and so on. The architectural world never agreed. 'Only' 50 years of colonial architecture, an immense country, and an excessively large building oeuvre have not done any good to that debate. And certainly not in Bukavu.

2.2. Bukavu and Bandung

An interesting comparison can be made with the visions of architects in the same period before and after the Second World War in Bandung, Indonesia (figures 3 & 4). Like Bukavu, the higher situated city of Bandung has a fairly mild climate, softly tropical, and the city was also created artificially from the 'colonial' desire to create a quiet and green environment for a new population. In the years between 1920 and 1940, the city was designed as a garden city, with many green avenues and parks. Since a relatively large proportion of Dutch people lived here with a good income, many detached buildings were built in the modern style of Frank Lloyd Wright for that time. Before the war, the city was known as the "Paris of Java" because of its urban beauty and the famous shopping street, the Bragaweg with the most modern fashion shops. The city is still known for its reasonably well-maintained art deco buildings and avenues.⁴

⁴ <https://nl.wikipedia.org/wiki/Bandung>



Figure 3: A 1920's Art Deco Heritage Walk Through Bandung: 'Paris of the East'⁵



Figure 4: 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. 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.⁶

⁵ <https://i-discoverasia.com/stories/art-deco-heritage-walk-bandung/>

⁶ J. van Dullemen. Tropical Modernity, Life and Work of C.P. Wolff Schoemaker, SUN, 2010



Figure 5: Semarang, Sobokarti Theatre, 1930, architect Th. Karsten

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. Maclaine Pont saw a long tradition of valuable (popular) architecture in the Indonesian archipelago, which he described in detail in various magazine articles. He described this architecture as 'indigenous craft architecture'. This was the tradition on which future architecture in the Dutch East Indies should be based, as it provided the solutions for the development of a modern, specific architectural style (figure 5). According to Wolff Schoemaker, it was possible to find good architectural traditions on other Indonesian islands, but not on Java. Moreover, Wolff Schoemaker refuted Maclaine Pont's argument that the Javanese wood techniques for building and certainly roof construction resulted in a rigid and strong construction with a high load-bearing capacity and relatively little material in a dispute surrounding the calculated economic use of construction materials and the statement that wood is in abundance found in the Dutch East Indies. Wolff Schoemaker was much more interested in monumental architecture. He sought a synthesis of Western and classical Indian architecture that he claimed offered exactly the right adaptation to the tropical environment. The combination of power and functionality creates a certain beauty, as in engineering work (form follows function), while 'the possibility of a grand design that impresses us is also an aesthetic factor that should not be underrated' (figure 6).



Figure 6: Societeit Concordia Bandoeng (1921), Wolff Schoemaker

In the early 1930s, Wolff Schoemaker evolved towards the then widely used Streamline Modernism style, which was also prominent in Bukavu.

The Art Deco Villa Isola for the wealthy newspaper magnate D. W. Berretty looks like a modern construction in concrete, but it is in fact a steel skeleton filled with plastered brick walls. The vertical and horizontal aspects that Wolff Schoemaker appreciated in the Indian stupa are easily recognizable in the composition (figure 7).



Figure 7: Former Dutch Villa Isola of Mr. Berretty (foto 1991) in Bandung van architect Charles Prosper Wolff Schoemaker, geb. Banyubiru, Semarang 25-7-1882, ovl. Bandung 22-5-1949.

In Bukavu, colonial-era buildings illustrate a particular type of international Art Deco architecture that emerged in the 1930s, according to Adedoyin Teriba, assistant professor of art and urban studies at Vassar College. “There is no doubt that the buildings exemplify ‘Streamline Moderne,’” Teriba says (figure 8). The style was inspired by aerodynamic engineering, as seen in the curvilinear edges of many of Bukavu's buildings, mimicking the surfaces of boats and airplanes.⁷ For architects and historians, these buildings capture a style characteristic of colonialism, of an imperial impulse toward the future.

⁷ <https://www.neatorama.com/2020/07/23/The-Art-Deco-Capital-of-Central-Africa/>



Figure 8: Bukavu has more than 100 Art Deco buildings. Walking through its streets, you see geometric lines, chevron motifs, stepped rectangles, curved walls with cylindrical roofs. But most of these structures, with the notable exception of the Cathedral, are now dusty and beginning to crumble. "People used to call this city the 'Switzerland of Congo,'" says Pierre Mpemba, 55, a local historian. "We were known for all these beautiful buildings. But that's disappearing."

The above-described conflicts and discussions between architects in Bandung about the most suitable architecture were also discussed with architecture students. Wolff Schoemaker was professor of architecture at the Technical University in Bandung. He and his colleagues also regularly traveled back and forth between Java and the Netherlands, so the debate was also conducted with international and influential architects such as Hendrik Petrus Berlage.

2.3. 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 *cit  indig ne*, 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.⁸

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. He did this with sober, limited and authentic regional resources and art forms and with a modern vision on mission and church building. In doing so, he followed the (liturgical) innovations of the Second Vatican Council. 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.⁹

⁸ <https://www.architectural-review.com/essays/belgian-imperialism-the-colonisation-of-the-congo>

⁹ <https://www.vai.be/nieuws/publicatie-over-het-werk-van-broeder-architect-paul-dequeker>

2.4. Missing 'African Modernism'

In this context, it is important to note that, unlike many other African countries, virtually no postcolonial modernist buildings have been erected in Congo. The reason is that the period during and just after independence was too divisive. In an article titled « *Invented Modernisms: Getting to Grips with Modernity in Three African State Buildings* », the authors explain how vernacular ideas were incorporated into cutting-edge political architecture, producing new or explicitly "African" forms of modernism. It explores how such buildings, which draw on "invented traditions", are used alongside conventional and monolithic representations of the state to produce "invented modernisms" which both support and challenge the state African as a project of modernity.¹⁰

Modernization has become the leitmotif of most, if not all, decolonized countries and their presidents. Modernization became representative of a promising future that was now in the hands of a sovereign people. There are no examples of such post-colonial modernist buildings in Bukavu that exude optimism in the context of independence. So there is not a single high-rise building like the Limete Tower in Kinshasa. However, Bukavu is one of three regions in Congo with a comparable high population density, alongside the Kinshasa region and Katanga province.

Land transportation between the three regions is almost impossible. There are practically no roads that would allow regular and less expensive exchange. This framework has also not favored a unitary practice of land tenure.

Manuel Herz's great book, *African Modernism*, discusses numerous buildings in Ghana, Senegal, Ivory Coast, Kenya and Zambia whose architecture speaks of courage and optimism, promising to bring progress to the country (figure 9).¹¹

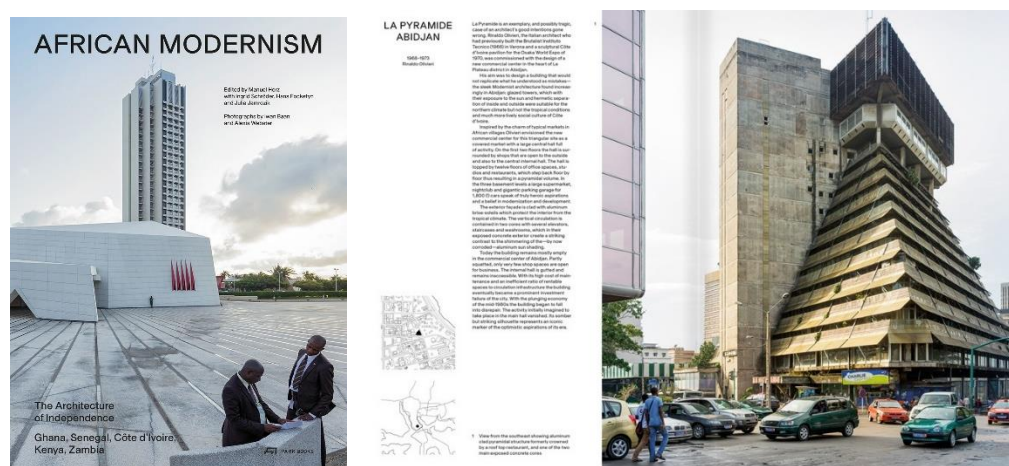


Figure 9: Images from the book African Modernism by Manuel Herz

“Modernist architecture is often positioned in opposition to local tradition. One of its premises is that it is not based on a *genius loci*. It is the international style that was used to build office buildings in Manhattan, the new capital of Brasilia or the housing estates of Eastern and Western Europe. The story goes that late modernism eschews ideology – except that of development – and that no particular country or specific culture can claim ownership of it. Post-war modernism therefore had the potential - and promise - for architects around the world to be taken up as an architectural expression

10 [Invented Modernisms: Getting to Grips with Modernity in Three African State Buildings - Manful - 2022 - Curator: The Museum Journal - Wiley Online Library](#)

¹¹ <http://www.manuelherz.com/african-modernism-architecture-of-independence>

that was not tied to local history, that was free from ideological constraints and colonialism and which was not embedded in pre-existing power structures, at least ideally not.”¹²

“In 1966, President Mobutu launched his political doctrine of resorting to authenticity in Congo. Aiming to erase all traces of Belgian colonialism, it not only led to interventions in social and political life, but also found expression in a new state culture, embodied in art and architecture. We trace the impact of this doctrine in the work of Eugène Palumbo, an Italian architect who designed several iconic public buildings during Mobutu's reign. Palumbo's projects, according to Johan Lagae and Kim De Raedt, highlight the tension of an architect seeking to develop an architectural language evoking both "authentic" Congolese culture and notions of progress and modernity (figure 10).”¹³

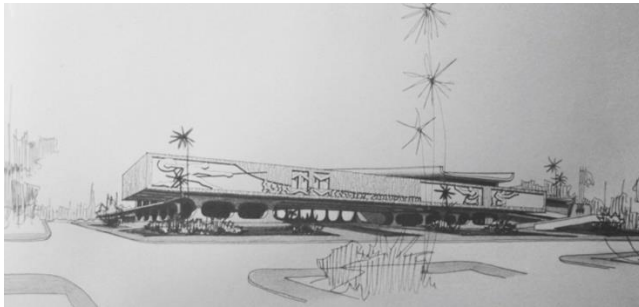


Figure 10 : Le théâtre sur la rivière Congo (1978) n'a jamais été construit.

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.

2.5. Authenticity

To understand the current architectural culture, or the lack thereof, a search for local identity remains important. How authentic is that architecture?

As mentioned before, from 1971, Mobutu begins his "authenticity campaign". The main aim of Zairization is to boost African self-esteem. In the meantime, corruption was rampant. Mobutu is building a posh palace in his Equator province, has several luxury villas in Europe and finances his extravagant lifestyle by skimming state revenues. The ordinary Congolese see it with sorrow and become impoverished. Those who have a little money in Bukavu often hire foreign engineers, sometimes architects, to design residential and commercial buildings. What signature styles do we see today? How did strong symbols appear in today's Bukavu? A quick glance at eye-catching buildings tells us a lot (figure 11).

¹² <http://www.manuelherz.com/african-modernism-architecture-of-independence>

¹³ <https://architexturez.net/doc/10-1080/10464883-2014-937235>

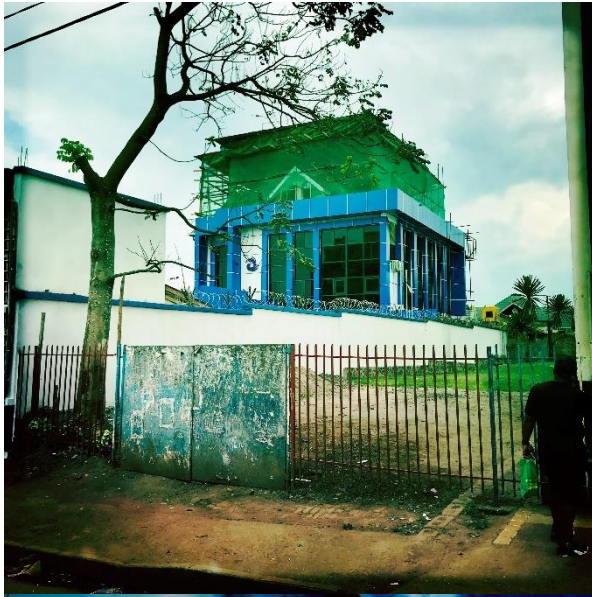


Figure 11: Hybrid architecture in Bukavu (Dag Boutsen)

This type of buildings can be found in just about every commune in the city; it is certainly not a specific zoning. The buildings attract the eye by their impressive appearance, or by their often strange proportions. Some residential or office buildings are reminiscent of oversized chalets where the frame is no longer in proportion to the main volume. Very small-scale exterior terrace constructions that stick to the main volumes also provide odd proportions.

The buildings are certainly also characterized by the use of expensive facade coverings, which in Bukavu of course contrast sharply with the poor materials of the region. As such, many office buildings, primarily, reflect examples in other parts of the world. The way these reflections weave themselves into the existing fabric often creates an uncomfortable feeling.

Finally, these buildings look for ornaments whose origins remain a mystery. Foreign designers incorporate color palettes, tile mosaics, complex roof structures, architectural decorations into these buildings, entering into a hybrid dialogue with the city. The language used is very different from what is called a generic international consumer language in many other contemporary cities.

What is striking in these observations is that the formal language of these buildings pursues the same objectives as those of sovereigns during the colonial era: here too it is a question of creating a language of domination. A form language that dares to bluff in a surprising way.

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.¹⁴ Hybrid architecture!

2.6. 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. They are also confused about the appropriate location of those buildings (and other urban functions that are currently missing) in or just outside the city. There is no single vision about the development of Bukavu. This will be discussed in more detail in the next chapter.

To conclude this chapter, it seems useful to mention in this context that it should never be forgotten that indigenous African art lay at the basis of European modern art and architecture. Both Picasso and Le Corbusier knew where to get the mustard. The jagged, angular forms of African masks were one of the major influences that pushed Picasso into Cubism. The African American architect, Melvin Mitchell, claimed that West African art (especially the mask) shaped Le Corbusier's work via cubism (figure 12).

¹⁴ 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



Figure 12: This is a picture of Picasso's collection of art that he took with him wherever he lived. It's easy to tell how much influence these pieces had on Picasso's art.

<https://mirroneurons.blog/2018/02/12/hey-picasso-africa-called-it-wants-its-art-back/>

In spite of an emerging African Renaissance, there is still no associated urgency in defining architecture with an African identity, says Gerald Steyn.¹⁵

3. A short history of the debate around appropriate urbanism for Bukavu

Bukavu, located on various green hills, gradually transformed from a beloved and idealized "green city" in the 1950s, to a "city in peril" or "dying city" in the 1980s, to a grotesque dead city, as several civil society groups and provincial administrators publicly declared the city officially dead in the 2010s.¹⁶

3.1. 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 (figure 13). 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.¹⁷

¹⁵ https://repository.up.ac.za/bitstream/handle/2263/46852/Steyn_Manifestations_2013.pdf?sequence=1&isAllowed=y

¹⁶ [Shaping Claims to Urban Land \(degruyter.com\)](https://www.degruyter.com/shaping-claims-to-urban-land)

¹⁷ M. Lootens, Urban development as a reflection of dynamics of mobility – The case of Bukavu, Master dissertation UGhent, 2019

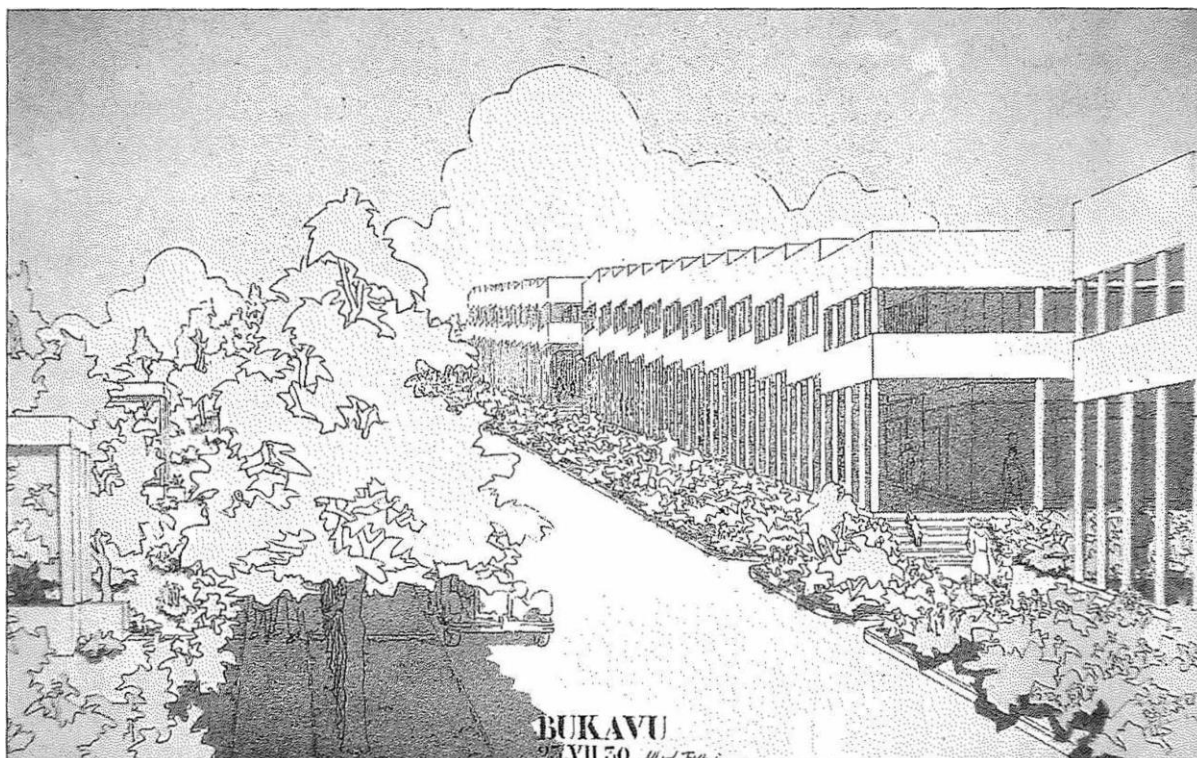


Figure 13: Verwilghen's architectural ambitions for the *Quartier des affaires*

3.2. Unprecedented urban growth

This city which had been designed as a city of contemplation and tranquility with views of the lake, no longer contains quietly visible places.

The environment has been threatened, migrants (rural exodus) are looking for land in the surrounding area and especially the banks of the lake and the very steep slopes of the city. On the other hand, the physical and topographical conditions of the city limit major developments and thus reduce the areas that can be developed in the city.¹⁸

Since the eastern region of the DRC slipped into cycles of armed conflict, abuse and impunity, Bukavu has experienced unprecedented urban growth, growing from a population of 338,689 in 2000, during the Second Congo War, at 806,904 in 2014. In its current post-conflict context, where violence still regularly breaks out in the city's peripheral districts, Bukavu continues to attract new arrivals. 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.

The city is becoming extremely dense. Today, the space between two curved streets is completely occupied by 10 to 15 adjacent multi-level buildings. The space between these constructions is unimaginably narrow. The plots were fragmented in a seemingly arbitrary manner. Thus, concerned about a home, or even better, about the development of their plot lest it be resold to another person, many residents build houses wherever and however they want without worrying urban planning standards (figure 14).

¹⁸ [Uncontrolled urbanization and expected unclogging of Congolese cities: Case of Bukavu city, Eastern DR Congo - ScienceDirect](#)



Figure 14: Bukavu centre

A consequence of this densification is that the view of the city is also busy, oppressive, with an overload of visual impressions. Bukavu is a vibrant city, but we do not fully understand the factors affecting the city's image.

3.3. Suitable or non-suitable areas for more and more inhabitants

The city of Bukavu is populated today by 1.300.000 inhabitants (Nyamugara et al., 2024). In June 2024, South Korean President Yoon Suk Yeol declared a state of emergency because the birth rate has reached a worrying low. 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.

Some earlier research has tried to determine the available suitable and non-suitable areas in Bukavu city based on known urban requirements as well as urban densification by taking into account the number of people that will have to occupy the city by 2030 and 2050 considering the four city functions.¹⁹ In this context it is important look into the institutional logics.

First, colonial land law and administration have created an urban sphere that is separate from the rural world. While land in Bukavu has remained at least legally distinct on paper, practices of land access and tenure have changed over the decades, at times rendering urban land law meaningless. Second, in the patronagedriven logics that began to permeate all state institutions in the Congo from the 1970s onwards, politics and business have become inherently intertwined. Wealthy political entrepreneurs are given favoured access to state institutions and resources in return for their loyalty. At the same time, low-level state administrators leverage their positions to secure their own income and provide kickbacks to those superiors on whom their jobs depend. In this context, urban land and property have become highly lucrative resources for all of them.²⁰

Construction on unsuitable land has resulted in landslides and erosion, as well as increased pressure on public space. Complex social relationships around property security are an important driver of the dynamics of urban inequality, accumulation and poverty. Even cemeteries are subject to speculation.²¹

Bukavu's challenges have been widely recognised but have not been met with public action. Since the end of the Second Congo War and the subsequent elections in 2006, various national and provincial development programs have been introduced but they have been largely ineffective.

¹⁹ Uncontrolled urbanization and expected unclogging of Congolese cities: Case of Bukavu city, Eastern DR Congo (uliege.be)

²⁰ Michel Thill and Godefroid Muzalia. All authorities have eaten, A history and political economy of Urban land in Bukavu, Rift Valley Institute, 2022

²¹ https://www.african-cities.org/wp-content/uploads/2021/12/ACRC_Bukavu_City-Scoping-Study.pdf

To maintain the sustainability of Bukavu and its former name of “green city”, both horizontal and mixed extensions will be considered while some selected zones have to be well planned for new satellites cities and new Bukavu city development.²²

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 from the centre), and the second ring contains satellite cities (figure 15).

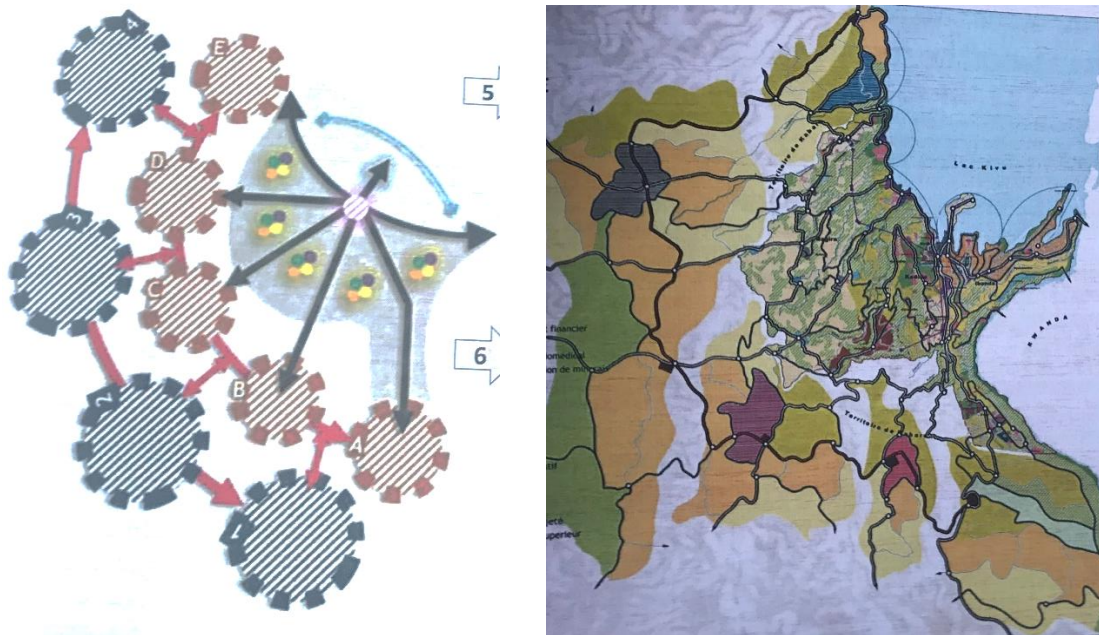


Figure 15: The PUR: 2 rings of extensions

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.

4. A mission for universities (and 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.

4.1. Researchers weariness

On March 11, 2020, Nobel prize winner 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”.²³ 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.²⁴ 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

²² https://orbi.uliege.be/bitstream/2268/296653/1/_Muhayaetal2022.pdf

²³ <https://www.ajol.info/index.php/lcc/article/view/254425/240390>

²⁴ <https://www.ajol.info/index.php/lcc/article/view/272641/257440>

in the abundant scientific production on Congo testifies to the permanence of failures in the management of the country.

4.2. 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.”

5. La grande maquette as a sketch design

The general aim of the TGM-workshop is an investigation into *the implosion and explosion* of Bukavu, exploring realistic scenarios for inclusive urban transformation. The TGM shows a prospective vision allowing Bukavu to face current urban challenges characterized by rapid population growth, rapid urbanization, high use and consumption of natural resources, climate change, etc.

5.1. Design of the model

Students of the 3rd, 4th and 5th year of the School 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, Etienne, Innocent and Carine were charged with the steering and practical concerns. The workshop took place in the Centre pour la Paix de la 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 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 (figure 16).



Figure 16: AutoCad drawing for the relief setup

To produce the base of the model, cardboard from the packaging of taxis-motos imported from China was purchased. More than 100 pieces were needed and 3,5 U.S. dollar was paid for each pack (figure 17).



Figure 17: Cardboard collection

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. From chaotic waterfronts to residential areas that are difficult to reach, from overcrowded areas to poorly used 'formal' zones (figures 18 & 19).

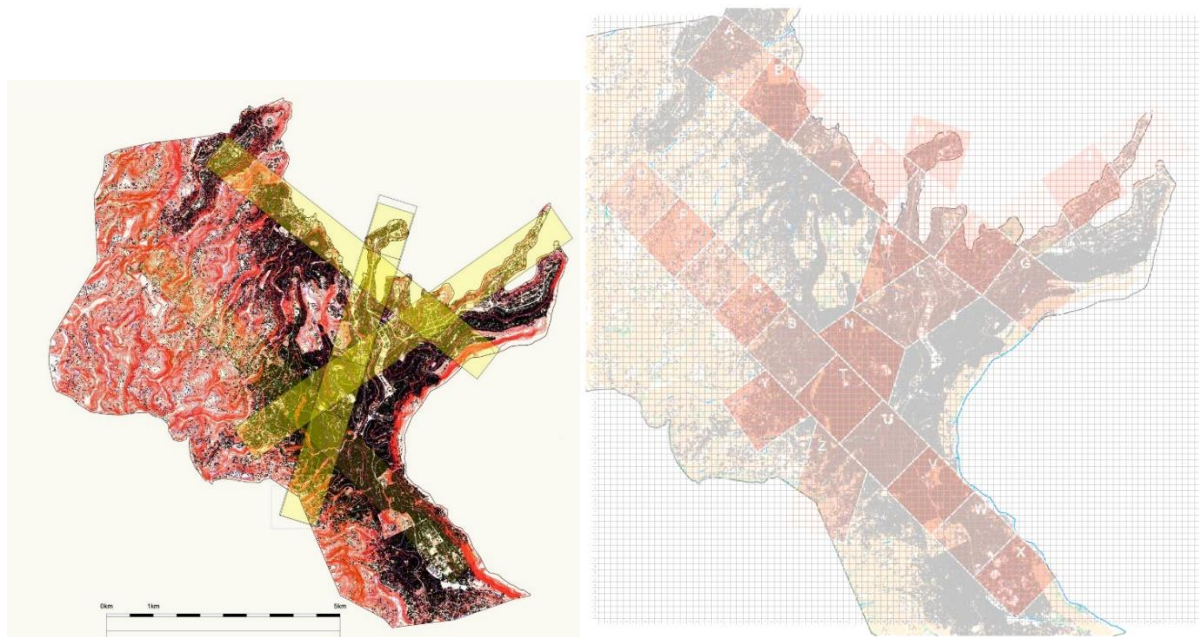


Figure 18: The four strips, and zones for groups labeled from A to Z



Figure 19: Scale model also adapted to the workspace Sant Egidio

After a general introduction, each group of students visited on Monday their assigned city zone. Reports were made based on short field research, photos and conversations with residents in that neighborhood. The most important characteristics and defining elements of the assigned urban fabric were mapped. On Tuesday work was done on the relief pedestals, on Wednesday work continued on this and the first city interventions were devised. These were visualized on Thursday and on Friday everything was made public with an extensive presentation and a debate with invited guests from various agencies and governments (figures 20 & 21).

A strike by all public transport throughout the city against excessive police corruption could not prevent the workshop: all students came to the workshop on foot every day, even from far away.

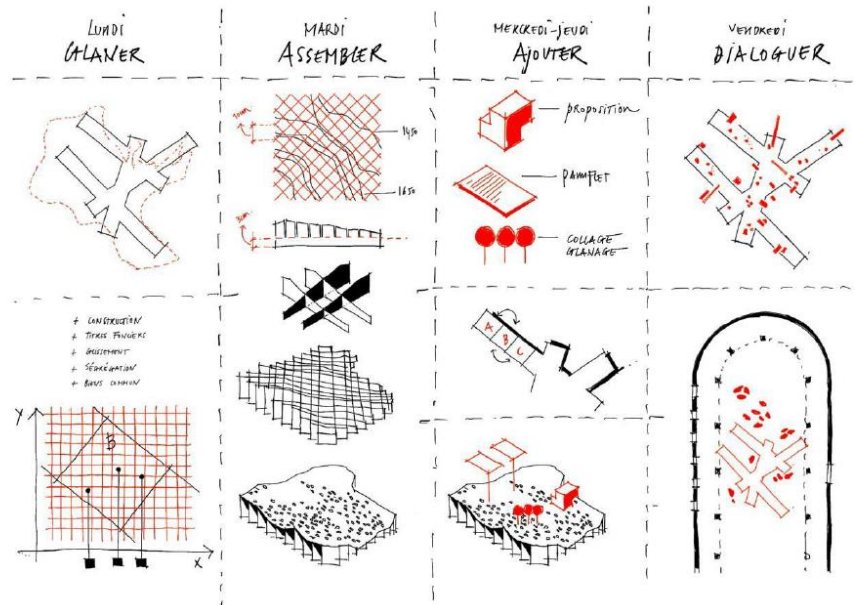


Figure 20: The visual calendar of the workshopweek



Figure 21: The 3dimensional base of the model

5.2. The main output

Before listing the most important findings, it should be noted that this workshop, in which the students from the different years were deliberately mixed in 27 groups, also called a 'vertical studio', were able

to enjoy an unprecedented and enthusiastic drive. Within the current school, 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 pieds 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 située - Arrêt de bus - Heineken city - Souligner les zones vertes aérées 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 kanjiya('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. *Kanjiya* is the local name for the mostly informal small paths created within the informal built environment. Often the paths are incorporating steps.

In her “story of a staircase”, Chandel Cifende Akonkwa has used an existing urban connection in her graduation work in an extremely creative way as a carrier for new and renewed development of adjacent residential properties, as a framework for the addition of small-scale public functions, as an instrument for the exchange of private and public properties and as a guideline for local policies and decision-making powers (figure 22). The existing operation of strategic meetings (*réunions stratégiques*) involving all stakeholders such as political and religious actors, local committees, law enforcement, syndicates, health services and educational institutions is clearly and schematically presented in the graduation work. With this project, Chandel Cifende Akonkwahas demonstrated that local and inventive competencies are extremely valuable.²⁵

Analogous to Maclaine Pont's search for a regional tradition in the Indonesian archipelago of valuable (popular) architecture described above, Chandel discovers inventive and traditional values and construction methods.

²⁵ C.C. Akonkwa. Résilience In_Formelle, TFE UCL, 2022

B. Bottom up

Case study : L'escalier de l'ITFM

I. LE PROCESSUS

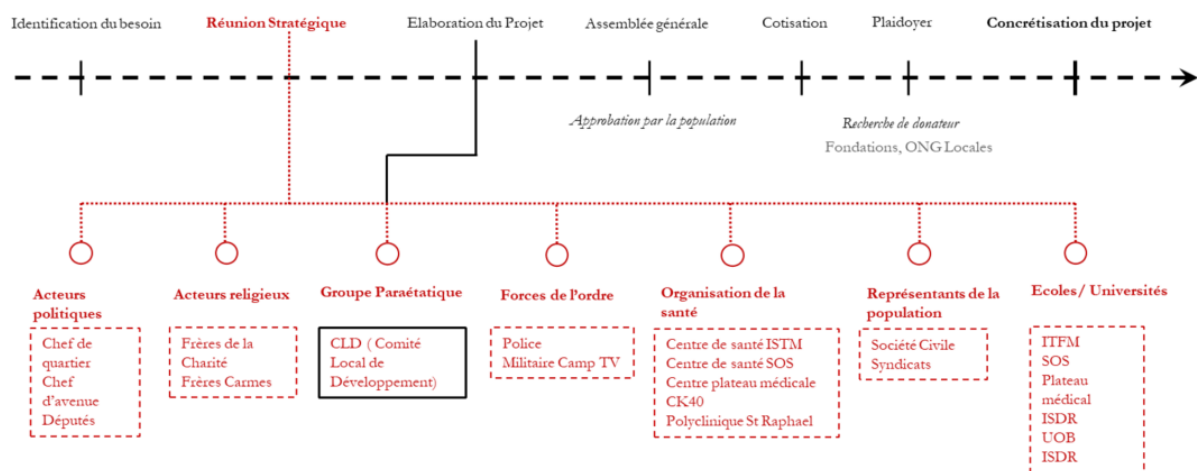


Figure 22: Case study : L'escalier de l'ITFM, made by Chandelle Cifende Akonkwa

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 kanjiya('s) in the Panzi area (figure 23).

LES « KANJIYA »

Certains sont spacieux et d'autres plus exigus, d'autres débouchent sur des petits ponts et nous trouvons des commerces sur le long



Figure 23: 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* (figures 24 & 25).



UNE VILLE, DEUX MONDES ...



LE KANJIYA...POIGNET SOCIAL ...

Figure 24: Images from group E



Figure 25: A renewed kanjiya, image from group E

LA GRANDE MAQUETTE DE LA VILLE DE BUKAVU



Pour la grande maquette de la ville, nous avons eu à travailler sur un axe se trouvant dans la commune de Kadutu. Un axe auparavant urbanisé par le belge mais aujourd'hui plongé dans un grand désordre.

Figure 26: 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 pieds nus**

Group R worked on a quite remote area.

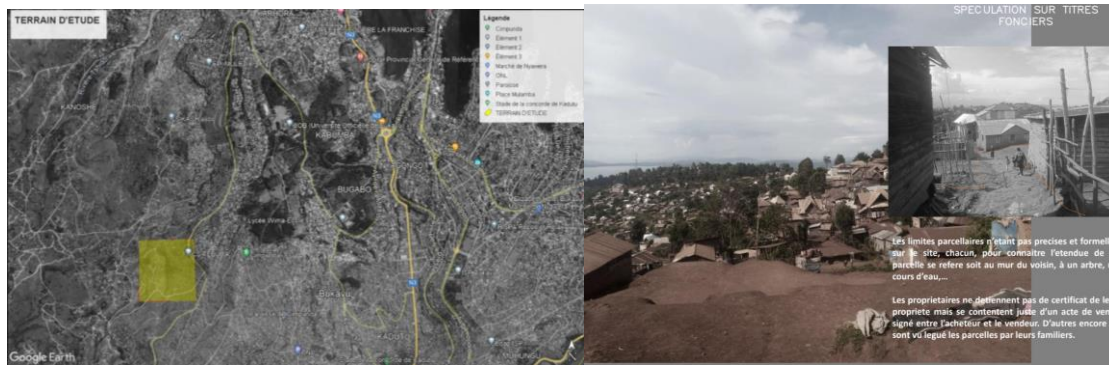


Figure 27: Zone group R

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 to 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 school of architecture. A temporary and locally scheduled part of the Academic Design Office (ADO) described above (figure 27).

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 maker 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 the ADO labs, offering creative and feasible solutions for the build environment in these area's (figure 28).



Figure 28: Visualisation of local design workshop by group R



Les constructions qui bordent la route témoignent du bricolage ingénieux des habitants, utilisant des matériaux de récupération pour ériger des boutiques et des kiosques. Ces structures, bien que précaires, débordent de vie et d'activité, offrant un refuge à une multitude de produits et de services.

Pourtant, malgré l'effervescence palpable et l'ingéniosité déployée, il est impossible de ne pas remarquer le désordre qui règne. Les étals semblent se fondre les uns dans les autres, créant un labyrinthe déconcertant pour les visiteurs. Les allées sont étroites, encombrées de marchandises variées et de clients affairés, ajoutant au sentiment de confusion qui règne dans cet espace commercial improvisé.

Figure 29: Description of the ingenious DIY in the area of Ciriri by group Y

One group worked on an area called Cikera in the region of Kabare (figure 29).

“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 themselves 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.”



Figure 30

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.

A design studio took place in the spring of 2022 under the name “*Servitudes et mitoyennetés en briques*” (Easements and joint ownership in bricks). The starting point of this studio was an overview of the specific techniques of access, provision, interchangeability of programmatic functions and private ownership of housing and frameworks of agreement in very dense built-up areas between the meanders of streets and alleys in the center of Bukavu.

This studio wished to examine this particular context in a creative way, reflect on the notions of easements and joint ownership and then develop a project in which ingredients such as high density,

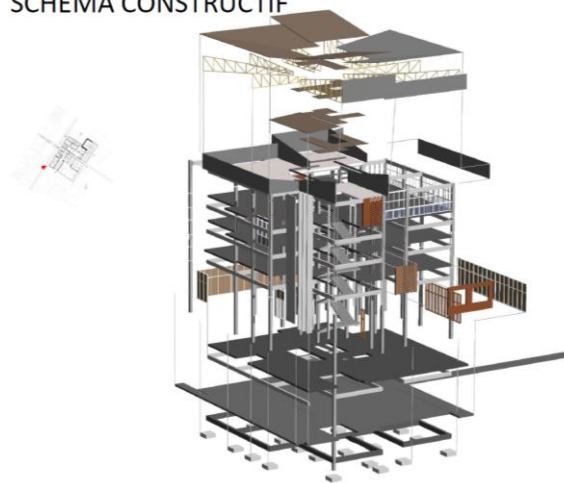
common paths and 'pedestrian tunnels', overlapping construction elements and ingenious access principles are translated into a residential volume built in brick (figure 31).

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

PLAN DE MASSE



SCHÉMA CONSTRUCTIF



LE PROJET ET SON ENVIRONNEMENT



Figure 31: 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 (figure 32).



Figure 32: 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 master thesis of Deborah Muhanzi.²⁶ 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, and 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 (figure 33).



Figure 33: The future of Nyakabila, seen by group N

²⁶ 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

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 Muhanzi Market, for example, can provide a safe crossing over the Katana route (RN2) 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 (figure 34).



Figure 34: 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 (figure 35).



Figure 35: 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 Munshekere 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 (figure 36).

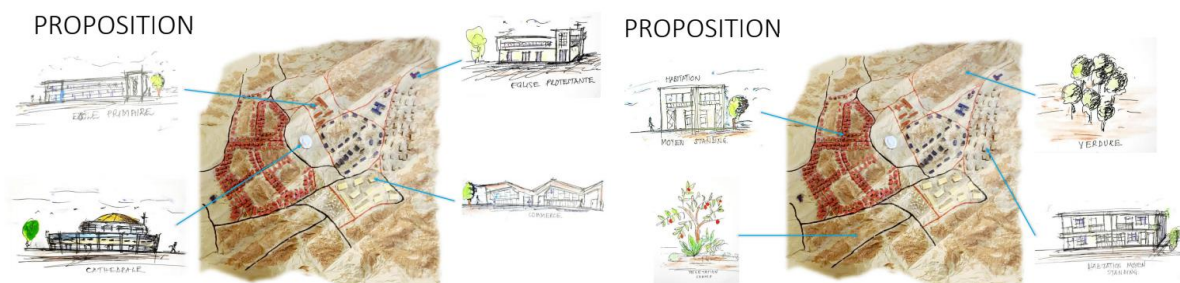


Figure 36: Proposals from group S

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 (figures 37, 38 & 39):

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 (figure 40)!

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.



Figure 37: Proposition by group J to install surfaces for volleyball, a restaurant at the lake in the Muhumba area

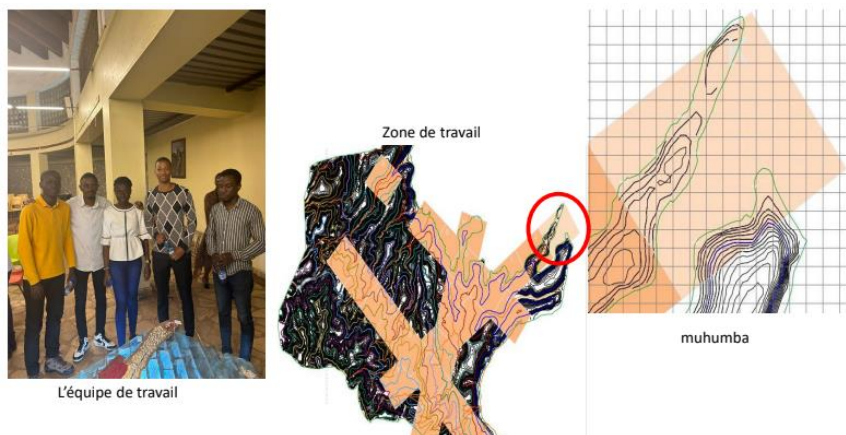


Figure 38: Group K: "In our proposals, we will see that a queue will be added to the site to streamline the traffic and enjoy the lake."



Figure 39: Group I proposed urban lighting on Labotte and floating housing

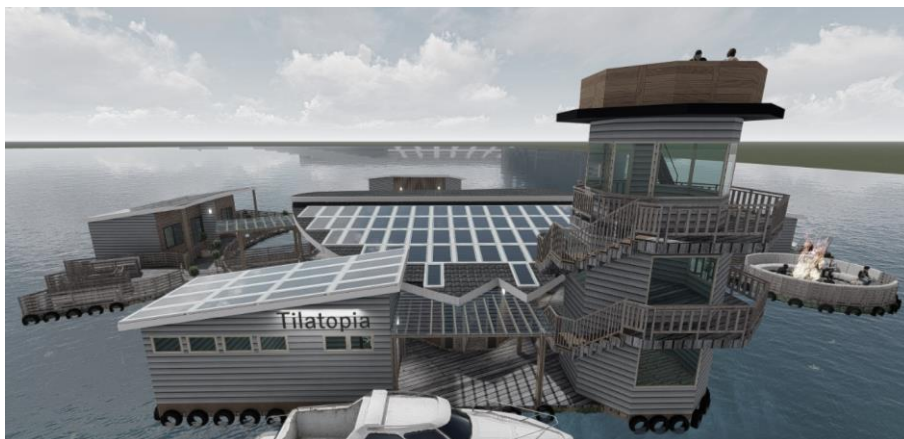


Figure 40: Tilatopia, project by Leo Yafetichoko & Josaphat Rubenga

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.²⁷ 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.²⁸

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 (figures 41, 42 & 43).

²⁷ <https://laprunellerdc.cd/ucb-les-etudiants-de-lecole-darchitecture-et-durbanisme-produisent-une-gigantesque-maquette-de-la-ville-de-bukavu/>
<https://radiouniversitaire.net/2024/04/12/presentation-de-la-maquette-de-bukavu-a-lucb-des-investisseurs-appelles-a-sen-appropriier-pour-la-materialisation/>
<https://vimeo.com/935052354/2be18553ae?share=copy>
https://www.youtube.com/watch?v=Lpg_bwef-ic

²⁸ <https://hal.science/hal-00789207/document>

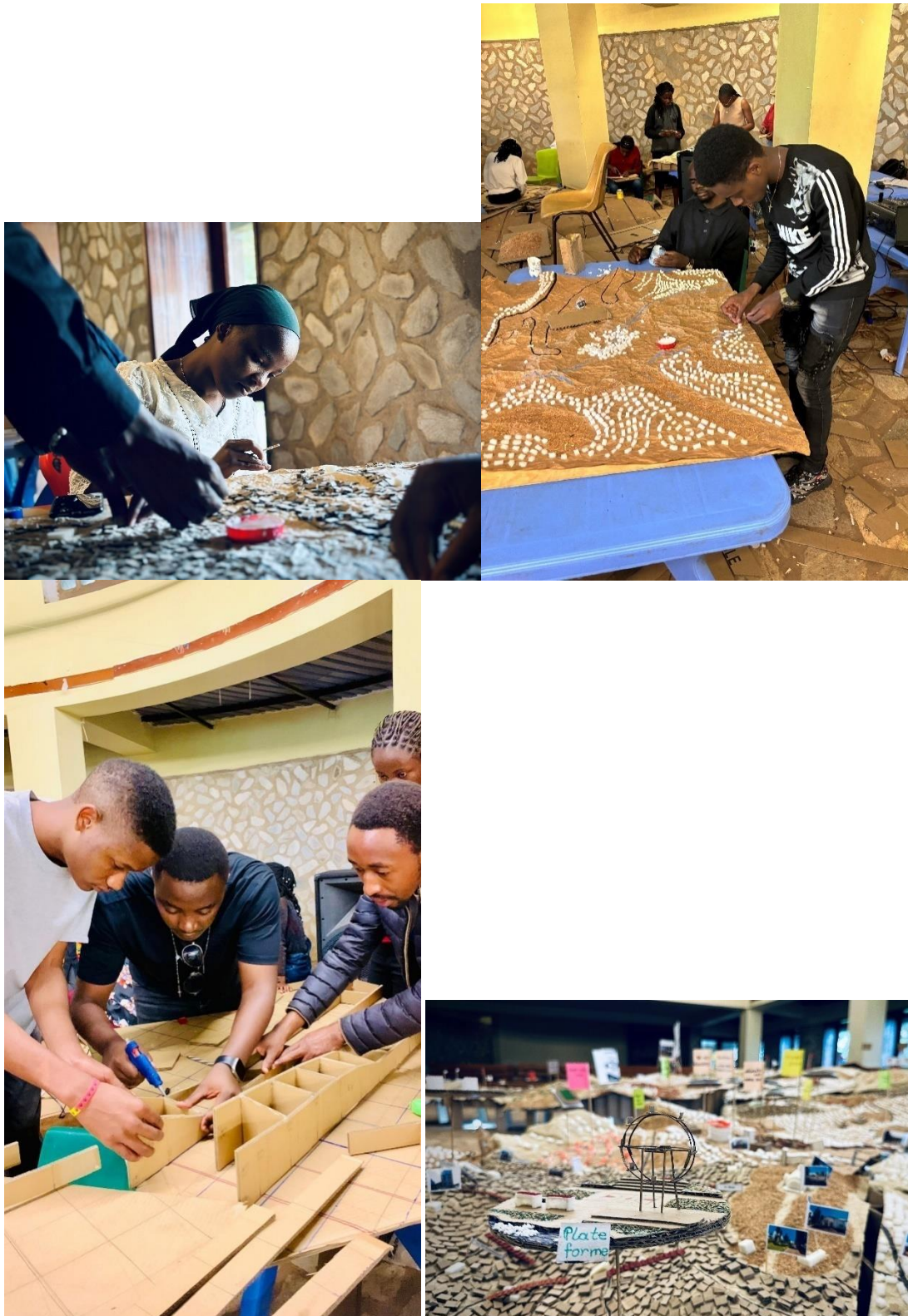


Figure 41: Atmospheric images 1



Figure 42: Atmospheric images 2

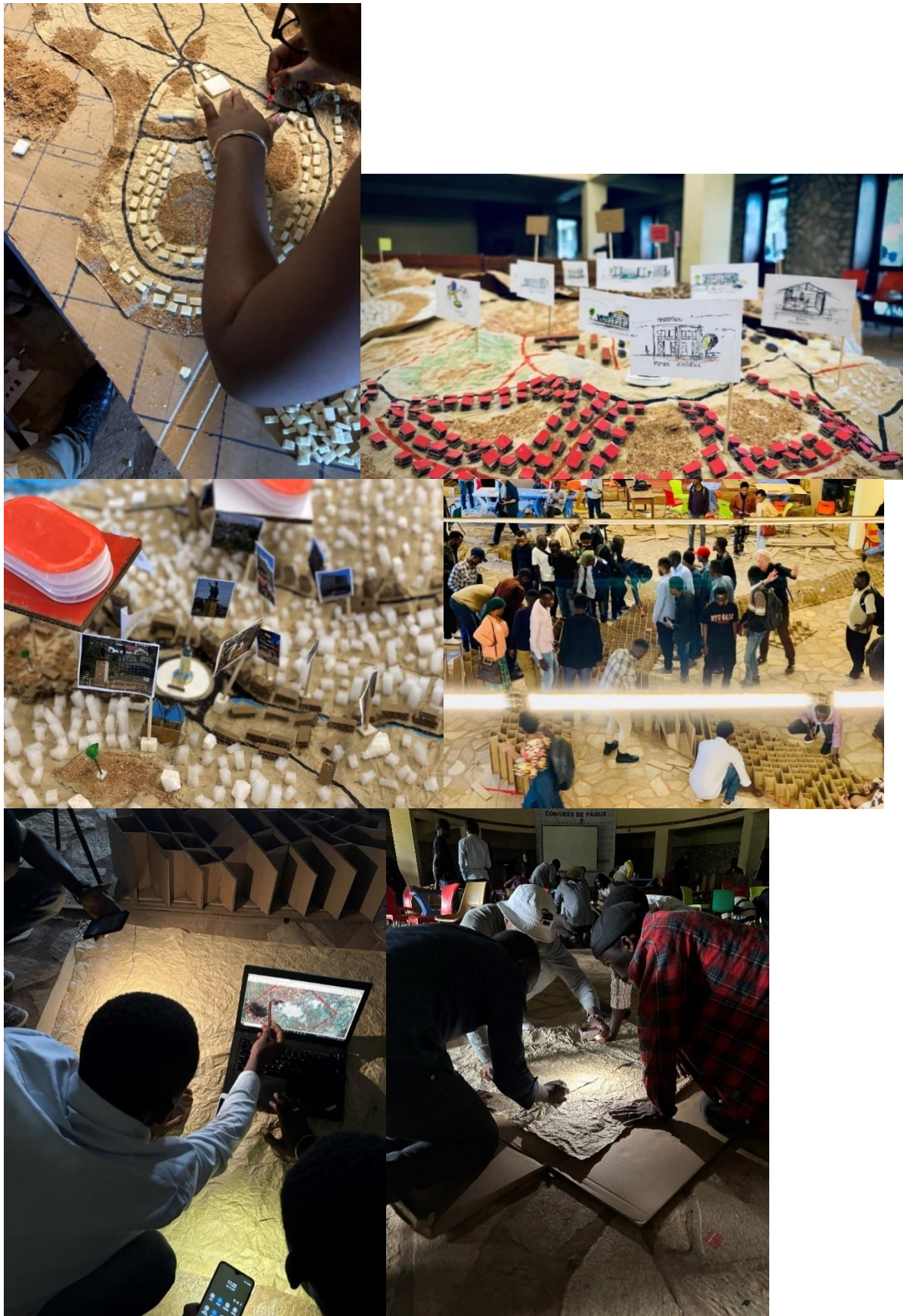


Figure 43: Atmospheric images 3

There is also a video of the workshop atmosphere: <https://vimeo.com/935052354/2be18553ae>

6. 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 (figure 44).

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.²⁹

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')

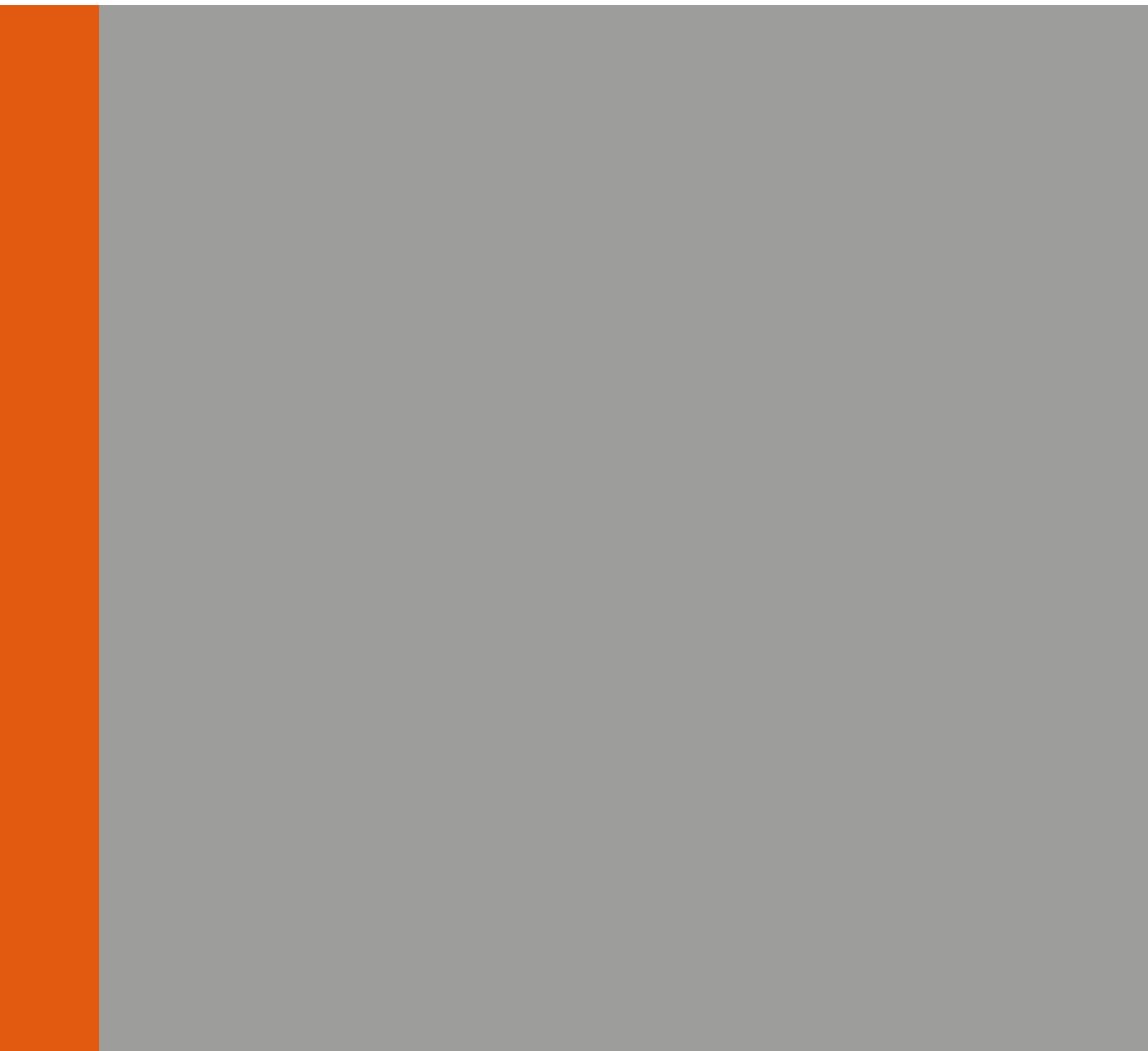


Figure 44: The final presentation

²⁹ <https://www.iosrjournals.org/iosr-ihss/papers/Vol.27-Issue9/Ser-6/H2709065363.pdf>

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