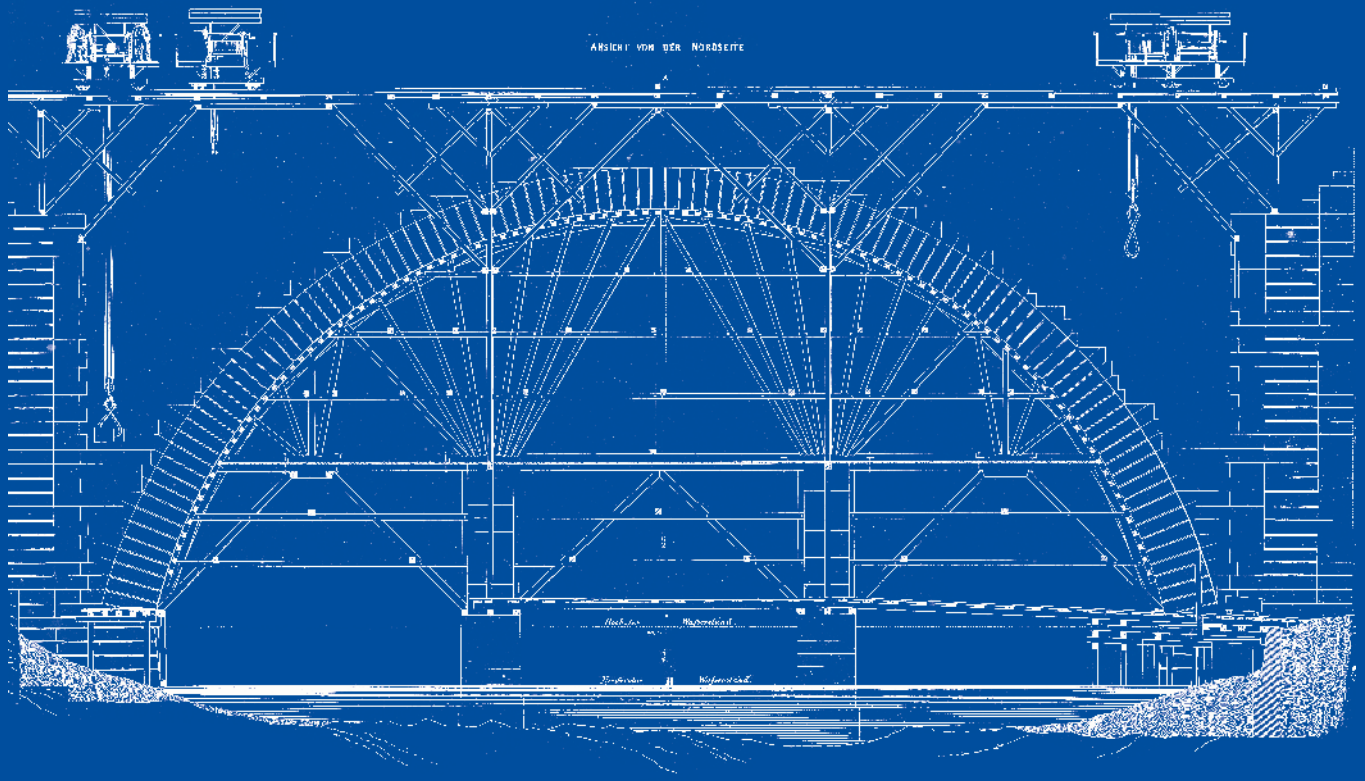
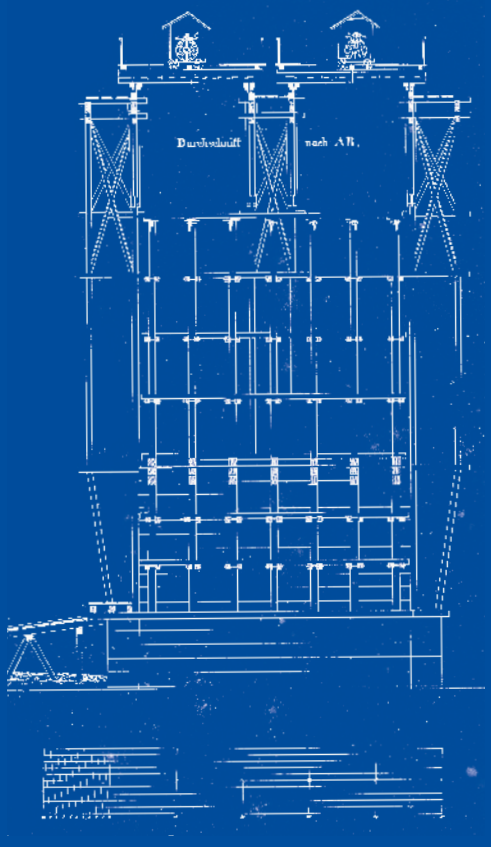
Proceedings of the 8th International Congress on Construction History
Stefan Holzer, Silke Langenberg, Clemens Knobling, Orkun Kasap (Eds.)



Construction Matters



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Bibliographic information published by the Deutsche Nationalbibliothek
The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data are available in the Internet athttp://dnb.dnb.de.

Download open access:

ISBN 978-3-7281-4166-8 / DOI 10.3218/4166-8

www.vdf.ch
verlag@vdf.ch

8th International Congress on Construction History – Zurich

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"Model" Workers' villages? Company rule and adobe-brick houses in late colonial Africa

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Abstract: In the early 1920s, a severe influenza epidemic in the Panda mining camps, recently founded by Union Minière in southern Belgian Congo, shed light on the importance of housing material conditions. Due to medical studies and reports, a solution was soon to be found in single-family adobe houses. Bricks arguably offered plenty of "benefits": they were cheap, made with local raw materials, easily assembled on site and did not require much expertise or heavy machinery. For the following decades, adobe was put forward by mining enterprises as a tool for and a symbol of control, neatness, salubrity, productivity and social hierarchy. When industrialization and urbanization issues became strongly entangled in the 1950s, the materialization of workers' houses was not only a case study for scientists but also a key instrument to counter international politics and anxieties about African housing. This paper questions the role of the adobe-brick components in shaping the built environment in late colonial Africa. What was their impact on house design, construction sites and building teams? To what extent did they compete with other technologies, namely concrete and stone? The overlooked histories of mining villages' construction illuminate significant trans-imperial circuits of knowledge transfer, running from the first on-site connections to the late international expert meetings. Far from being "workingman's paradises", as most company official reports suggested, adobe villages materialized multiple combinations of economic, social, moral and power guises, thus offering new perspectives on colonial construction, away from canonized actors, materials and norms.

Introduction

Mining companies were key agents in producing space across colonial Africa in the twentieth century. While working within large extractive concessions of land, enterprises were made responsible by the colonial apparatuses for housing thousands of workers. As a result, workers' villages stood out as one of the main units of territorial organization.

The mining labor space was organized according to a series of factors: stages in the recruitment process, type of contract, professional roles, and duration of the mines. In addition to these requirements, it was influenced by political and social factors (legal diplomas, pressure from the colonial authorities or international bodies, for example) and technical demands (such as the availability of materials, construction methods, health issues, and town planning guidelines). The process of building houses for workers was thus not linear, homogeneous, or well-ordered over time and space.

This paper aims to explore the housing models offered by three of the major mining companies operating in Central Africa, roughly from the late 1910s until the 1970s. The workers' villages of Union Minière du Haut Katanga and Forminière in Belgian Congo, and Diamang in northeastern Angola, will be questioned about their building materials, particularly on the role and the outcomes of adobe bricks. What was their impact on house design, construction sites, and building teams? To what extent did they compete with other building technologies?

Previous research has questioned the social, political, and spatial impacts of workers' housing in Africa (Home 2010; Barker-Ciganikova, et al. 2020) and, in particular, of the mentioned mining companies' repertoires (Higginson 1988; Cleveland 2015; Waldburger 2020). Following this background, this paper will try to surpass two persisting gaps: first, accounts of the materiality of these settlements are still scarce, despite their fundamental role in spatial design, the companies' positioning and the workers' contestation, as this paper will unveil; second, while Union Minière, Forminière and Diamang shared roots and fostered strong trans-national circuits of knowledge, they have yet not been approached together, mainly due to their different political colonial contexts—the first two under Belgian control and the last under Portuguese rule.

The paper follows a genealogical approach to unpacking the entanglements between mining corporations over time, mostly concerning typologies, material choices, and political debates.

1. The rise of material concerns, 1920–1935

1.1. Panda, Belgian Congo

During the year 1922, several influenza outbreaks took place across mining camps in Panda, one of the main locations of Union Minière du Haut Katanga (UMHK) in southern Belgian Congo. The company stressed the role of housing in these events: "Recent epidemics have highlighted the disadvantages of 'Panda-type' buildings from a hygiene

Figure 1. "Old houses" for workers in Union Minière's Panda camp, Belgian Congo (AGR, Sibeka, 530).

Figure 2. "New modern houses" for workers in Panda camp, Belgian Congo (AGR, Sibeka, 530).

point of view. It is indisputable that the contagious nature of these diseases is difficult to contain in the camps. Every room houses 14 people and therefore quickly becomes a source of infection. Bearing this in mind, we have found that 'hut-type' housing for three or four laborers is the best option" (Archives Union Minière 1922). (Fig. 1)

That same year, the UMHK sponsored the publication of the book "L'hygiène pratique des camps de travailleurs noirs en Afrique tropicale", authored by doctors Arthur Pearson and R. Mouchet. The volume presented numerous guidelines on the planning of camps, types of construction, models of toilets and water connections, and cleaning methods, among other aspects. From their experience of the "first eighteen years of European work in Katanga", Pearson and Mouchet advocated for a spatial solution similar to the notes mentioned above: single-family detached houses, organized through an "orthogonal system", divided into "sections", with a central communal kitchen, toilets on the side and surrounded by a fence (Pearson and Mouchet 1922).

While not much was then detailed about the materiality of constructions, later publications would openly show UMHK's growing awareness about the topic. In 1933, Rene Van Nitsen, also part of the company's medical team, published a book whose title suggested the need for a more local-based approach: "L'hygiène des travailleurs noirs dans les camps industriels du Haut-Katanga". In this volume, the materiality of housing was flagged as a key subject. According to Nitsen's notes, there were various construction options across mining camps, but not all of them met the UMHK's latest standards. Although straw huts were the cheapest and most similar to local housing, they offered few hygiene guarantees and should soon be abandoned. Rammed earth houses were also to be discarded due to their high cost, the large amount of wood needed, and the difficult maintenance.

Since these initial building hypotheses had been ruled out, Nitsen presented bricks as the most "suitable" material. In the villages of Union Miniére there were various "models" of brick buildings, most of them known as "Kimberley bricks" houses (Nitsen 1933). Photographs of camps in Panda, Ruashi, and Lubumbashi, among others, revealed the many different typologies to be found and the attention and effort that UMHK put into the exterior look of houses and communal spaces, namely small green areas, and kitchens (Archives Union Minière 1930). (Fig. 2)

According to John Higginson, who later addressed Union Minière's activities, "brick and cement housing was the best insurance against tick fever and pneumonia", thus allowing "the replacement of the [previous] military metaphor (…) with a bureaucratic and scientific one reflected the imperatives of technical control as perceived by the Union Minière's executive" (Higginson 1988, 11–13).

After these first experiments, the 1930s were fruitful in further testing materials. The definition of new labor hierarchies was also at stake and both topics were taken by companies as intertwined issues: for example, in 1938, the Union Minière reported that it was "impossible to continue to house 'specialized workers' in the same type of house as inferior labor. The black man is not indifferent to the category of accommodation he is given, nor its comfort. This question is as important as wages, rations or marriage for the stabilization of workers..." (Archives Union Minière 1940). In this regard, the widespread use of baked bricks had a significant impact on the design of houses, especially in the inclusion of verandas. In effect, the so-called "double house", which had brick walls and a front veranda, became the most used typology throughout mining camps in Belgian Congo and Angola from the 1940s onwards.

1.2. Lunda, Angola

Following the "hygienic concerns" that mostly guided the production of space in Africa at the beginning of the 20th century, "salubrity" became the main structuring line of the first mining sites. It was the materiality of the construction that began to divide the "old" villages from those considered to be more "modern". This distinction was made very clear in Diamang's mining camps, located in the Lunda region, right next to the northeastern border of Angola.

Diamang shared roots with the companies of the Belgian Congo. A few years after the creation of Union Minière and Forminière, Belgian engineers were the first to find diamonds in Lunda, after crossing the rivers on Angola's north-eastern border. Since then, the corporations became "like siblings" (Archives Sibeka 1929) and shared stakeholders, technicians, workers, know-how, and transport routes. Later, they also became major players within the powerful "Cape to Katanga" team or "lobby", which controlled much of the territory in this Central African corridor over the following decades (Wolfe 1962; Hughes 2003).

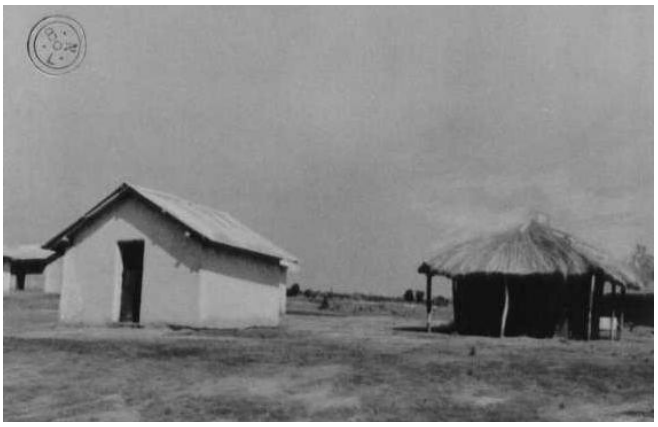

Figure 3. Contrast between "modern and old" houses in Lunda (ANTT/AOS-D-N/2-2-1, 1936).

In Lunda, Diamang's concerns were evidently similar to those shown by Union Minière and Forminière regarding the materiality of housing. On Diamang's 1936 annual report, the company presented a sharp confrontation between two house typologies that was to be seen as the "before and after" of the reality to be achieved in Lunda (Fig. 3) (ANTT Archives 1936)—but which was slow to happen on the ground, as this paper later questions.

The strategy of using changes in the materiality of housing as an alluring tool was evident in the "propaganda villages" that were being built in Lunda, where the company decided to use adobe bricks and zinc roofs. The following year, Diamang confirmed this approach by presenting a more systematized view of its villages in a similar annual report. Different houses on offer in Lunda, whose typological, spatial, and aesthetic characteristics corresponded closely to the Union Minière houses described by Van Nitsen, were presented in a carefully composed picture (ANTT Archives 1937). While it is essential to stress that most of the company's housing on the ground was still made of wattle and dub, the three different "types" of houses exhibited, all made in brick, revealed Diamang's intentions toward different construction materials and methods.

From the experience coming out of the Union Miniére, not only through the medical reports, as mentioned above, but also through frequent visits that technicians (often operating in the two or three companies simultaneously) made to the several mining sites across borders, the benefits of improving housing conditions were striking. These were trialed through several typological and constructive changes. The Belgian teams were keen to suggest offering houses that were "perhaps more expensive, but healthy and preferred by the locals", which would make it possible to balance the work, family, and social life of the laborers, as well as promoting a labor hierarchy through housing while turning it into an inducement for further vocational training (Mottoulle 1946). Several pictures show changes in the mining camps, where long rows of brick houses would compose workers' villages.

Along the same lines, Diamang built its first "model village" in 1940. This plan further emphasized construction as a key strategic device for running mining operations. The site was exposed as a fundamental spot for "tests on the hygiene of the villages and their layout, before any measures were generalized to other settlements", in a significant appreciation of empirical knowledge. The "model village" was set up in Mucunene, a "panoramic point" near one of the main mining groups. The location had been carefully chosen: visible from afar, seen by the workers and their families on their way to work as well as outside visitors when traveling throughout the mining area (Diamang Archives 1941).

2. Material and political entanglements, 1950–1960

2.1. "Durable" materials

Despite the companies' first efforts to simultaneously counter housing and productivity issues, the living conditions in most mines remain appalling. Several labor riots between 1935 and 1940 were a result of rough and murky environments (Cooper 1966; Perrings 1979; Parpart 1983; Seibert 2015).

It was after WWII, when movements against colonialism became sounder, that ideas of "urbanization" expanded to the places where African workers and families lived. The knowledge produced on and from colonial territories was deemed crucial for the actors involved: while the colonial state sought to secure its authority, local communities exposed growing power over the ruling structures. The housing issue, in particular, went beyond the initial questions of hygiene and control to stand out as a political discussion. This context resulted in and was fueled by new international organizations and meetings, mounting scientific research and technological production, as well as the expectations of the colonial administrations and populations. Consequently, mining companies' previous "stabilization strategies" for African labor began to be worked on by other bodies and particular forums, while there were ongoing legal and social changes that could no longer be ignored.

At the beginning of 1950, in particular, corporations in Central Africa were openly confronted with the scrutiny emerging in various inter-imperial forums, especially about the so-called "conditions of assistance" for African labor. The Inter-African Labour Conferences, the second edition of which took place in Elisabethville, Belgian Congo, in July of that year, were among the most important meetings. Amid the documents presented by the companies were extensive reports, with written information and photographs that acknowledged housing as one of the most influential materializations in the mining space.

Belgian companies had been working hard since the late 1930s to increase the number of houses made of "durable materials". This orientation was reflected in concrete figures: in the 11 camps of Union Minière, for example, around 3⁄4 of the accommodation area (162,000m2) was made up of "durable" materials (in concrete or backed bricks); in the more recent camps, in particular, the number of "non-durable or temporary" constructions (in mud brick or adobe) was minimal. The rationale toward this material path was made clear by the mining agents: "Today [in the mining villages] we have the greatest interest in improving the living conditions of the workers and their families. These are sine qua non conditions for the success of our stabilization policy" (Archives Union Minière 1947).

Professional positions also kept playing an important role in housing design and choice of materials. In this regard, Diamang claimed that a clear distinction between houses was a key tool for and a result of labor hierarchy. Unsurprisingly, the company argued that "contract" workers—i.e. those most

Figure 4. Chilupuca "modern neighborhood" in Lunda (SPAMOI, report, 1966. UC/AD).

scrutinized by the colonial state, since they were "recruited" by public bodies—should live in brick houses, closer to the Western model. On the other hand, the "volunteer" workers—as the men from the Luanda region were called—should live in their "original" houses, made with local materials.

According to inside reports, this choice represented both material savings for the company and greater satisfaction for the workers. Furthermore, materials were used to enhance racial distinctions among colonial workers. For instance, Diamang was keen on stressing the "better houses" offered to the Cape-Verdian laborers, who were considered more capable. These houses were made with baked bricks and their outside walls were painted with white clay. In the following decade, the company would use this same "model" to build "modern neighborhoods" in Lunda, thus endorsing such an option. (Fig. 4)

2.2. "Definitive" housing

A few years before the Elisabethville meeting, the Portuguese colonial government had issued a decree requiring companies to build "definitive" housing for their workers, thus putting extra pressure on the issue. This diploma was in line with the overall guidelines of the Native Labor Code [Código do Trabalho Indígena, CTI], already underway in Angola since 1928, but the growing international scrutiny of European colonialism had made this latest orientation stand out.

In 1953, the anxieties of the Portuguese colonial apparatus around the topic were made evident: the approval of labor contracts by the government in Angola was put on hold until companies presented plans and drawings of their workers' houses. Materiality was the cornerstone, confirming the approach already set in the Inter-African Labour Conference. While both decrees mentioned the need for employees to house their workers, the "housing question" was approached differently. The 1928 Labor Code specified the legal right to build "types of houses for each region of the colony, taking into account climatic conditions, the habits of the indigenous people and local resources of building materials" (Código do Trabalho Indígena 1928). As a result, the employers had assumed over the years that houses made of clay and grass—considered the "local materials"—were sufficient to fulfill the legal obligations. There were a few experiments with brick houses throughout Angola, also sponsored by Diamang in the Lunda region, but they were far from representing the overall housing conditions within the colony. The later decree, on the other hand, was sketchier around building materials, only mentioning the need to offer improved and definitive living solutions (Portaria 1946). The interpretation of the colonial apparatus gave it a new meaning: the "definitive nature" of housing was to be translated into "brick", thus mirroring fresh technological developments, the newest social demands, and greater public attention.

In an aim to make it easier for employers, the Colonial Public Works Department in Angola shared "model plans" for enterprises to use. However, when faced with the design, the Diamang engineers expressed their frustration at "the short-sighted approach of the Portuguese authorities": in their words, it was "a pity that [houses] are not built in Angola by copying or imitating what has already been studied and tried out abroad" (Diamang Archives 1953). As an alternative to this short view, they referred to the "extremely interesting" publication of the Bulletin du Centre d'tudes des Problèmes Sociaux Indigènes, in particular issues 12 and 18, from 1950 and 1952 respectively. In both volumes, published by the Institut Royal Colonial Belge, the company's agents praised the "interesting and appropriate models of housing" and the "extensive material to help solve the problem of indigenous housing" (Diamang Archives 1953).

Volume 12 included several pages on the "houses and annexes for indigenous personnel" at the Union Minière, with plans, their dimensions, and photographs. In addition to these plans, the booklet also had detailed maps about building materials (Bulletin du CEPSI 1950, 129–181). By then, bricks were the only option considered, in contrast with previous studies. It is noteworthy that the names of the houses offered by the different companies, although often the same, did not translate into similar solutions on the ground—a question that illuminates the corporations' strategies and loopholes and does not allow for immediate and simple comparisons. In the camps of the Belgian Congo, for instance, a "temporary house" was built with Kimberley bricks (dry adobe blocks), a rammed earth floor, and an aluminum roof; in Lunda, on the contrary, straw roofs were mainly kept in use. A "temporary" dwelling at Union Minière would therefore match a "semi-definitive house" in Lunda. The "definitive" houses, on the other hand, were similar in terms of materiality at both sites: concrete foundations, cement floors, baked brick walls, glass windows, and corrugated fiber cement roofing sheets.

Volume 18, on the other hand, printed a summarized version of M. Bruyère's latest studies (Bulletin du CEPSI 1952). The Belgian engineer had written his "Contributions to the study of Indigenous Housing in the Belgian Congo" in 1952. Regarding the organization and materiality of the house, he analyzed the pros and cons of solutions tested in the Belgian Congo and assumed the challenges of that "panacea". Bruyère's conclusion was open-ended: "Traditional materials, when used properly, are undoubtedly the most economical option, but given the weight of the task [of housing workers], new methods must be tested" (Bruyère 1952, 144).

Diamang followed the Belgian advice and drawings and soon had its labor contracts approved again. The plans included an orthogonally organized village composed of numerous brick houses, with a front veranda and metal roof. (Fig. 5) Tellingly, the colonial administration in Angola and other experts considered mining companies' houses as "role models" to be followed by other enterprises throughout

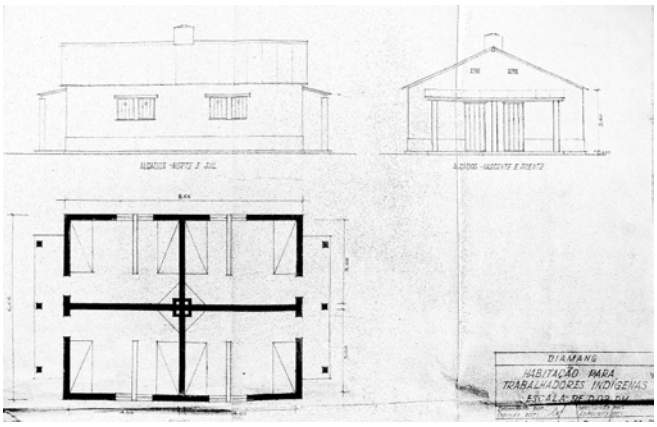

Figure 5. Plans for Diamang workers houses, 1953 (UC/AD).

the colony (Garrett 1940; Diamang Archives 1953). This assessment hints at a broader impact of company housing that is yet to be studied.

2.3. Expertise and contestation

Although companies showed an obvious interest in the widespread use of brick houses—not least because this option responded to economic, social, and political constraints, as previously noticed—, it is important to grasp that changes in the materiality of housing were also entangled with other factors which involved the know-how and the willingness of the local communities, as well as the re-organization of construction teams and methods.

First, in parallel with the aforementioned international political debates, mining companies began to test new construction models and methods. The motives were many: economy, speed, and diversification of materials. In 1953, both Union Minière and Diamang experimented with "airform" houses (Lagae and Boonen 2012; Diamang Archives 1953), using the structures created by Wallace Neff in 1941, which could be built in a few hours using an air balloon and sprayed concrete. Diamang also trialed the manufacture of new cement-dosed earth bricks, by using machines imported from England "on an experimental basis". (Fig. 6) Despite their efforts, none of these experiments were successful. The earth blocks used in Lunda could not withstand the rain and subsequently required the external walls to be plastered with cement and sand mortar. On the other hand, the "balloon houses", even if they were semi-detached, were rejected due to their "slowness, smaller area, and high cost" (Diamang Archives 1955), when compared to the common brick house. In sum, the latter material remained predominant.

Secondly, reports of the Diamang's labor service in the early 1960s assumed, in sparse and scattered lines, that it was "advisable to gradually replace the mud and grass houses with brick ones" because there would be great "difficulty in collecting material (mostly grass) for major repairs" and it would take "a lot of persistence for the women to harvest the grass". Notes on the subject highlighted opposing and overlapping motives for material and typological changes in housing: "The workers show a clear preference for permanent brick villages, we don't know if it's because of the comfort or because it frees the women from picking grass. The work is well paid, but it's met with reluctance and unwillingness (…). There are also long distances to collect wood. Traditional building work is becoming increasingly expensive due to the repeated increases in the minimum wage. This motive is almost as strong [to choose brick houses] as the desire to provide better accommodation for the workers" (Diamang Archives 1966).

From then on, corporations had to create and support building teams with more expertise in brickmaking and construction. In addition, new brick factories had to be built, incorporating more and more technology. The situation was compounded by evidence that fewer and fewer people knew how to work with local materials. In other words, changes in construction altered the building knowledge of the regional communities; and this last change in itself reinforced the abandonment of the so-called "traditional" typologies. This outcome could be understood as a "creole technology", introduced by David Edgerton as "technologies originating elsewhere combine in original ways with local technologies, forming hybrids" (Edgerton 1999, 101). Brick houses, however, would never be fully appreciated by everyone. On the contrary, reports of the rejection of this material and the resulting "European" typologies continued until the 1970s, when the Portuguese colonial project was over and Diamang was nationalized.


Figure 6. Brick factory in Lunda; blocks in stock (SPAMOI Report, 1961, UC/AD).

Conclusion

Over several decades of exploitation in Central Africa, mining companies have built thousands of houses for their workers. This article surveyed the mining camps of Union Minière, Forminière, and Diamang, across former Belgian Congo and Angola, to question the role and impact of building materials in creating colonial built environments. Even though these were everyday constructions, apparently of no great architectural value, they have shaped extensive landscapes and were often considered "models" to be copied by other colonial bodies. Furthermore, they were part of a history that intersects different geographies and expands the construction knowledge on colonial Africa beyond the still prevailing national and "modern" frameworks. Cross-readings are thus essential to understanding the wider spatial and building impact of these corporations.

Research points out that the materiality of housing was more significant and more debated than the design itself in these exploitation contexts. While the houses were also classified according to the number of bedrooms, it was mostly the materials that stood out as the main differentiating factors.

Yet, it remains important to stress that the same typology names were often attributed to different building solutions, over time and in different geographies, revealing an intricate and volatile reality that was quite permeable to local agency and not always easy to disentangle in the light of the present. The complexity of mapping and systematizing the different types of housing and spatial devices reveals villages as a complex ground to be further unpacked.

Moreover, the introduction of new building elements, such as the veranda, was directly related to changes in materials. Brick allowed the design of new typologies, considered "more modern", and thus must be enquired as an essential part of the process of spatial and social "modernization" in the context of colonialism in Africa.

Finally, it is noteworthy that the surveyed processes of material changes were not only dictated or guided by the mining corporations but also recurrently participated by local knowledge. Such an interplay suggests that materiality entails practical procedures and building methods that are not easily controlled by theoretical knowledge or impositions. Future research on the impact of workers in colonial construction sites and building techniques is still needed.

Acknowledgments

This work was supported by the Portuguese Foundation for Science and Technology (FCT) under Grant SFRH/BD/122658/2016. The research is part of the research project "ArchLabour: Architecture, Colonialism and Labour. The role and legacy of mass labour in the design, planning and construction of Public Works in former African territories under Portuguese colonial rule" [ERC Grant 101096606].

Bibliography

Barker-Ciganikova, Martina, Kirsten Rüther, Daniela Waldburger, and Carl-Philipp Bodenstein (eds). 2020. The Politics of Housing in (Post)colonial Africa: Accommodating Workers and Urban Residents. Berlin, Boston: De Gruyter.

Bruyère, M. 1952. Contribution à l'étude des Habitations pour Indigènes au Congo Belge. Brussels: Institut Royal Colonial Belge.

Cleveland, Todd. 2015. Diamonds in the Rough Corporate Paternalism and African Professionalism on the Mines of Colonial Angola, 1917–1975. Ohio: Ohio University Press.

Cooper, Frederick. 1996. Decolonization and African Society. The Labor Question in French and British Africa. Cambridge University Press.

Edgerton, David. 1999. Creole technologies and global histories: rethinking how things travel in space and time. *History* of Science and *Technology* Journal, 1(1): 75-112.

Garrett, Visconde de Almeida. 1940. A Casa do Colono em terras da África Tropical: condições a que deve obedecer a construção da habitação do colono e do indígena. Congresso Colonial do Mundo Português.

Grévisse, Fernand. 1962. "Les Aspects multiples et changeants du Problème du Logement des Populations Katangaises." Civilisations 12, no. 1: 88–110.

Higginson, John. 1988. "Disputing the Machines: Scientific Management and the Transformation of the Work Routine at the Union Miniere du Haut-Katanga, 1918–1930." African Economic History, no. 17: 1–21.

Home, Robert. 2010. "From barrack compounds to the single-family house: planning worker housing in colonial Natal and Northern Rhodesia." Planning Perspectives 15, no. 4: 327–47. https://doi.org/10.1080/026654300420945.

Hughes, Matthew. 2003. "Fighting for White Rule in Africa: The Central African Federation, Katanga, and the Congo Crisis, 1958–1965." The International History Review, no. 25: 592–615.

Lagae, Johan and Sofie Boonen. 2012. "Des Pierres Qui (Nous) Parlent". Biennale de Lubumbashi, Simon Njami (ed.). Filigrainesl: 19–53.

Mottoulle, Leopold. 1946. Politique Sociale de L'Union Minière du Haut-Katanga pour sa Main d'Oueuvre Indigène et ses résultats au cours de vingt années d'application. Brussels: Institut Royal Colonial Belge.

Nitsen, Van. 1933. L'Hygiène des Travailleurs Noirs dans les Camps industriels du Haut-Katanga. Brussels: Institut Royal Colonial Belge.

Parpart, Jane. 1983. Labor and Capital on the African Copperbelt. Philadelphia: Temple University Press.

Pearson, A, R. Mouchet. 1923. The Practical Hygiene of Native Compounds in Tropical Africa: being notes from the experience of the first eighteen years of European work in the Katanga. London: Baillière, Tindall and Cox.

Perrings, Charles. 1979. Black Mineworkers in Central Africa: Industrial Strategies and the Evolution of an African Proletariat in the Copperbelt, 1911–41. London: Heinemann Educational.

Seibert, Julia. 2015. "'Wind of Change': Worker's Unrest and the Transformation of Colonial Capital in Katanga, Belgian Congo". in Work and Culture in a Globalized World: From Africa to Latin America, Babacar Fall, Incke Rheinberger e Andreas Eckert (eds.). Berlin: Karthala: 253–271.

"Social Policy of Union Minière du Haut Katanga." African Affairs 46, no. 183 (April 1947): 87–89.

"Union Minière du Haut-Katanga. Groupment des maisons et annexes pour le personnel indigène. Plans, métrés et photos." Bulletin du CEPSI, no. 12 "Consacré aux maisons indigènes au Congo" (1950): 129–181.

Waldburger, Daniela. 2020. "House, Home, Health and Hygiene: Social Engineering of Workers in Elisabethville /Lubumbashi (1940s to 1960s) Through the Lens of Language Usage." in The Politics of Housing in (Post) colonial Africa: Accommodating Workers and Urban Residents. Martina Barker-Ciganikova, Kirsten Rüther, Daniela Waldburger, Carl-Philipp Bodenstein (eds.). Berlin, Boston: De Gruyter.

Wolfe, Alvin. 1962. "The Team Rules Mining in Southern Africa." Toward Freedom, no. 11: n.p.

Archival sources

Archives Union Minière, 1930, 354, Archives Générales du Royaume.

Bulletin du CEPSI, 12, 1950: "Consacré aux maisons indigènes au Congo": 29–181.

Bulletin du CEPSI, 18, 1952: “Contribution à l’étude des Habitations pour Indigènes au Congo Belge”.
“Construction Services”, annual report, 1955, Diamang Archives, University of Coimbra.
“Inter-African Labour Conferences”, 1948–53, Diamang Archives, University of Coimbra.
“La Main d’Oeuvre Indigène de L’Union Minière du Haut Katanga, June 1928”, Archives Sibeka, 530, Archives Générales du Royaume.
“Oeuvres et Action Sociales”. Raport annuel, 1947. Archives Union Minière, Archives Générales du Royaume.
“Preliminary and Final Report on the Angola and Belgian Congo Diamond Fields”, by Paul Beetz, 1929, Archives Générales du Royaume, Depot Joseph Cuvelier, Sibéka Archives [BE-A0545.189], 4201.
“Rapport por l’année 1922”, Departement de la Main d’Oeuvre Indigène, Archives Union Minière, 653, Archives Générales du Royaume.
Report by the administrators of the Companhia de Diamantes de Angola (Diamang), 1936, ANTT Archives [AOS-D-N/2-2-1].
Report by the administrators of the Companhia de Diamantes de Angola (Diamang), 1937, ANTT Archives [AOS-D-N/2-2-1].
SPAMOI’s (Diamang’s Labour Propaganda service) annual report, 1940, Diamang Archives, University of Coimbra.
SPAMOI’s (Diamang’s Labour Propaganda service) annual report, 1966, Diamang Archives, University of Coimbra.